

**THE
WOODSIDE
CONSULTING
GROUP**

**RTC MODEL STUDY OF PROPOSED PASSENGER TRAIN SERVICE
BETWEEN LYNCHBURG AND ROANOKE, VA**

**Prepared For:
Norfolk Southern Corporation**

**Prepared By:
The Woodside Consulting Group, Inc.**

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I. Background

- In January 2013, The Woodside Consulting Group, Inc. (“Woodside”) was retained by Norfolk Southern (“NS”) to make an RTC Model Study of the network effects of adding one roundtrip passenger train daily between Lynchburg and Roanoke, VA.
- Our assignment was to determine, using the RTC model, if clearing the Altavista District “V-Line” between Roanoke and Abilene for double-stack intermodal container service would open sufficient network capacity on the Blue Ridge District to accommodate the extension of one roundtrip passenger train from Lynchburg to Roanoke without increasing freight or passenger train delay.
- Two levels of underlying train volumes (freight and existing Amtrak) were addressed: a 2012 Base Case (2012A) and a 2017 Future Base Case (2017A).
- The RTC train file for the 2012 Base Case was developed by Woodside from NS-provided October 2012 train operating data. Subsequent modifications were made to reflect operational changes in and around Roanoke Yard in early 2013 and to add a new Trash Train and Train No. 201 to the train file data.
- Projected growth in intermodal trains was provided to Woodside by NS for development of the 2017 Future Base Case RTC train file. Nine second frequencies of existing intermodal trains were added (two hours later, if currently scheduled to leave before 7:00 p.m., or two hours earlier, if currently scheduled to leave after 7:00 p.m.). Five intermodal trains were operated more days per week than in the 2012 Base Case.
- 2012 and 2017 Roanoke Passenger Train Cases (2012B and 2017B) included the extension of the existing daily Washington-Lynchburg passenger train to a single roundtrip daily between Lynchburg and Roanoke.

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- To model train spacing compliance with NS Operating Rule 444-1, Woodside modeled hypothetical “Leader Trains” for all passenger trains in the RTC network. The “Leader Trains” are not included in the RTC Model output statistics for any of the cases.
- Both the 2012 and 2017 Roanoke Passenger Trains and Additional Infrastructure Cases (2012C, 2017C, and 2017D) included the shift of five intermodal trains (Nos. 217, 218, 234, 236, and 23G) from NS’s Blue Ridge District to NS’s Altavista District, as specified by NS, thereby freeing up capacity on the Blue Ridge District to accommodate one roundtrip passenger train between Lynchburg and Roanoke.
- Because shifting Trains Nos. 217 and 218 saves approximately one hour in running time between Roanoke and the Hurt Connection, Woodside rescheduled Train No. 217 on Tuesdays and Wednesdays to about a one hour later departure in order to avoid meets of Trains Nos. 217 and 218 on the Altavista District, without impairing arrival time.
- The RTC Model Network defined for our Study totaled about 400 route miles plus additional lines (see Attachment A); the core routes are:
 - Piedmont Division, Charlottesville-Lynchburg-Danville
 - Blue Ridge District, Crewe-Roanoke via Lynchburg
 - Altavista District, Abilene-Roanoke via Altavista

II. Passenger Train Schedules

- Passenger Train Schedules used in the RTC Model for the extension to Roanoke of existing Washington-Lynchburg Amtrak trains were provided by NS, and were based on TPC run times that assume the speed increases for the Blue Ridge District “Low Investment Scenario” from NS and a 3-minute dwell time at Lynchburg Station. (See Attachment B.)

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- Maximum authorized speeds of 60 mph, the historic maximum speeds, were used because significant engineering and curve adjustment projects would otherwise have been required.
- Daily operation is projected for the single roundtrip Lynchburg-Roanoke passenger trains, although schedule times differ for weekdays and weekend days (in accordance with Amtrak's current Washington-Lynchburg schedules).
- The same Lynchburg-Roanoke passenger train schedules were used for both the 2012 and the 2017 Roanoke Passenger Train Cases.
- Passenger Train Schedule Run Times between Lynchburg and Roanoke, excluding station dwell, were 80 minutes in both directions initially in the Roanoke Passenger Trains Case (2012B and 2017B), but were reduced to 76 minutes in the 2012C, 2017C, and 2017D Cases that include Infrastructure Additions and, as such, are comparable to the run times when Amtrak last operated the service in 1979.

III. Infrastructure Additions For 2012 and 2017 Cases

Infrastructure Additions were made in order to operate passenger train service and to prevent deterioration in NS's train performance that would otherwise result from the operation of the Roanoke Passenger Trains.

A. 2012 and 2017 Roanoke Passenger Trains Cases

The following infrastructure additions were made to the 2012 and the 2017 Roanoke Passenger Trains Cases (2012B and 2012C; 2017B, 2017C, and 2017D):

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1. At Lynchburg, a second station platform was added on southbound Track No. 2, as requested by NS.
2. At Roanoke, a passenger station track was added parallel to Track No. 1 in the vicinity of MP N258, as requested by NS.
3. At Roanoke, a maintenance facility was proposed by NS to be located south of JK. In order to reach the maintenance facility, a reverse train move out of the station track each evening and a reverse train move into the station track each morning were modeled.

B. 2012 Roanoke Passenger Trains and Infrastructure Additions Case

In addition to the infrastructure additions listed above for the passenger train cases, the following infrastructure additions were made to the 2012 Roanoke Passenger Trains and Infrastructure Additions Case (2012C):

1. Between Lynchburg and Roanoke, train speeds were increased through implementation of the NS “Low Investment Scenario”. (See Attachment C(1).)
2. On the Altavista District, all of the tunnels were assumed to be cleared so that double-stack intermodal trains could be operated.
3. On the Altavista District, speed upgrades provided by NS were implemented to accommodate intermodal trains. (See Attachment C(2).)
4. On the Altavista District, in order to prevent deterioration in train performance departing from and arriving in Roanoke Yard, a two-mile long siding between MP V236.0 and V238.0, near Niagara, for trains to meet and pass was added by Woodside. (See Attachment C(3).)

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C. 2017 Future Roanoke Passenger Trains and Infrastructure Additions Case

The 2017 Future Roanoke Passenger Trains and Infrastructure Additions Case (2017C) and the 2017 Future Roanoke Passenger Trains/Mitigating Infrastructure Case (2017D) included all of the Infrastructure Additions listed above for the 2017 Passenger Trains Case (2017B) and all of the infrastructure additions listed above for the 2012 Roanoke Passenger Trains and Infrastructure Additions Case (2012C).

In addition, in the 2017 Future Roanoke Passenger Trains and Infrastructure Additions Case (2017C), in order to test the provision of sufficient capacity on each line segment so that the RTC Model train performance for all train groups was at least as good as the 2017 Future Base Case (2017A), a series of infrastructure additions were made:

- On the Blue Ridge District, the Liberty – Forest Siding was extended westward from MP N214.5 to MP N218.5. (See Attachment D(1)(a).)
- In Roanoke Yard, the existing Pocket Track was extended eastward and a proposed crossover was moved eastward to about MP 256.9, so that a 1,000 ft. long passenger train would be in the clear after being turned on the Campbell Avenue east leg of the wye. These infrastructure additions were intended to permit simultaneous train movements through CP Eight & ½ Street using both the Pocket Track and Main Track No. 2 during the time that the Amtrak train occupies Main Track No. 1 while being wyed. (See Attachment D(1)(b).)
- On the Piedmont Division, at Lynchburg, a second main track was added to the Double Wye Connecting Track. (See Attachment D(2)(a).)
- On the Piedmont Division, a second main track was added between MP 202.1 and MP 212.0, from Green to Smothers. (See Attachment D(2)(b).)

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- On the Altavista District, a second main track was added from Tinker Creek, at MP N256.1, to MP V238.0 as an extension of the Niagara Siding that was added in the 2012 Roanoke Passenger Trains and Infrastructure Additions Case (2012C). The infrastructure addition in this 2017C case created a 5.5-mile double track from Tinker Creek to MP V236.0, east of Niagara. (See Attachment D(3)(a).)
- On the Altavista District, a two-mile long siding was added between MP V217.4 and MP V219.4 at Stone Mountain. (See Attachment D(3)(b).)
- On the Altavista District, a two-mile long siding was added between MP V202.6 and MP V204.6, west of Hurt. (See Attachment D(3)(c).)

The 2017 Future Roanoke Passenger Trains/Mitigating Infrastructure Case (2017D), however, reduces the infrastructure additions from those included in the 2017C Case. Only the following two infrastructure additions would be necessary for train performance to be comparable to 2017 Future Base Case (2017A) train performance:

- On the Piedmont Division, a second main track was added between MP 202.1 and MP 212.0, from Green to Smothers. (See Attachment D(2)(b).)
- On the Altavista District, a second main track was added from Tinker Creek, at MP N256.1, to MP V238.0 as an extension of the Niagara Siding that was added in the 2012 Roanoke Passenger Trains and Infrastructure Additions Case (2012C), creating a 5.5-mile double track from Tinker Creek to MP V236.0, east of Niagara. (See Attachment D(3)(a).)

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IV. RTC Model Results and Findings: 2012 Cases and 2017 Cases

A. Summary of Case Differences

- A summary of the differences in the seven cases analyzed by Woodside is contained in Table 1, below, which shows Freight Train Volumes, Passenger Train Schedules, and Included Infrastructure Additions, by Scenario:

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**Table 1
Freight Train Volumes, Passenger Train Schedules, and Included Infrastructure Additions, by Scenario**

	2012 Base Case (2012A)	2012 Roanoke Passenger Trains Case (2012B)	2012 Roanoke Passenger Trains & Infrastructure Additions Case (2012C)	2017 Future Base Case (2017A)	2017 Roanoke Passenger Trains Case (2017B)	2017 Roanoke Passenger Trains & Infrastructure Additions Case (2017C)	2017 Roanoke Passenger Trains /Mitigating Infrastructure Case (2017D)
Freight Trains:							
• Current Operations	X	X	X				
• Projected Future Operations				X	X	X	X
• Rerouted Intermodal Trains			X			X	X
Passenger Train Schedules		80"	76"		80"	76"	76"
Passenger Train Infrastructure Additions:							
• Lynchburg Station Platform		X	X		X	X	X
• Roanoke Station Track		X	X		X	X	X
• Roanoke Maintenance Facility		X	X		X	X	X
Blue Ridge District Infrastructure Additions:							
• Speed Upgrades			X			X	X
• Liberty-Forest Siding Extensions						X	
• Roanoke Yard Pocket Track Extension						X	
Piedmont Division Infrastructure Additions:							
• Double Wye, Second Main Track						X	
• Green-Smothers, Second Main Track						X	X
Altavista District Infrastructure Additions:							
• Cleared Tunnels			X			X	X
• Speed Upgrades			X			X	X
• Niagara Siding			X				
• Tinker Creek, Second Main Track						X	X
• Stone Mountain Siding						X	
• West of Hurt Siding						X	

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B. Comparison Metrics

- Woodside's Study objective for the Roanoke Passenger Trains Cases was to add sufficient capacity on each line segment so that RTC Model train performance for all train groups (i.e., passenger, expedited, freight) was reasonably comparable to the 2012 Base Case or the 2017 Future Base Case train performance.
- Both of the following key metrics were analyzed:
 - Average train speed (mph)
 - Delay per 100 train miles (minutes)

C. 2012 Cases

- Attachment E contains the RTC Model results for the 2012 Base Case (2012A).
- Attachment F contains the RTC Model results for the 2012 Roanoke Passenger Trains Case (2012B).
- Attachment G contains the RTC Model results for the 2012 Roanoke Passenger Trains and Infrastructure Additions Case (2012C).
- A comparison of RTC Model train performance for the 2012 Roanoke Passenger Trains and Infrastructure Additions Case (2012C) with train performance for the 2012 Base Case (2012A) demonstrates that:

Average Train Speeds are generally comparable and usually improved across all train groups for the entire RTC Model and network, although there is some variation on individual lines within the network, as shown in Table No. 2 below:

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Table No. 2
Average Train Speeds (mph)

		2012 Base Case (2012A)	2012 Roanoke Passenger Trains Case (2012B)	2012 Roanoke Passenger Trains & Infrastructure Additions Case (2012C)
<u>Entire Network:</u>	Passenger	42.8	42.0	42.4
	Expedited	32.1	31.7	32.7
	Freight	<u>20.3</u>	<u>20.1</u>	<u>20.1</u>
	Averages	24.1	24.0	24.2
<u>Piedmont Division:</u>	Passenger	42.7	44.4	44.5
	Expedited	33.1	32.8	33.8
	Freight	<u>22.5</u>	<u>22.5</u>	<u>22.6</u>
	Averages	27.6	27.7	27.9
<u>Crewe – Roanoke:</u>	Passenger	n/a	40.3	41.4
	Expedited	33.1	32.5	33.0
	Freight	<u>17.9</u>	<u>17.8</u>	<u>18.2</u>
	Averages	23.6	23.8	22.9
<u>Altavista District:</u>	Passenger	n/a	n/a	n/a
	Expedited	n/a	n/a	29.1
	Freight	<u>22.6</u>	<u>22.6</u>	<u>22.0</u>
	Averages	21.7	21.6	23.3

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- Delay Per 100 Train Miles is somewhat poorer across all train groups for the entire RTC Model Network, although there is some variation on individual lines, as shown in Table No. 3 below:

Table No. 3
Delay Per 100 Train Miles (Minutes)

		2012 Base Case (2012A)	2012 Roanoke Passenger Trains Case (2012B)	2012 Roanoke Passenger Trains & Infrastructure Additions Case (2012C)
<u>Entire Network:</u>	Passenger	1.9	2.6	2.7
	Expedited	8.0	10.7	8.5
	Freight	<u>18.7</u>	<u>20.8</u>	<u>21.0</u>
	Averages	14.0	15.9	15.4
<u>Piedmont Division:</u>	Passenger	0.1	0.5	0.5
	Expedited	5.6	6.8	6.1
	Freight	<u>14.9</u>	<u>15.3</u>	<u>13.9</u>
	Averages	9.3	10.0	9.1
<u>Crewe – Roanoke:</u>	Passenger	n/a	0.0	0.0
	Expedited	2.5	4.9	2.9
	Freight	<u>12.1</u>	<u>13.8</u>	<u>10.3</u>
	Averages	7.0	8.6	6.8
<u>Altavista District:</u>	Passenger	n/a	n/a	n/a
	Expedited	n/a	n/a	1.7
	Freight	<u>7.3</u>	<u>6.9</u>	<u>11.4</u>
	Averages	7.3	6.8	8.9

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- Based on the detailed comparisons contained in Tables Nos. 2 and 3, Woodside found that, for 2012 train volumes, the proposed Infrastructure Additions and shifting of intermodal trains to the Alvarista District in conjunction with the operation of a daily roundtrip Roanoke Passenger Train will not permit reasonable attainment of the NS network train performance goal, because Delay Per 100 Train Miles deteriorated by ten percent for the network in its entirety.

D. 2017 Cases

- Attachment H contains the RTC Model results for the 2017 Future Base Case (2017A).
- Attachment I contains the RTC Model results for the 2017 Roanoke Passenger Trains Case (2017B).
- Attachment J contains the RTC Model results for the 2017 Roanoke Passenger Trains and Infrastructure Additions Case (2017C).
- Attachment K contains the RTC Model results for the 2017 Roanoke Passenger Trains/Mitigating Infrastructure Case (2017D).
- A comparison of RTC Model train performance for the four 2017 Cases demonstrates that:
 - Average Train Speeds are generally comparable across all four cases, with generally higher speeds for the two cases with more robust infrastructure additions, and across train groups for the entire RTC Model Network, although there is some variation on individual lines within the network, as shown in Table No. 4 below:

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Table No. 4
Average Train Speeds (mph)

		2017 Future Base Case (2017A)	2017 Roanoke Passenger Trains Case (2017B)	2017 Roanoke Passenger Trains & Infrastructure Additions Case (2017C)	2017 Roanoke Passenger Trains/ Mitigating Infrastructure Case (2017D)
<u>Entire Network:</u>	Passenger	42.7	42.0	42.5	42.5
	Expedited	32.4	32.0	33.3	33.3
	Freight	<u>20.2</u>	<u>20.0</u>	<u>20.5</u>	<u>20.3</u>
	Averages	24.9	24.8	25.4	25.3
<u>Piedmont Division:</u>	Passenger	42.6	44.4	45.1	44.6
	Expedited	32.3	32.2	34.6	34.3
	Freight	<u>22.5</u>	<u>22.5</u>	<u>23.7</u>	<u>23.5</u>
	Averages	27.9	28.0	29.5	29.3
<u>Crewe – Roanoke:</u>	Passenger	n/a	40.3	41.2	41.4
	Expedited	34.5	34.0	34.4	34.5
	Freight	<u>18.0</u>	<u>17.6</u>	<u>18.0</u>	<u>18.0</u>
	Averages	25.2	25.3	24.1	24.2
<u>Altavista District:</u>	Passenger	n/a	n/a	n/a	n/a
	Expedited	n/a	n/a	28.7	28.6
	Freight	<u>22.5</u>	<u>22.5</u>	<u>22.4</u>	<u>21.9</u>
	Averages	21.5	21.4	23.8	23.4

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- Delay Per 100 Train Miles is improved for all lines in Cases 2017C and 2017D, although there is some variation in individual train groups for the entire RTC Model Network, as shown in Table No. 5 below:

Table No. 5
Delay Per 100 Train Miles (Minutes)

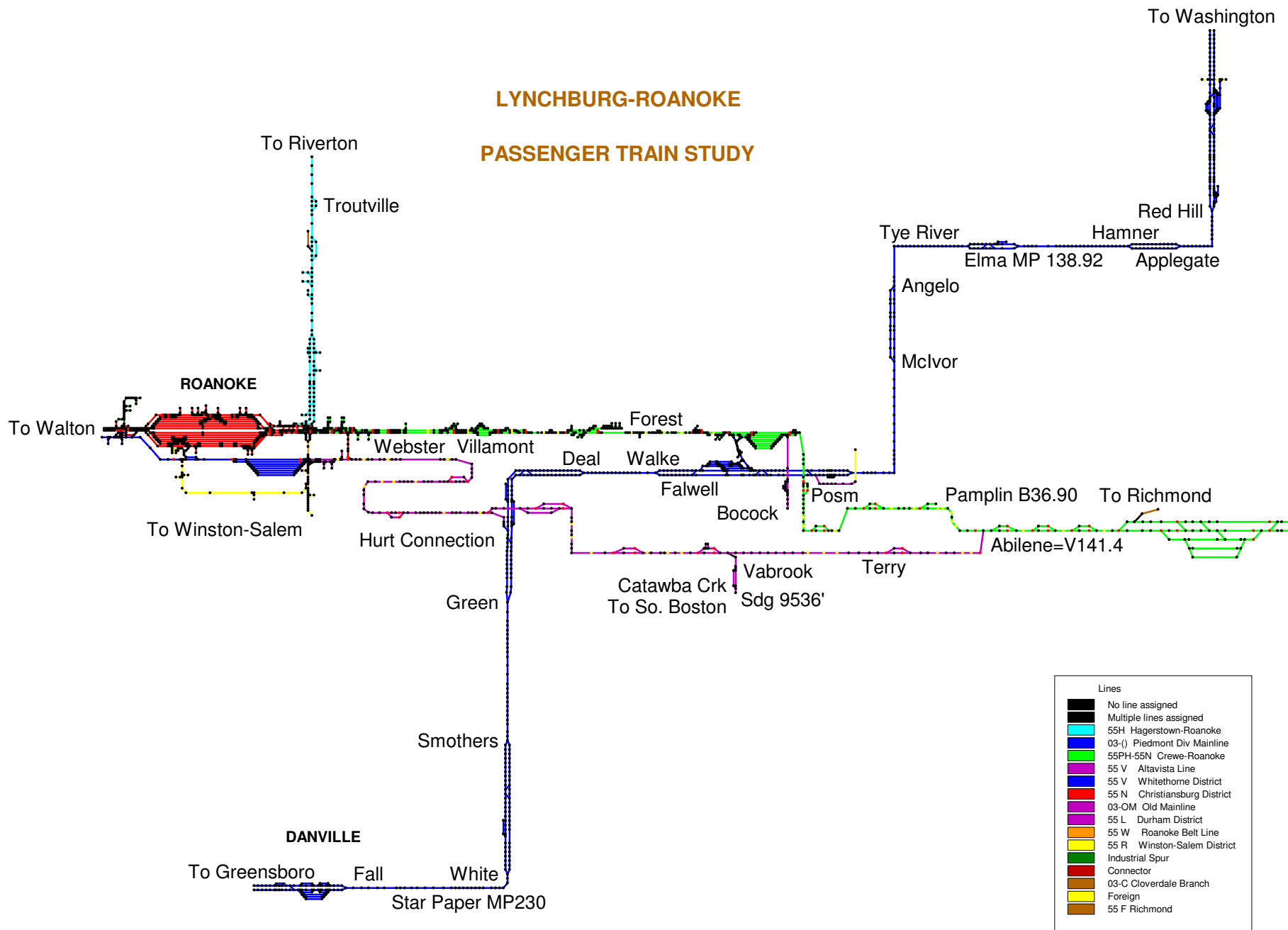
		2017 Future Base Case (2017A)	2017 Roanoke Passenger Trains Case (2017B)	2017 Roanoke Passenger Trains & Infrastructure Additions Case (2017C)	2017 Roanoke Passenger Trains/ Mitigating Infrastructure Case (2017D)
<u>Entire Network:</u>	Passenger	2.1	2.6	2.7	2.9
	Expedited	9.3	11.2	8.0	8.1
	Freight	<u>21.8</u>	<u>24.8</u>	<u>19.2</u>	<u>22.2</u>
	Averages	15.4	17.6	13.5	15.1
<u>Piedmont Division:</u>	Passenger	0.1	0.5	0.1	0.1
	Expedited	6.6	7.3	4.6	5.0
	Freight	<u>18.7</u>	<u>19.8</u>	<u>11.7</u>	<u>13.0</u>
	Averages	10.9	11.8	7.1	7.9
<u>Crewe – Roanoke:</u>	Passenger	n/a	0.0	0.0	0.0
	Expedited	3.0	5.2	3.5	4.0
	Freight	<u>12.7</u>	<u>15.7</u>	<u>10.1</u>	<u>10.7</u>
	Averages	6.9	8.9	6.5	6.9
<u>Altavista District:</u>	Passenger	n/a	n/a	n/a	n/a
	Expedited	n/a	n/a	2.8	3.0
	Freight	<u>7.5</u>	<u>8.1</u>	<u>6.7</u>	<u>12.8</u>
	Averages	7.4	8.0	5.5	9.9

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- The number of expedited trains increased substantially between the 2012 Base Year and the 2017 Forecast Future Year. The Run-Time Train Count for expedited trains on the entire network increased to 172 trains in the 7-day study period, a 58-train increase over the 114 expedited trains operated in the 2012 Base Case. For the Piedmont Division, 42 more expedited trains are projected in 2017. Moreover, for the Crewe-Roanoke Line, 14 additional passenger trains and 40 additional expedited trains would be operated in the 2017 forecast future year. Similarly, on the Altavista District, 44 additional expedited trains would be operated in the 2017 forecast future year.
- The best measure of the adequacy of the 2017 Infrastructure Cases (2017C and 2017D) to efficiently operate the Roanoke Passenger Trains and the 2017 Forecast Future Year Freight Trains is provided in Table No. 5 above. A comparison of the first two columns indicates a notable increase in Delay Per 100 Train Miles from the 2017 Future Base Case (2017A) to the 2017 Roanoke Passenger Trains Case (2017B), in which Roanoke Passenger Trains were added without infrastructure additions. However, both the 2017 Roanoke Passenger Trains and Infrastructure Additions Case (2017C) and the 2017 Roanoke Passenger Trains/Mitigating Infrastructure Case (2017D), in the third and fourth columns, generally compare favorably with the 2017 Future Base Case (2017A).

Based on the detailed comparisons contained in Tables Nos. 4 and 5, Woodside found that, for 2017 forecast train volumes, shifting of intermodal trains to the Alvavista District, combined with the proposed infrastructure additions in either Case 2017C or Case 2017D, will permit reasonable attainment of the train performance goal on each NS line segment and the network in its entirety and for all train groups, despite the operation of a daily roundtrip Roanoke Passenger Train.

**LYNCHBURG-ROANOKE
PASSENGER TRAIN STUDY**



Lines	
Black	No line assigned
Black	Multiple lines assigned
Cyan	55H Hagerstown-Roanoke
Blue	03-() Piedmont Div Mainline
Green	55PH-55N Crewe-Roanoke
Purple	55 V Altavista Line
Red	55 V Whitethorne District
Blue	55 N Christiansburg District
Purple	03-OM Old Mainline
Green	55 L Durham District
Yellow	55 W Roanoke Belt Line
Yellow	55 R Winston-Salem District
Green	Industrial Spur
Red	Connector
Blue	03-C Cloverdale Branch
Yellow	Foreign
Brown	55 F Richmond

Attachment B-1
 Passenger Train Schedules for Roanoke Service
With No Infrastructure Improvements (Southbound)

<u>Station</u>		<u>171 (M-F)</u>	<u>147 (Sat)</u>	<u>145 (Sun)</u>
Washington	Dp	16:50	16:00	16:50
Alexandria	Dp	17:15	16:17	17:07
Burke Centre	Dp	17:30	16:34	17:24
Manassas	Dp	17:49	16:53	17:43
Culpepper	Dp	18:24	17:27	18:17
Charlottesville	Dp	19:23	18:26	19:16
Lynchburg	Ar	20:36	19:39	20:29
Lynchburg	Dp	20:39	19:42	20:32
Roanoke	Ar	21:59	21:02	21:52

Source: Amtrak, with extension to Roanoke based on TPC run times and 10% recovery time.

Attachment B-2
 Passenger Train Schedules for Roanoke Service
With No Infrastructure Improvements (Northbound)

<u>Station</u>		<u>176 (M-F)</u>	<u>156 (SS)</u>
Roanoke	Dp	6:15	8:36
Lynchburg	Ar	7:35	9:56
Lynchburg	Dp	7:38	9:59
Charlottesville	Dp	8:52	11:13
Culpeper	Dp	9:44	12:05
Manassas	Dp	10:19	12:39
Burke Centre	Dp	10:36	12:56
Alexandria	Dp	11:05	13:21
Washington, DC	Ar	11:20	13:35

Source: Amtrak, with extension to Roanoke based on TPC run times and 10% recovery time.

Attachment B-3
 Passenger Train Schedules for Roanoke Service
With Infrastructure Improvements (Southbound)

<u>Station</u>		<u>171 (M-F)</u>	<u>147 (Sat)</u>	<u>145 (Sun)</u>
Washington	Dp	16:50	16:00	16:50
Alexandria	Dp	17:15	16:17	17:07
Burke Centre	Dp	17:30	16:34	17:24
Manassas	Dp	17:49	16:53	17:43
Culpepper	Dp	18:24	17:27	18:17
Charlottesville	Dp	19:23	18:26	19:16
Lynchburg	Ar	20:36	19:39	20:29
Lynchburg	Dp	20:39	19:42	20:32
Roanoke	Ar	21:55	20:58	21:48

Source: Amtrak, with extension to Roanoke based on TPC run times and 10% recovery time.

Attachment B-4
 Passenger Train Schedules for Roanoke Service
With Infrastructure Improvements (Northbound)

<u>Station</u>		<u>176 (M-F)</u>	<u>156 (SS)</u>
Roanoke	Dp	6:19	8:40
Lynchburg	Ar	7:35	9:56
Lynchburg	Dp	7:38	9:59
Charlottesville	Dp	8:52	11:13
Culpeper	Dp	9:44	12:05
Manassas	Dp	10:19	12:39
Burke Centre	Dp	10:36	12:56
Alexandria	Dp	11:05	13:21
Washington, DC	Ar	11:20	13:35

Source: Amtrak, with extension to Roanoke based on TPC run times and 10% recovery time.

Lynchburg-Roanoke Low Investment Scenario

054

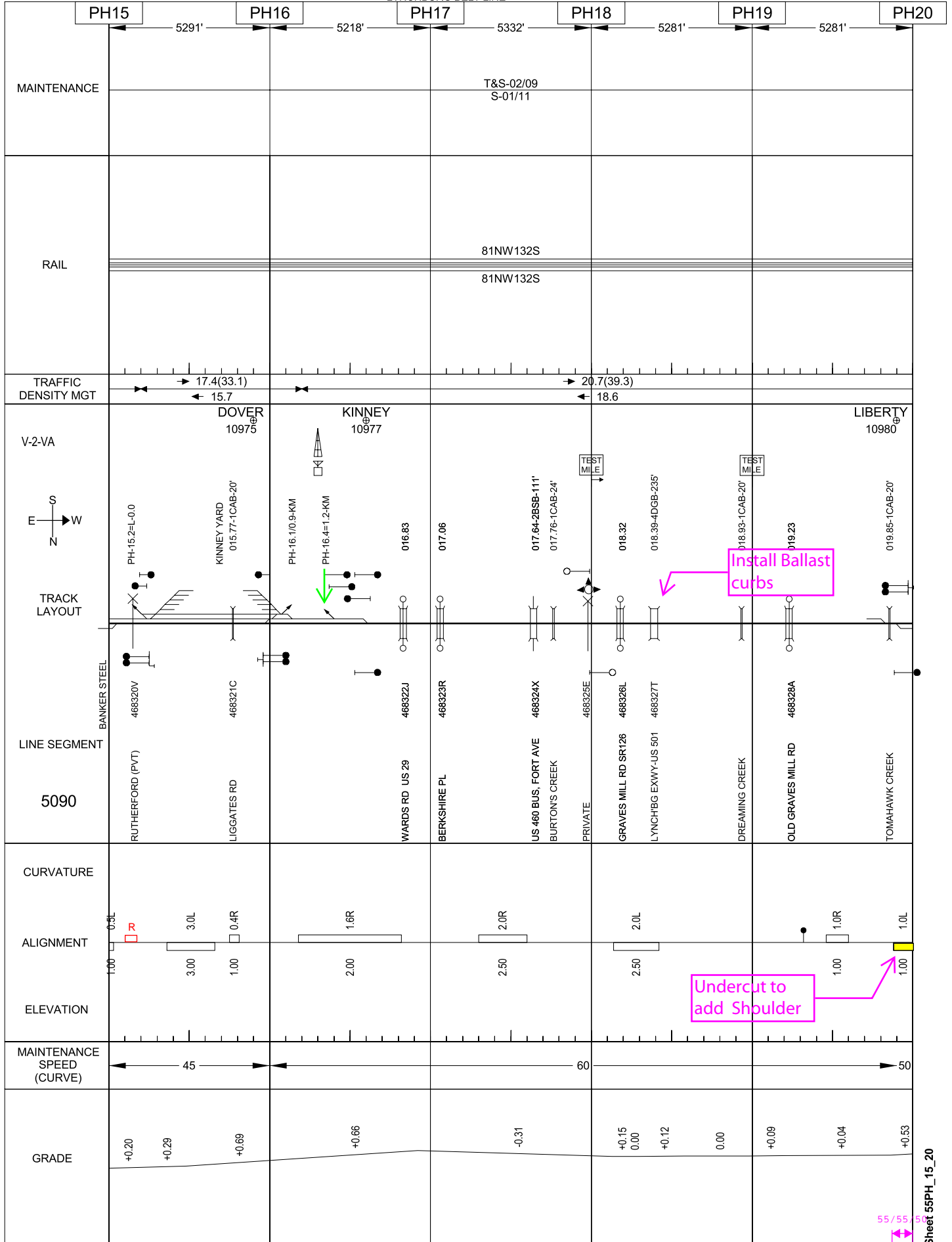
07/25/2012

BLUE RIDGE

LYNCHBURG BELT LINE

CONCORD-FOREST

VIRGINIA



General Reference Only - Not for Operational Purposes

Sheet 55PH_15_20

055

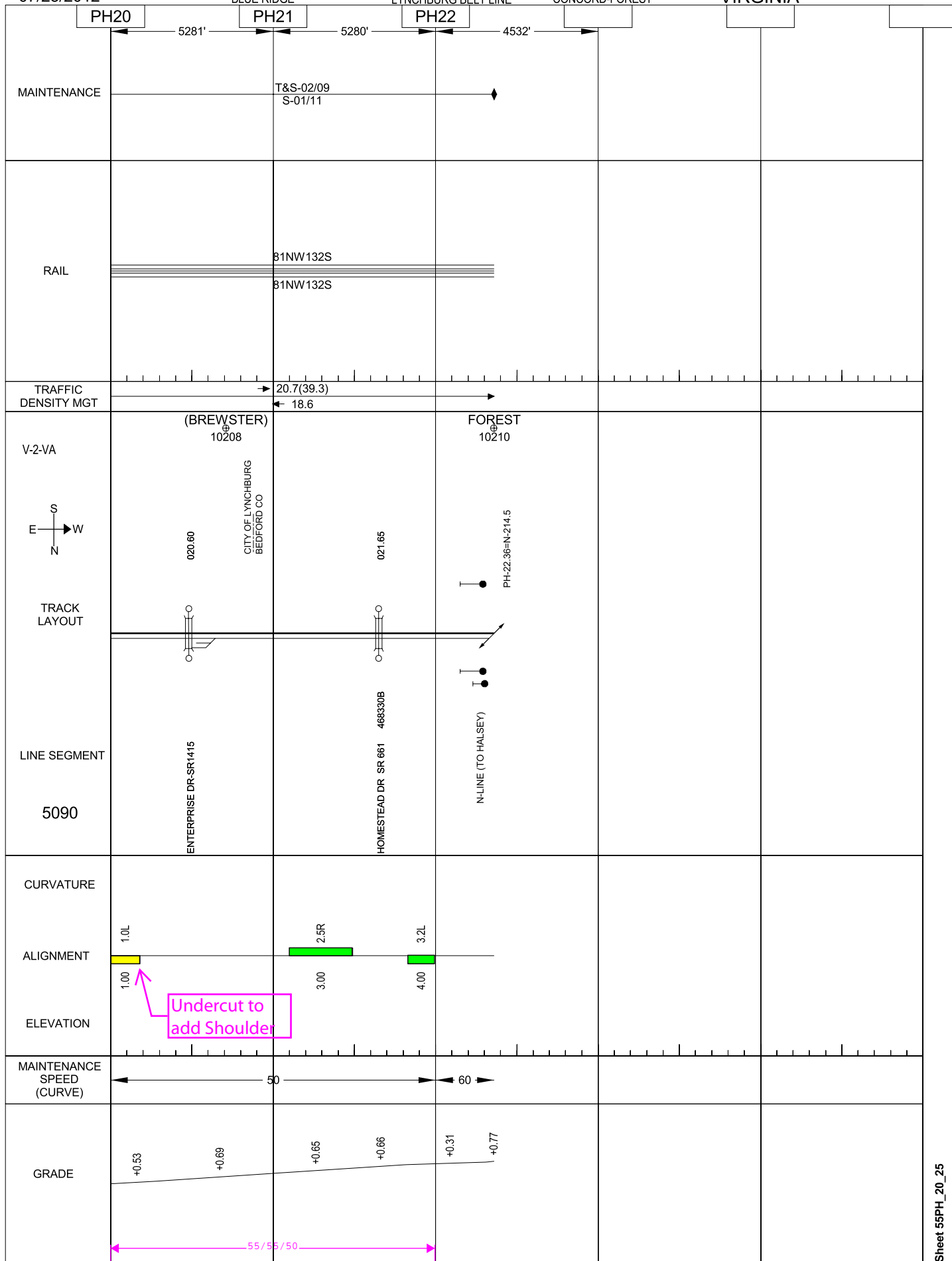
07/25/2012

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LYNCHBURG BELT LINE

CONCORD-FOREST

VIRGINIA



General Reference Only - Not for Operational Purposes

07/25/2012

BLUE RIDGE

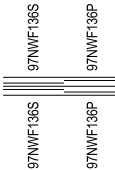

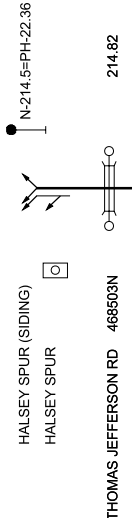
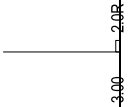
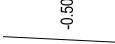
056

FOREST-ROANOKE

VIRGINIA

N215

5257' 5001' 5275' 5412' 5280'

<p>MAINTENANCE</p>					<p>T&S-10/11</p>
<p>RAIL</p>					
<p>TRAFFIC DENSITY MGT</p>					<p>→ 20.7(39.3) ← 18.6</p>
<p>V-2-VA</p>  <p>TRACK LAYOUT</p> <p>LINE SEGMENT</p> <p>5100</p>					<p>FOREST 10210</p> 
<p>CURVATURE</p> <p>ALIGNMENT</p> <p>ELEVATION</p>					
<p>MAINTENANCE SPEED (CURVE)</p>					<p>← 60 →</p>
<p>GRADE</p>					<p>-0.50</p> 

General Reference Only - Not for Operational Purposes

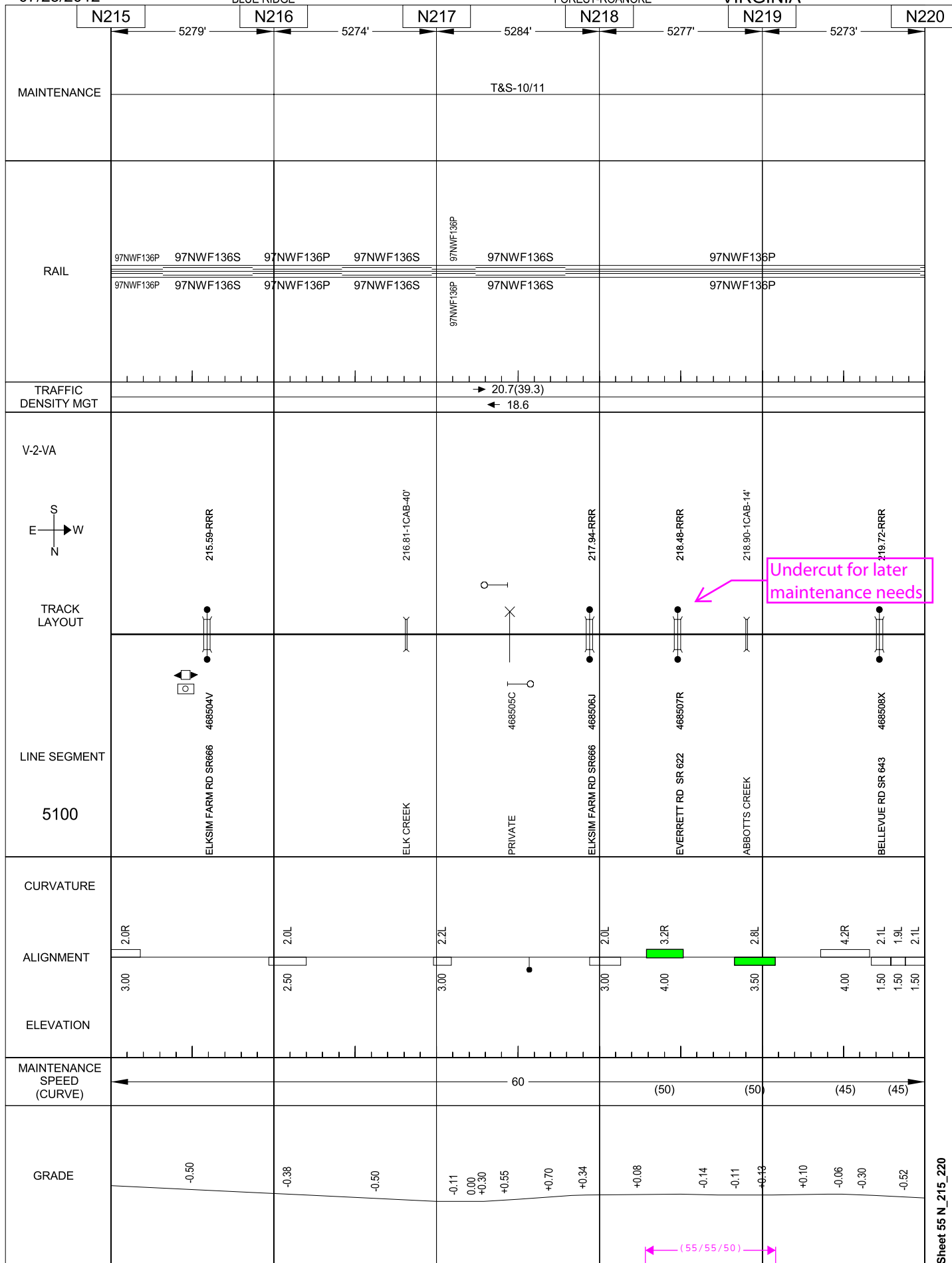
057

07/25/2012

BLUE RIDGE

FOREST-ROANOKE

VIRGINIA



General Reference Only - Not for Operational Purposes

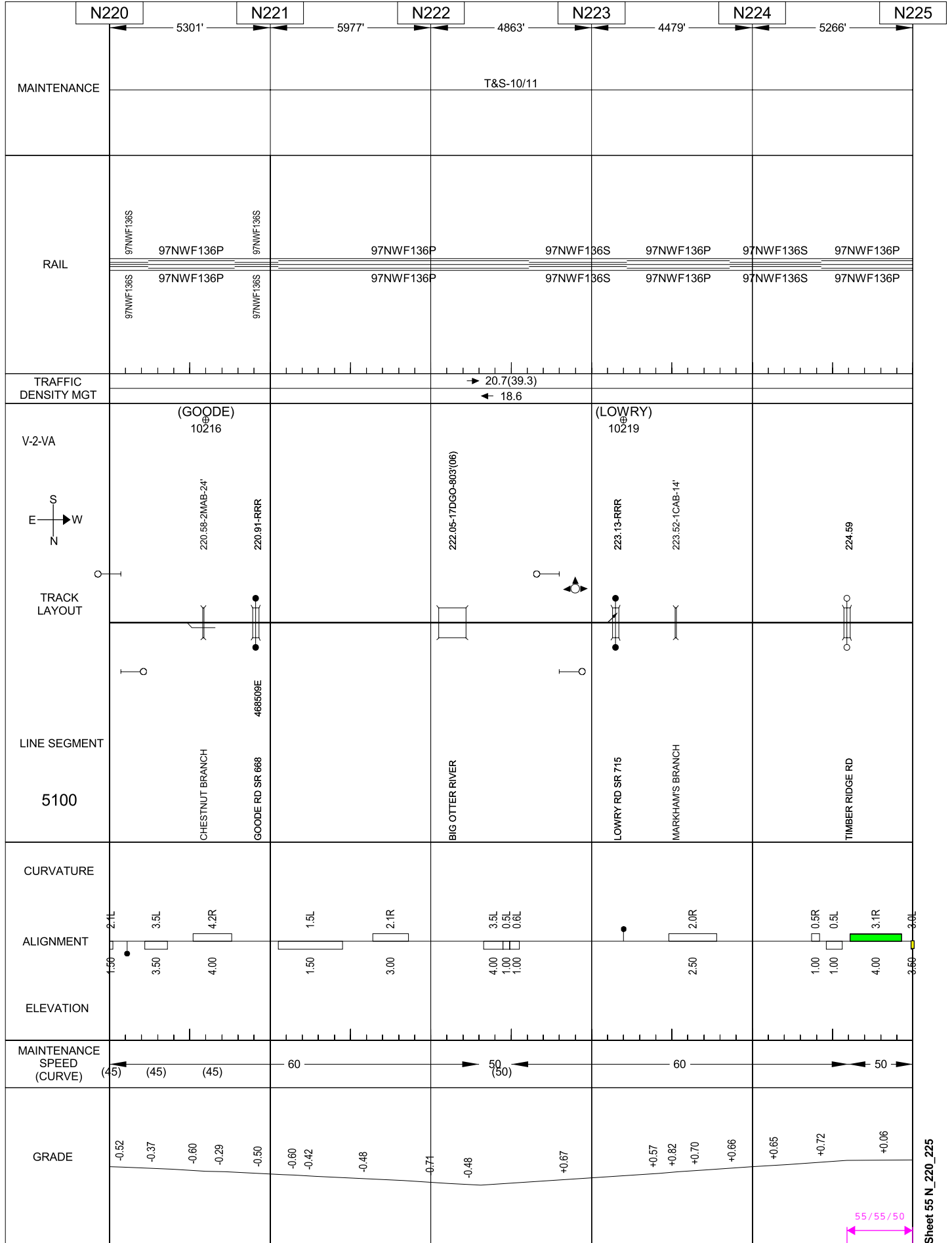
058

07/25/2012

BLUE RIDGE

FOREST-ROANOKE

VIRGINIA



General Reference Only - Not for Operational Purposes

Sheet 55 N_220_225

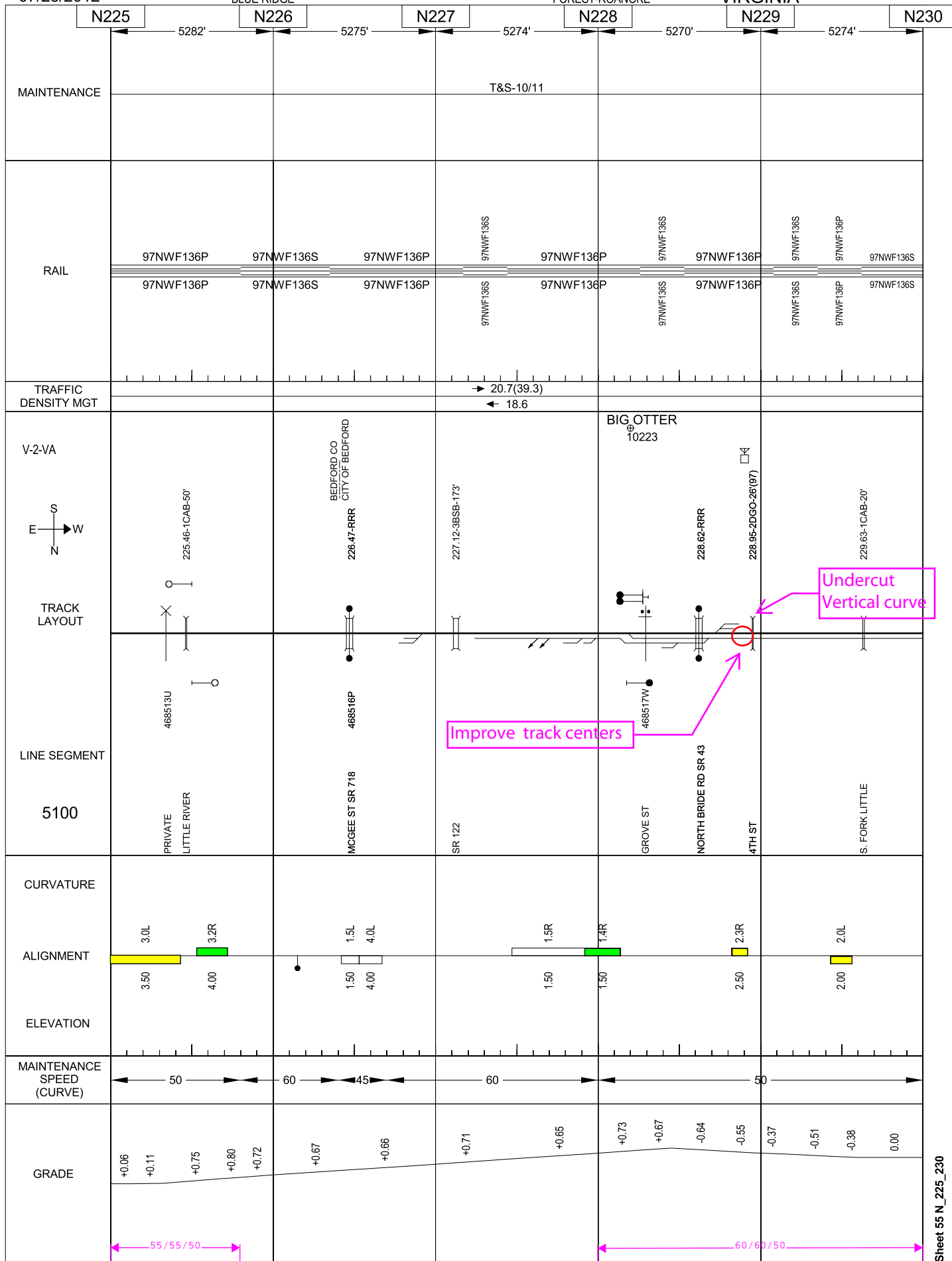
059

07/25/2012

BLUE RIDGE

FOREST-ROANOKE

VIRGINIA



General Reference Only - Not for Operational Purposes

Sheet 55 N_225_230

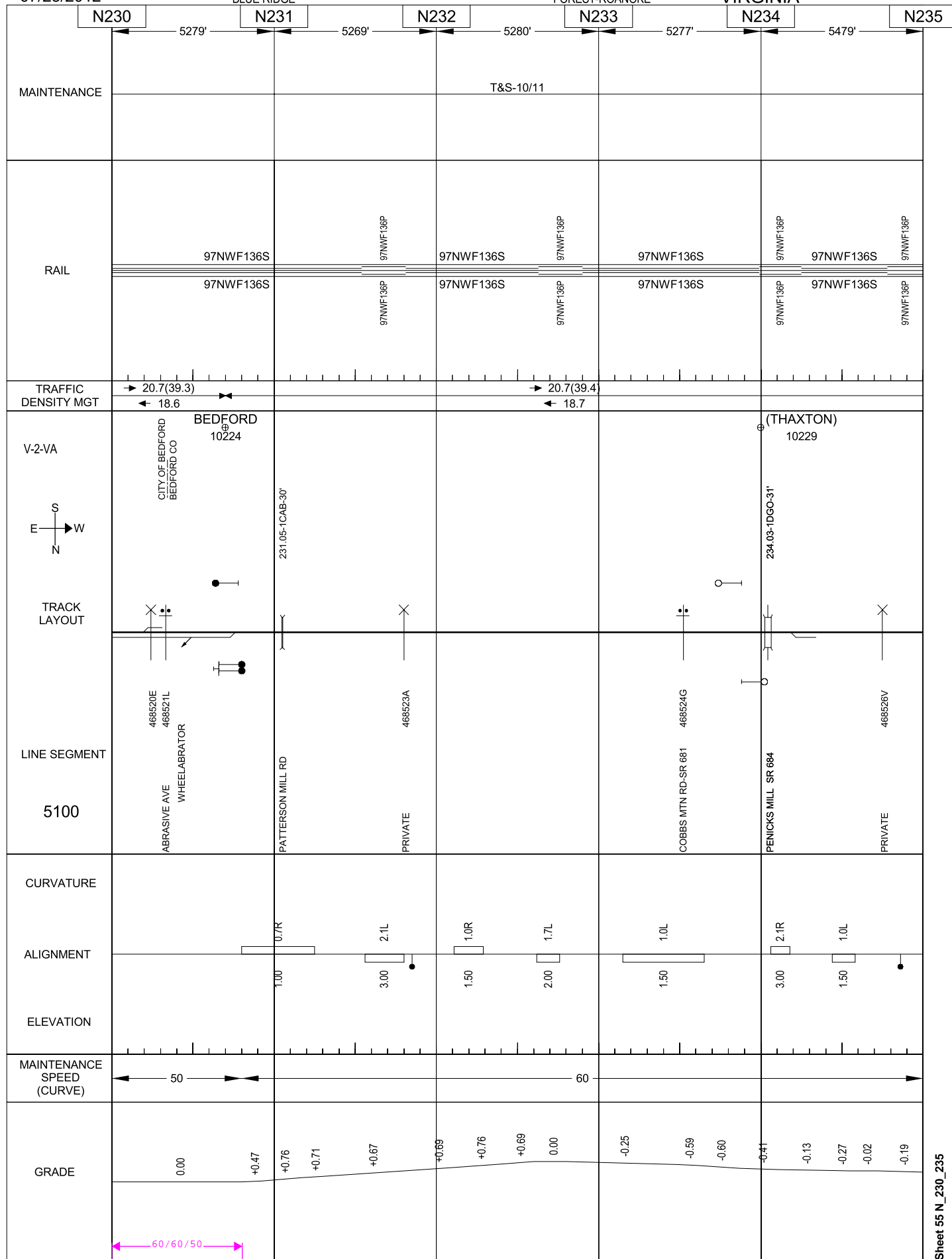
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07/25/2012

BLUE RIDGE

FOREST-ROANOKE

VIRGINIA



General Reference Only - Not for Operational Purposes

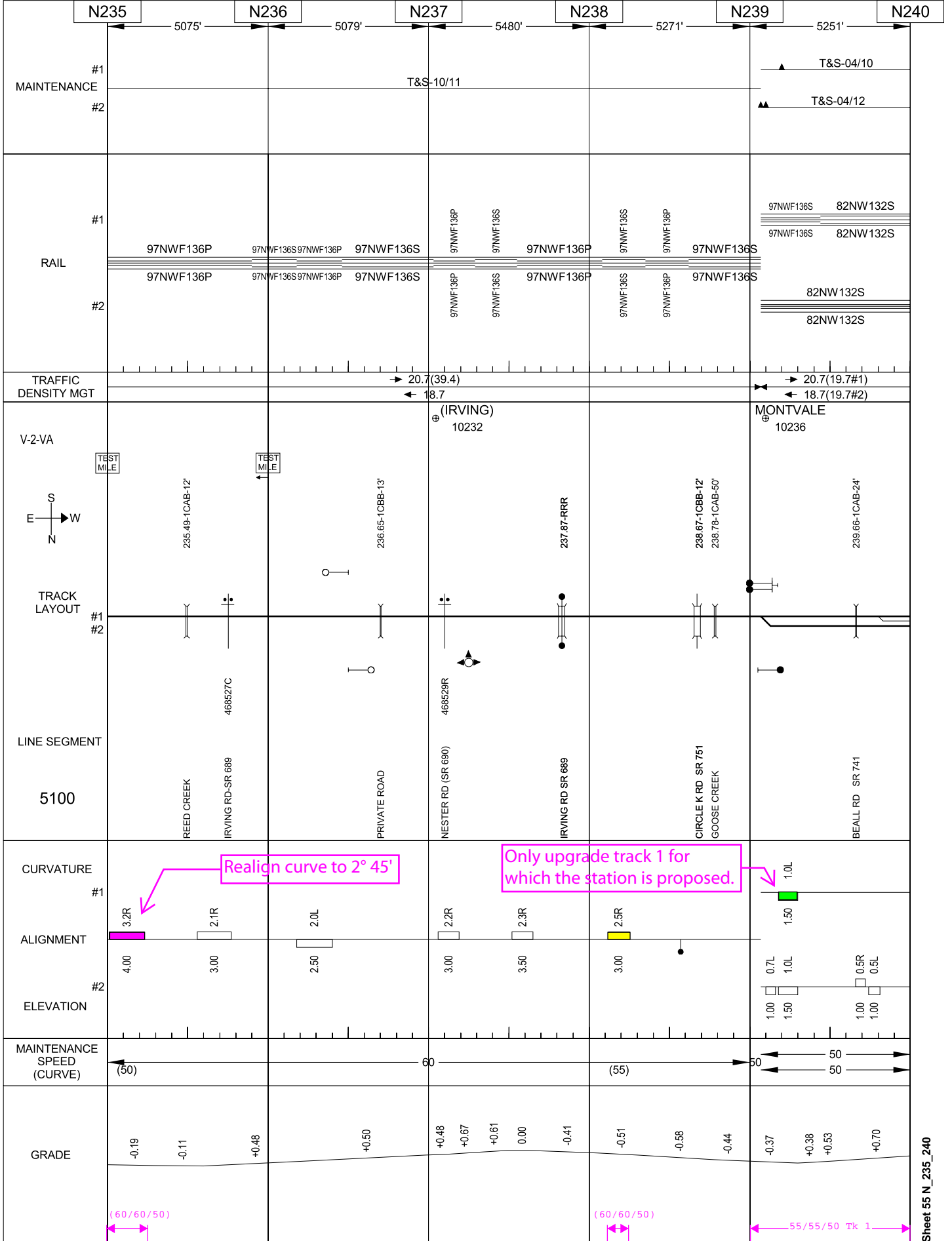
061

07/25/2012

BLUE RIDGE

FOREST-ROANOKE

VIRGINIA



General Reference Only - Not for Operational Purposes

Sheet 55 N_235_240

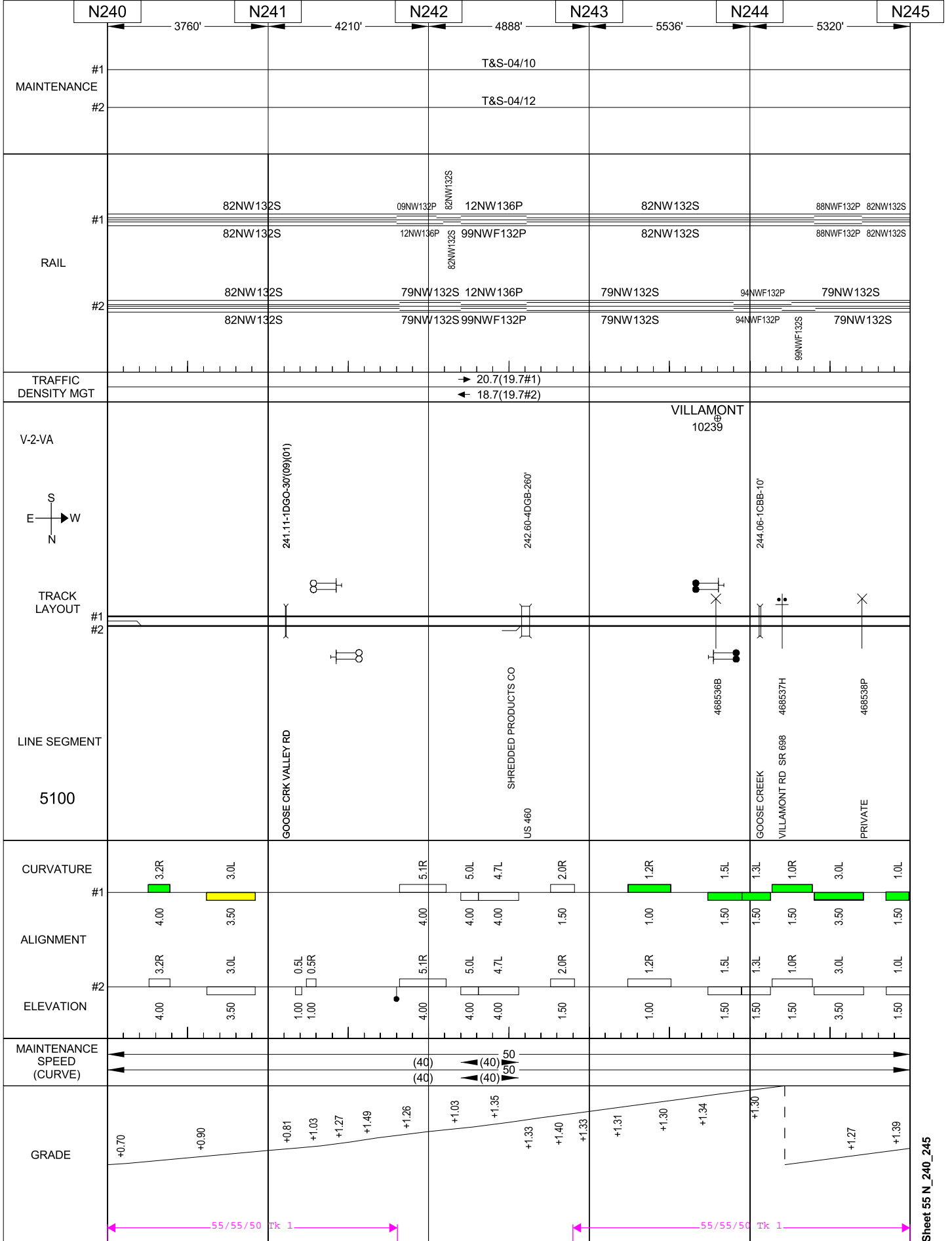
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07/25/2012

BLUE RIDGE

FOREST-ROANOKE

VIRGINIA



General Reference Only - Not for Operational Purposes

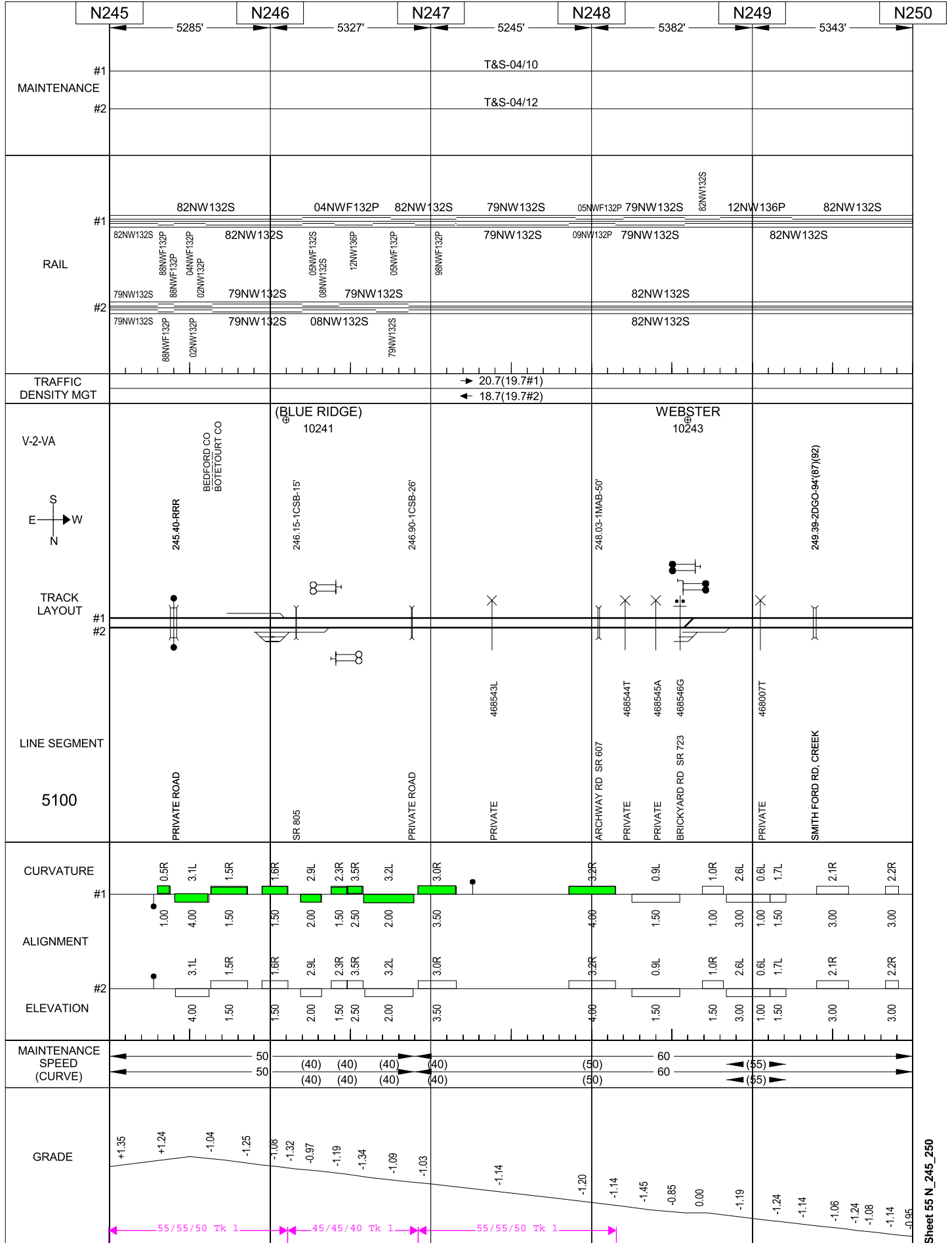
063

07/25/2012

BLUE RIDGE

FOREST-ROANOKE

VIRGINIA



General Reference Only - Not for Operational Purposes

Sheet 55 N_245_250

064

07/25/2012

BLUE RIDGE

FOREST-ROANOKE

VIRGINIA

	N250	N251	N252	N253	N254	N255				
MAINTENANCE	5243'		5418'		5211'		5301'		5260'	
#1					T&S-04/10					
#2					T&S-04/12					
RAIL	82NW132S 08NW136S		82NW132S		82NW132S		82NW132S		82NW132S	
#1	82NW132S 01NW132P		82NW132S		82NW132S		82NW132S		82NW132S	
#2	82NW132S 01NW132P		82NW132S		82NW132S		82NW132S		82NW132S	
TRAFFIC DENSITY MGT			→ 20.7(19.7#1) ← 18.7(19.7#2)							
V-2-VA	250.11-2DGO-99'(85/09)		250.28		250.44-2DGO-90'(92/92)		250.65-2DGO-91'(92/92)		250.94-2TGO-110'(08/94)	
TRACK LAYOUT	468551D 468552K		468553S 468556M		468578R		468558B		468558B	
LINE SEGMENT	GLADE CREEK		GLADE CREEK		GLADE CREEK		GLADE CREEK		GLADE CREEK	
5100	BLUE RIDGE PKWY DAVIS RD-SR 658		PRIVATE		PRIVATE		WATERWAY		WATERWAY	
CURVATURE	3.0R		0.8L		2.2L		2.0R		0.6R	
ALIGNMENT	2.00		1.00		3.00		3.00		1.00	
ELEVATION	2.00		1.50		3.00		3.00		1.00	
MAINTENANCE SPEED (CURVE)	(40)		(55)		(55)		60		60	
GRADE	-0.95		-0.48		-0.71		-0.29		-0.32	

General Reference Only - Not for Operational Purposes

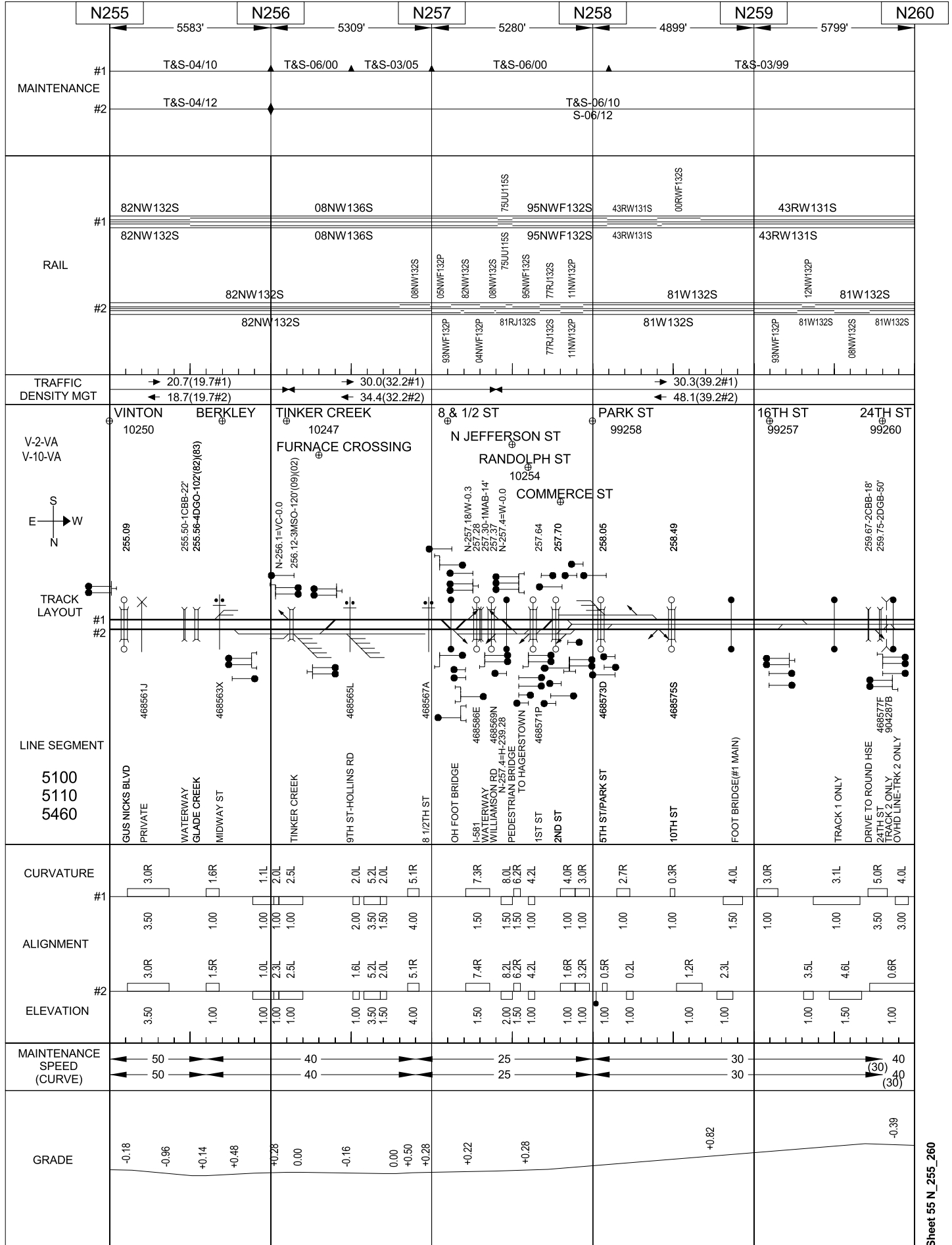
065

07/25/2012

CHRISTIANSBURG

ROANOKE-WALTON

VIRGINIA



General Reference Only - Not for Operational Purposes

Altavista District Speed Upgrades For Intermodal Trains

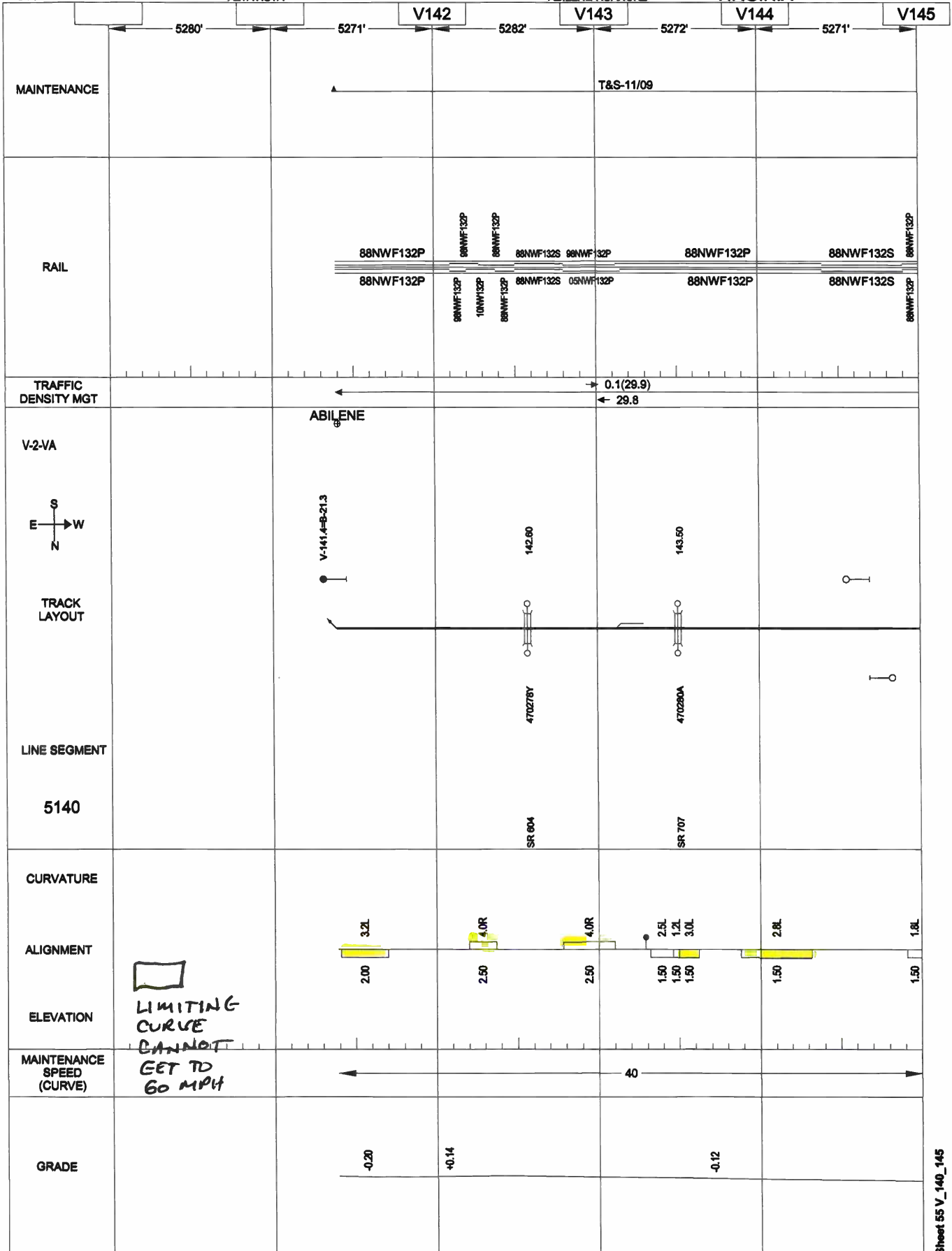
089

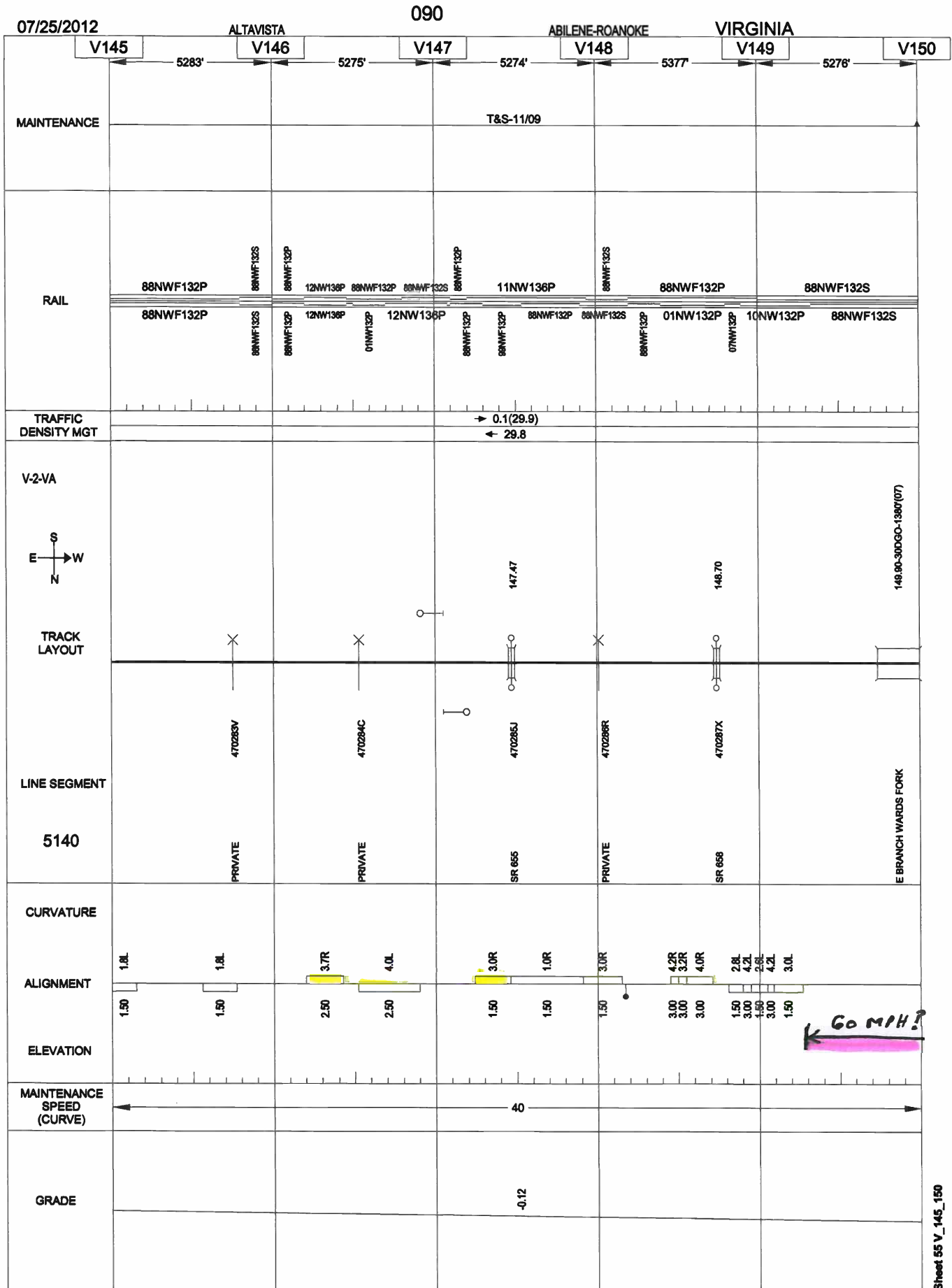
07/25/2012

ALTAVISTA

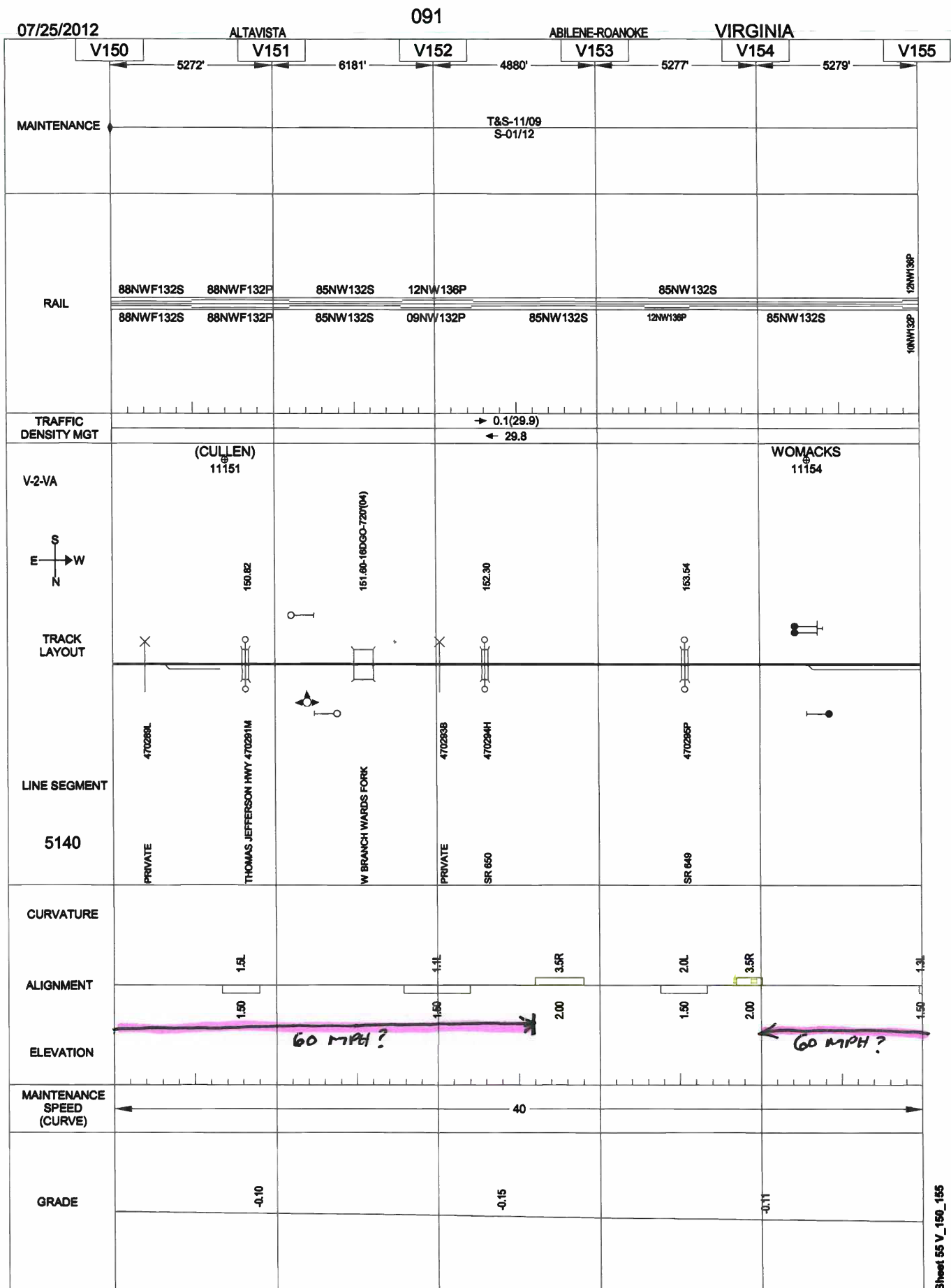
ABILENE-ROANOKE

VIRGINIA



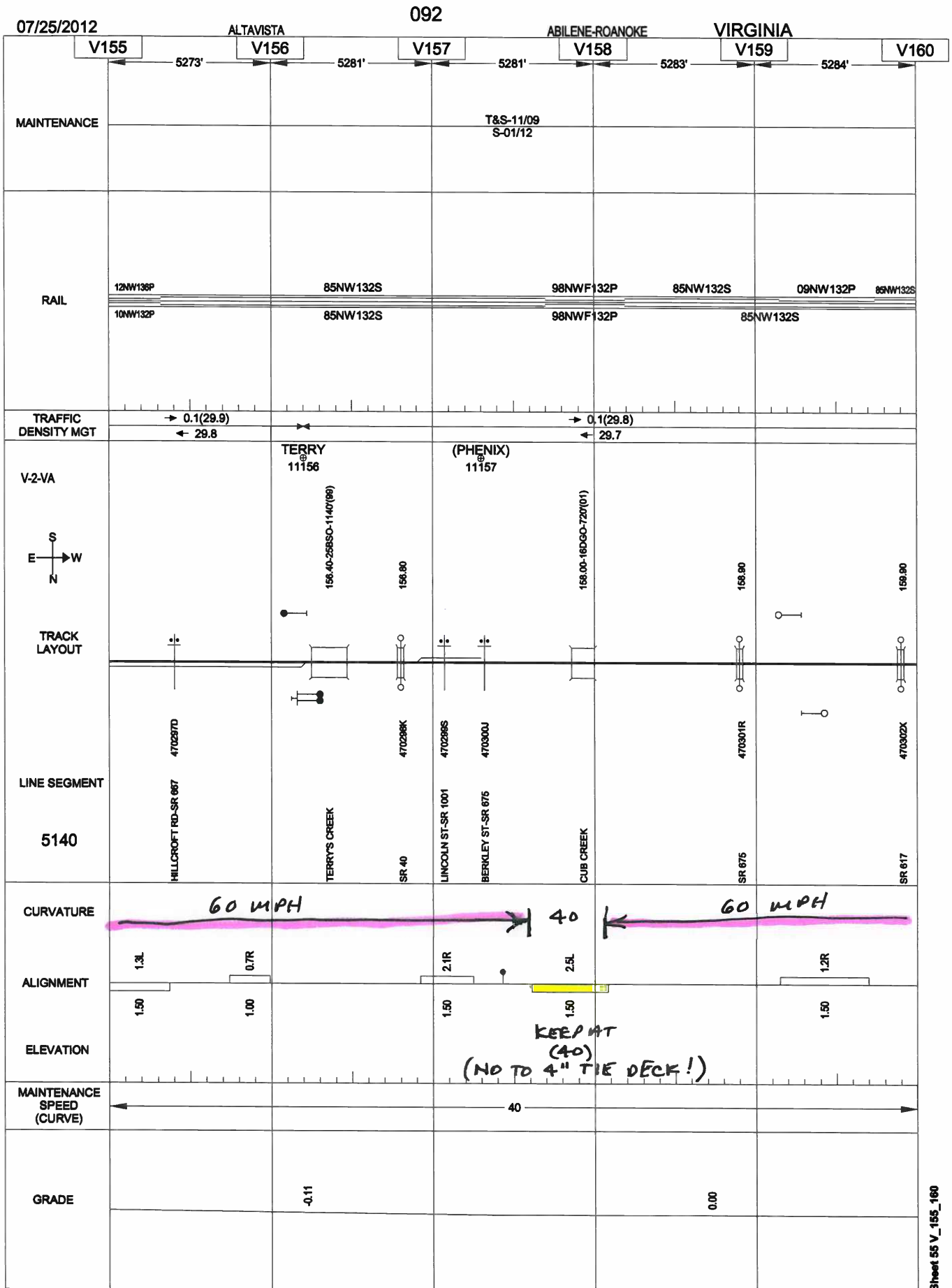


General Reference Only - Not for Operational Purposes



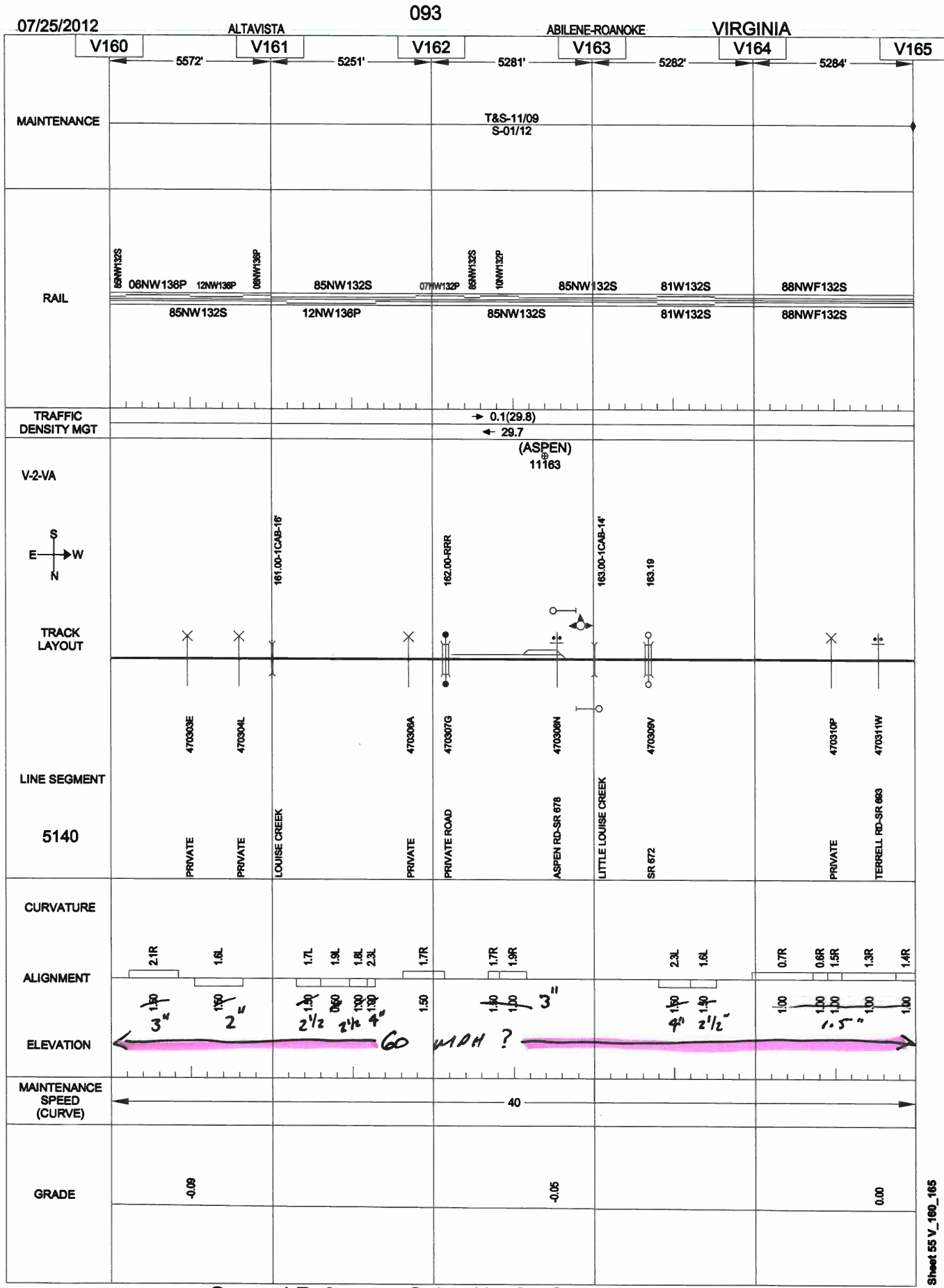
General Reference Only - Not for Operational Purposes

Sheet 55 V_150_155



General Reference Only - Not for Operational Purposes

Sheet 55 V_155_160



Sheet 55 V_160_165

General Reference Only - Not for Operational Purposes

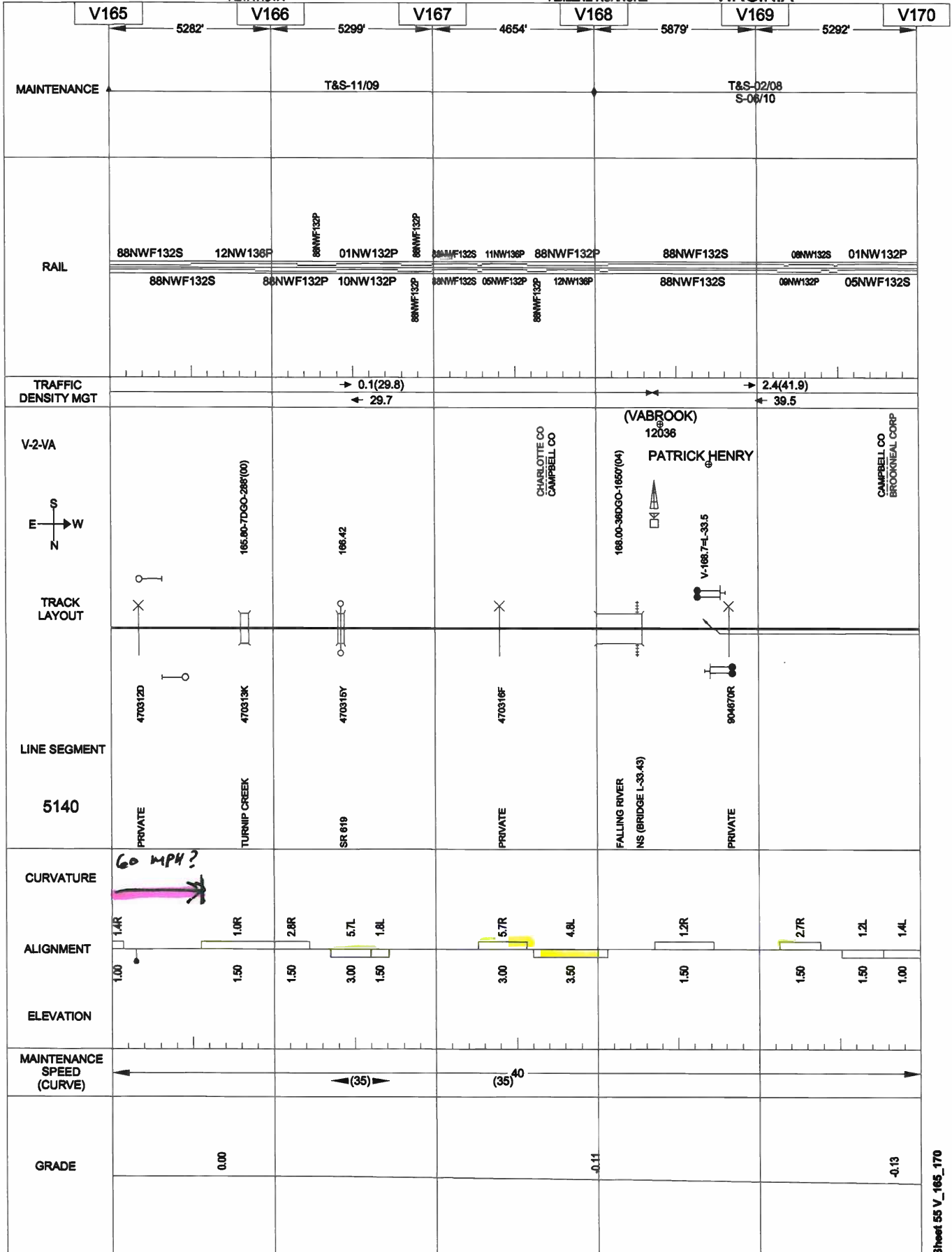
094

07/25/2012

ALTAVISTA

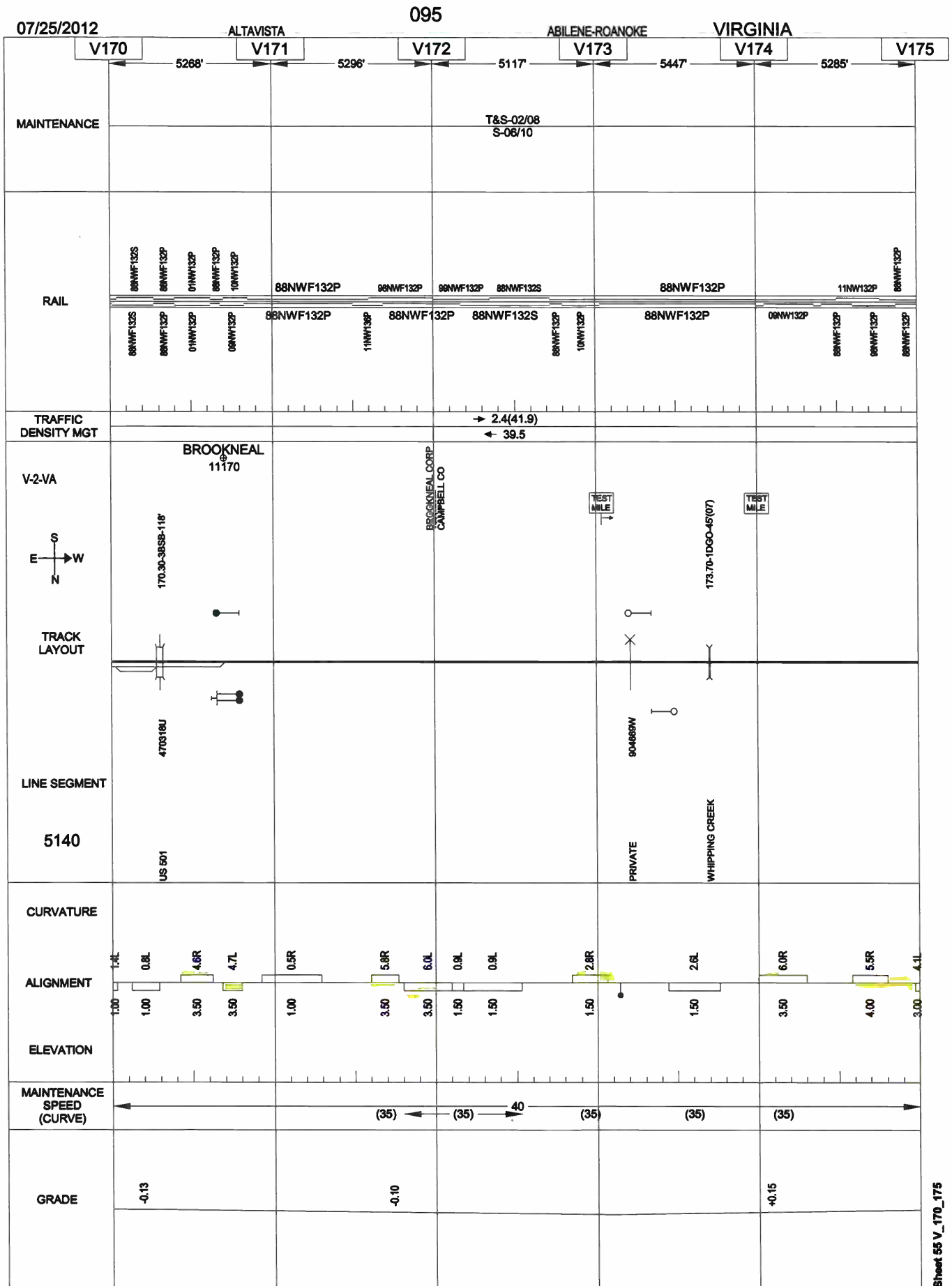
ABILENE-ROANOKE

VIRGINIA



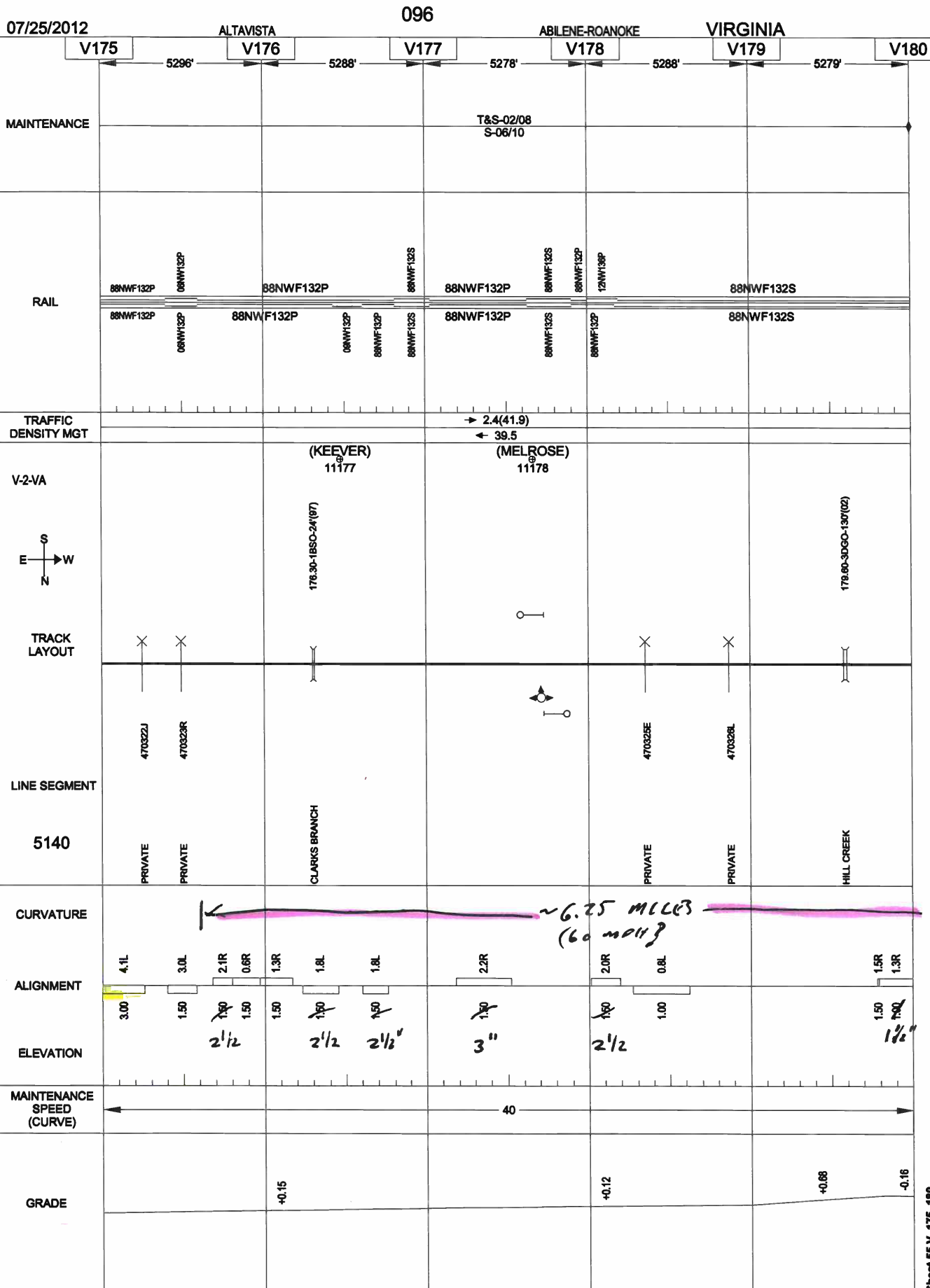
General Reference Only - Not for Operational Purposes

Sheet 55 V_165_170



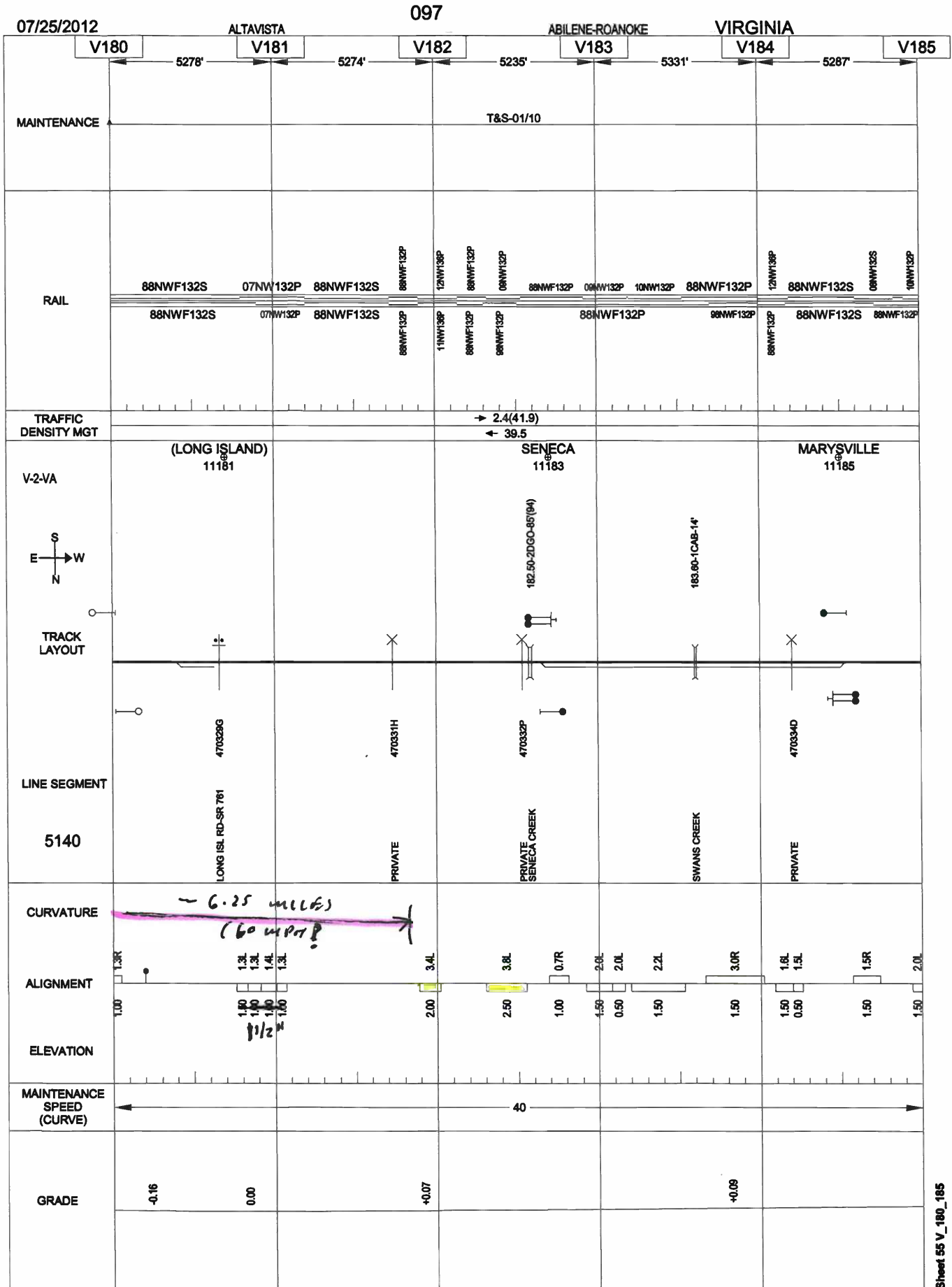
General Reference Only - Not for Operational Purposes

Sheet 55 V_170_175



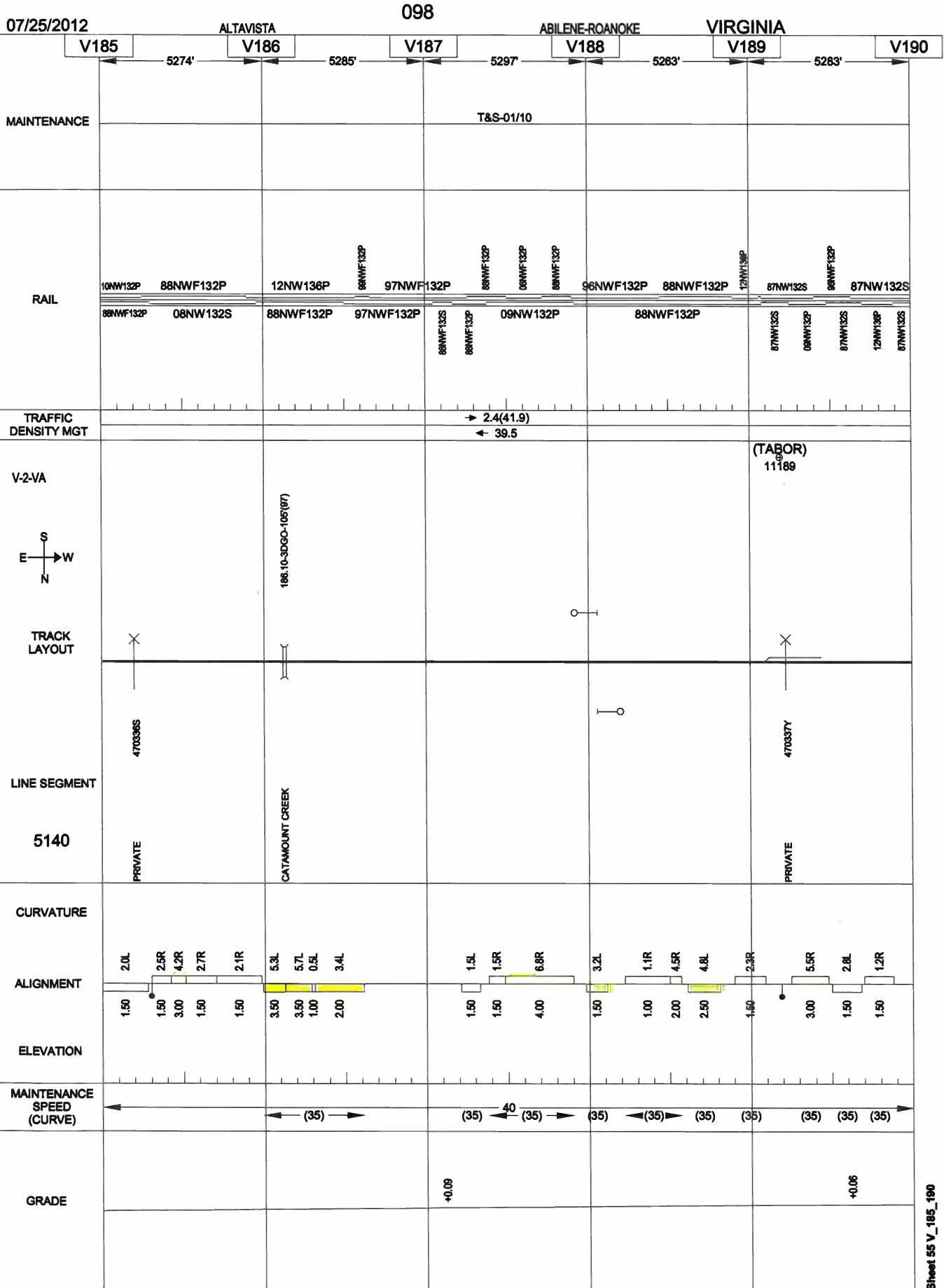
General Reference Only - Not for Operational Purposes

Sheet 55 V_175_180



General Reference Only - Not for Operational Purposes

Sheet 55 V_180_185



General Reference Only - Not for Operational Purposes

Sheet 55 V_185_190

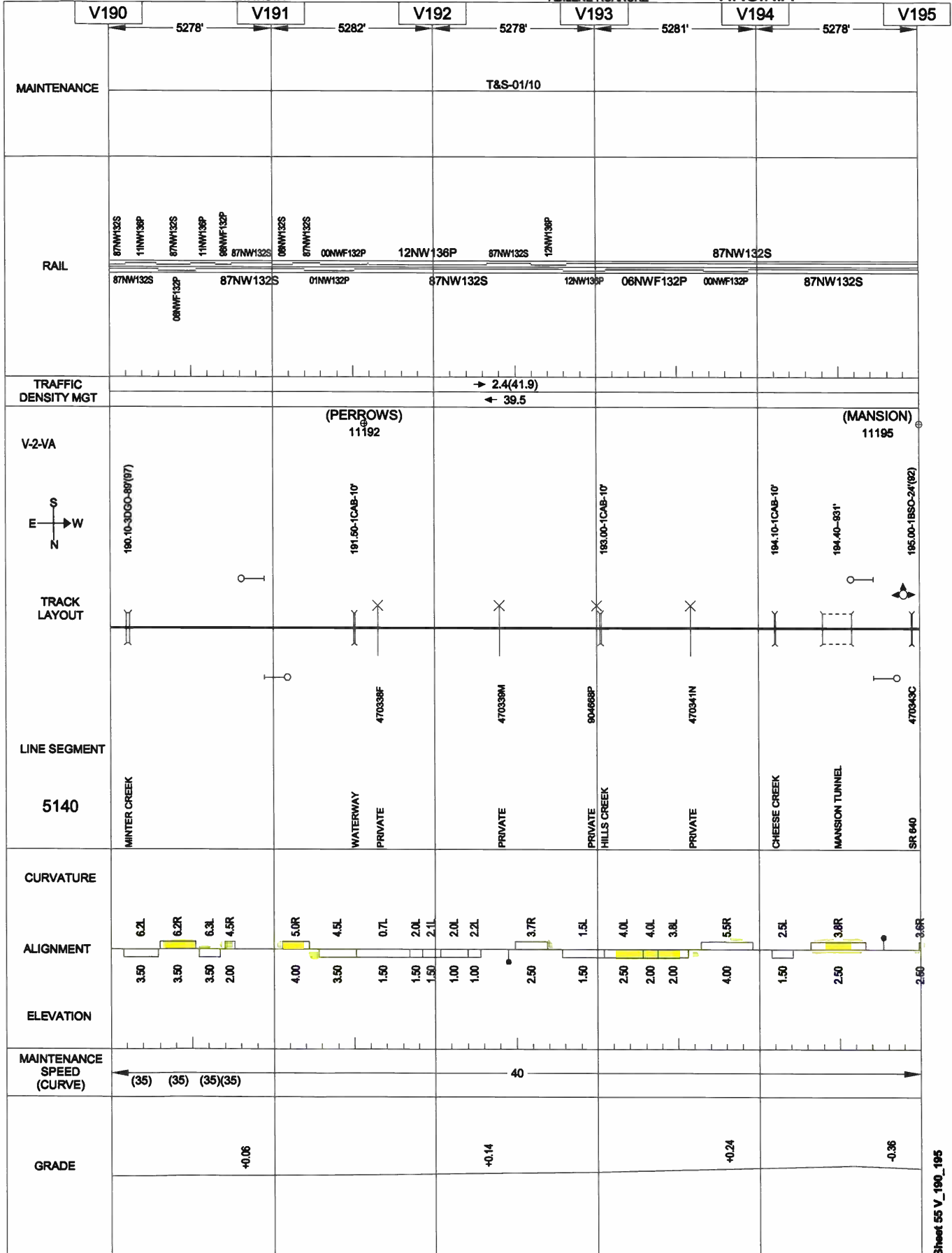
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07/25/2012

ALTAVISTA

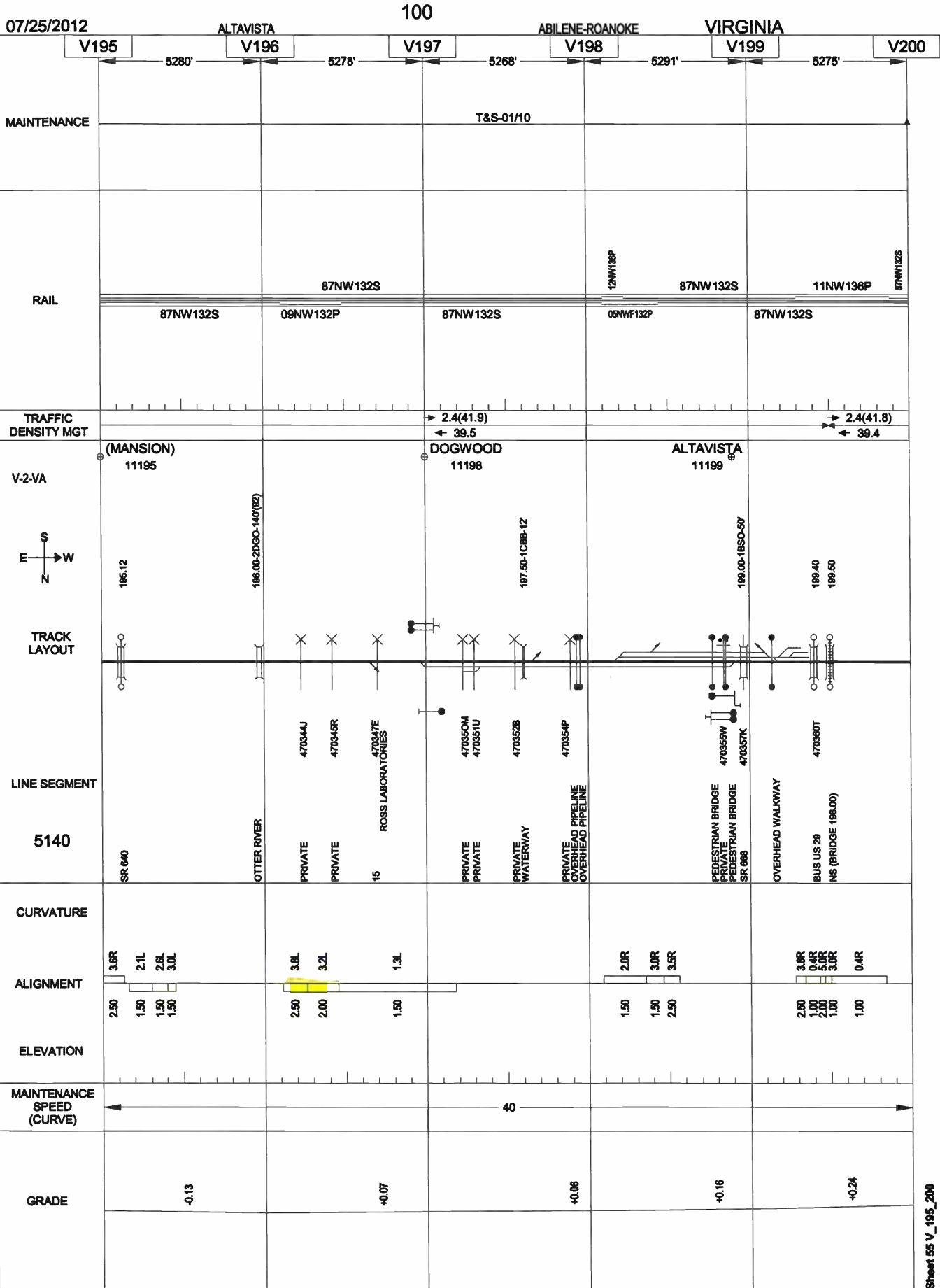
ABILENE-ROANOKE

VIRGINIA



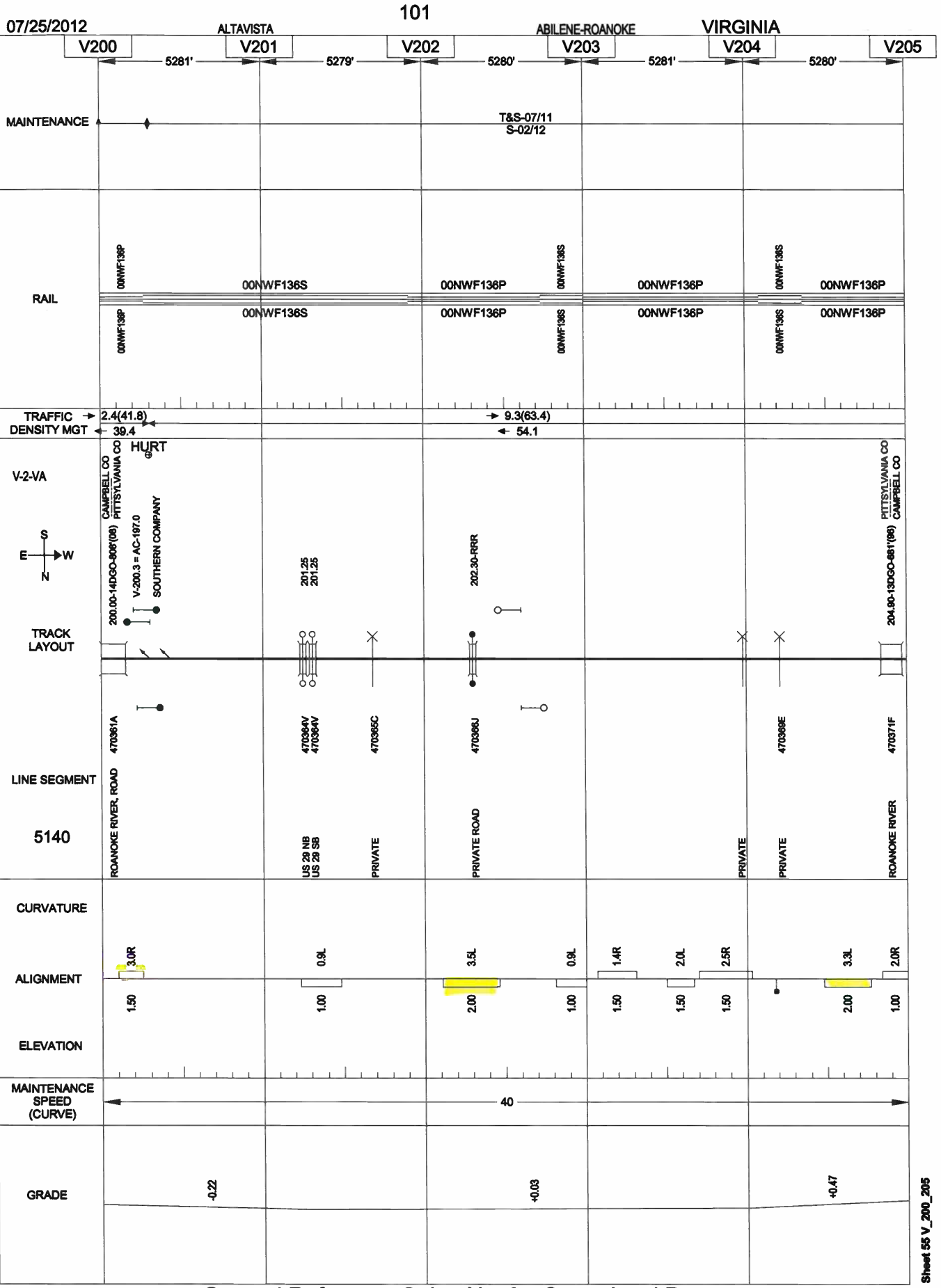
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Sheet 55 V_190_195

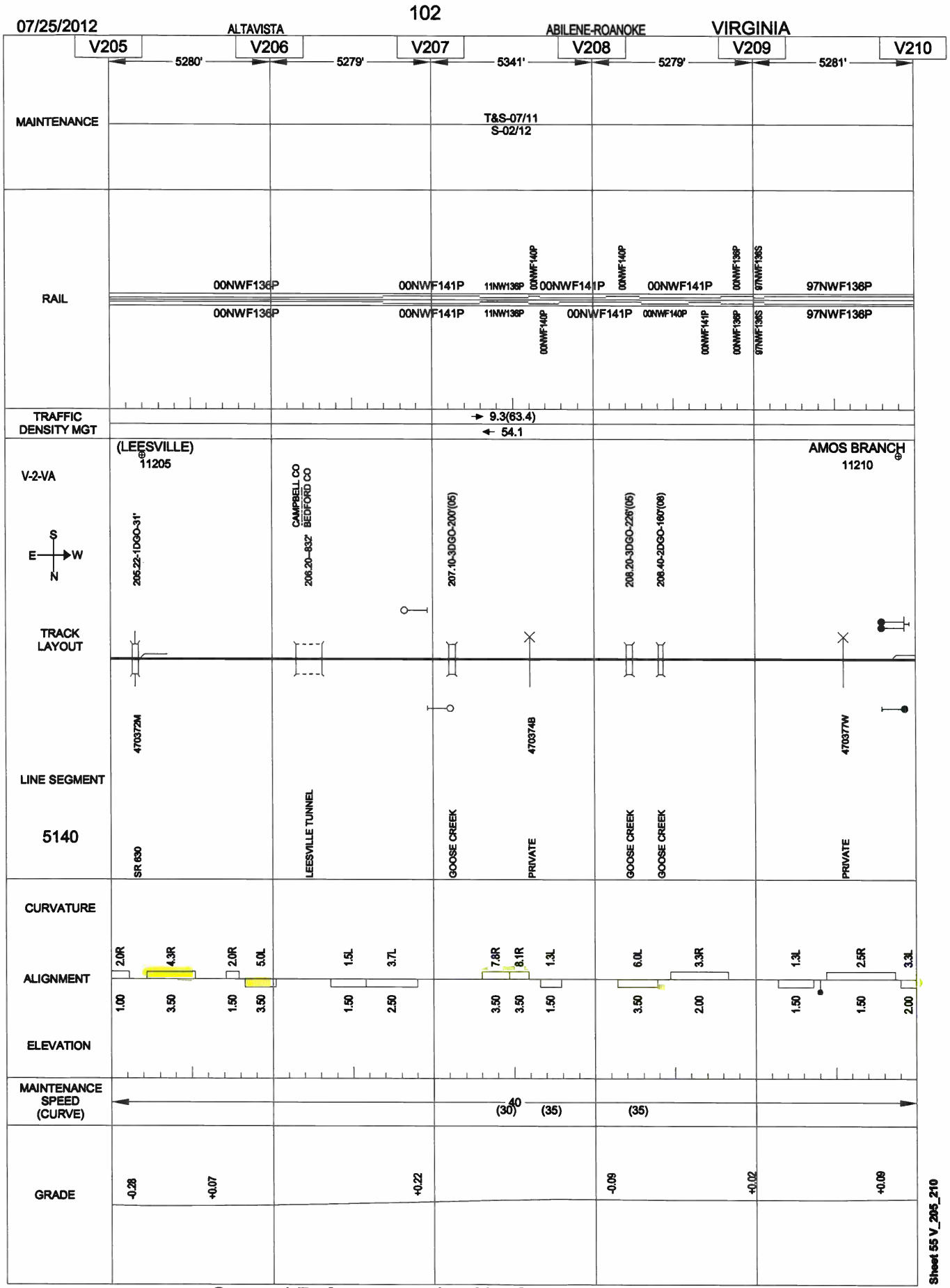


Sheet 55 V_195_200

General Reference Only - Not for Operational Purposes

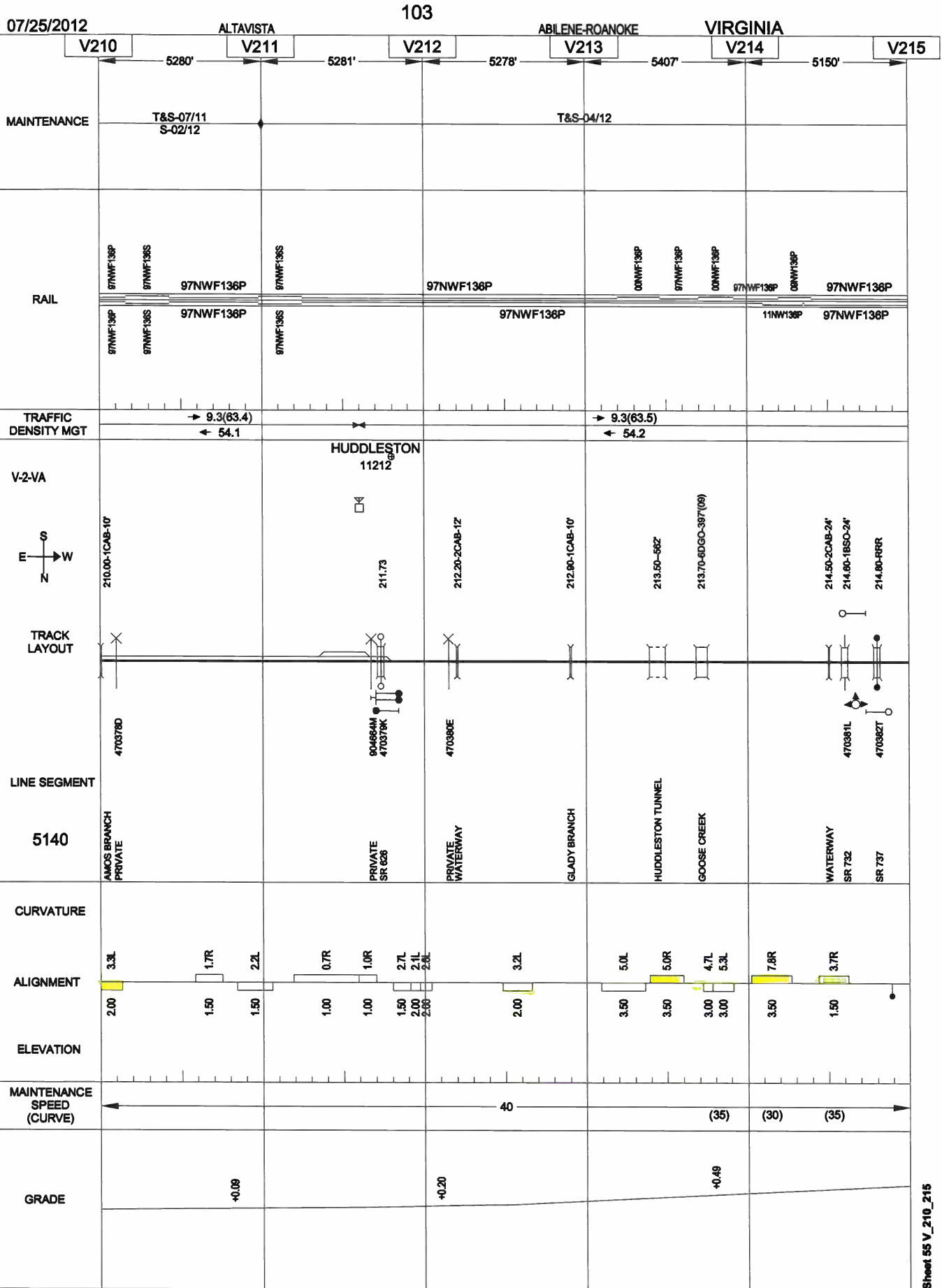


Sheet 55 V_200_205



Sheet 55 V_205_210

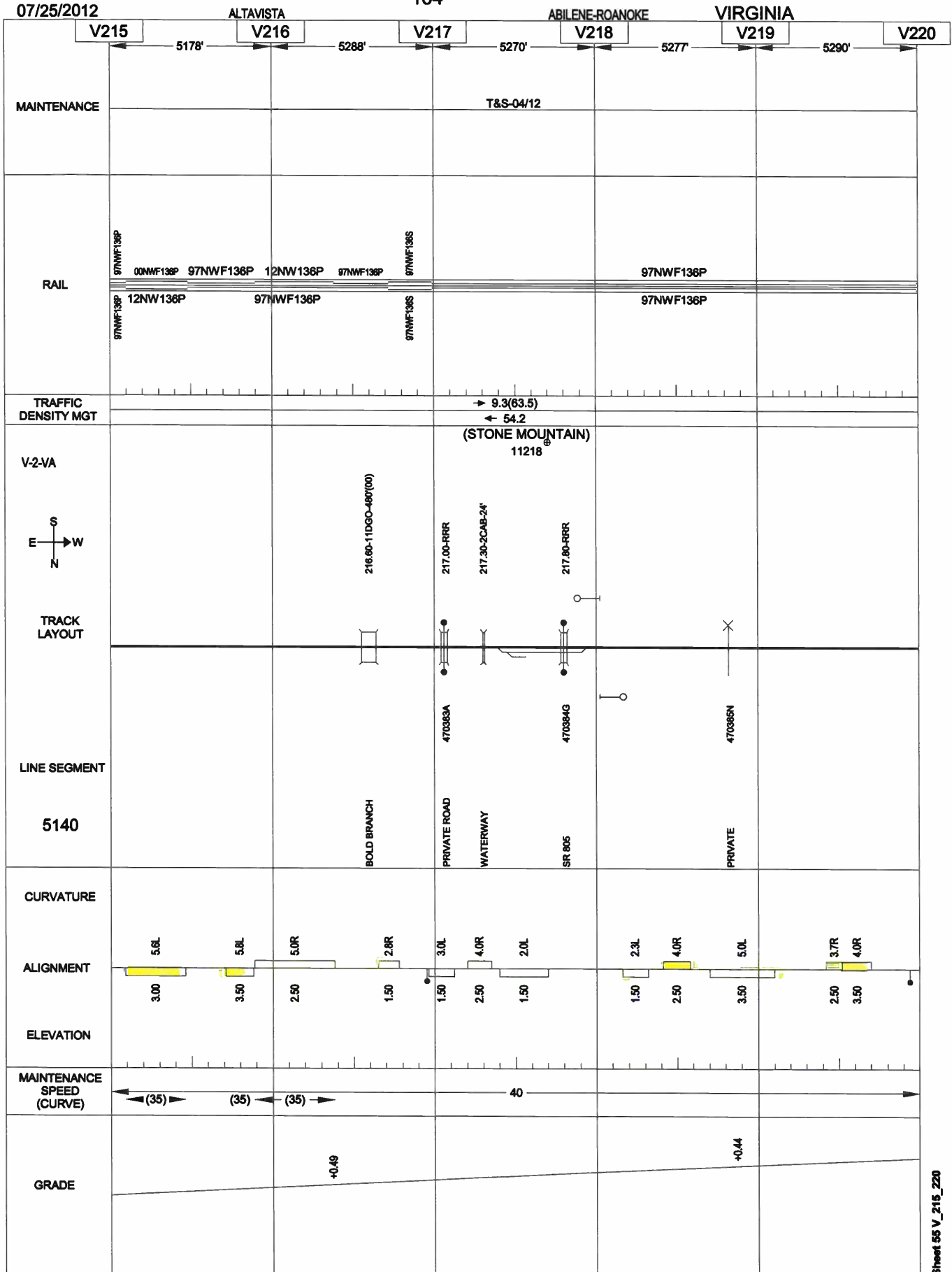
General Reference Only - Not for Operational Purposes



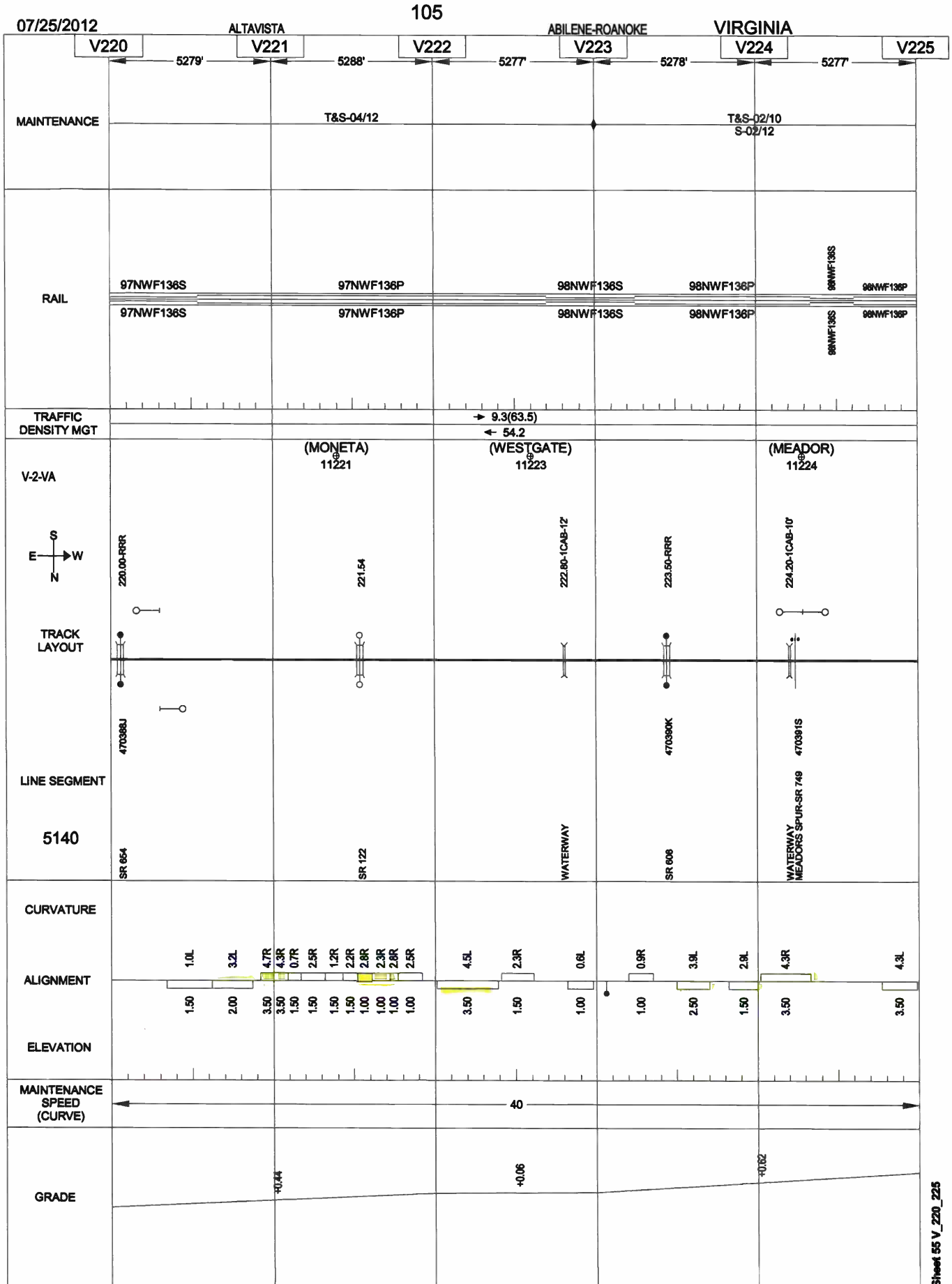
General Reference Only - Not for Operational Purposes

Sheet 55 V_210_215

104

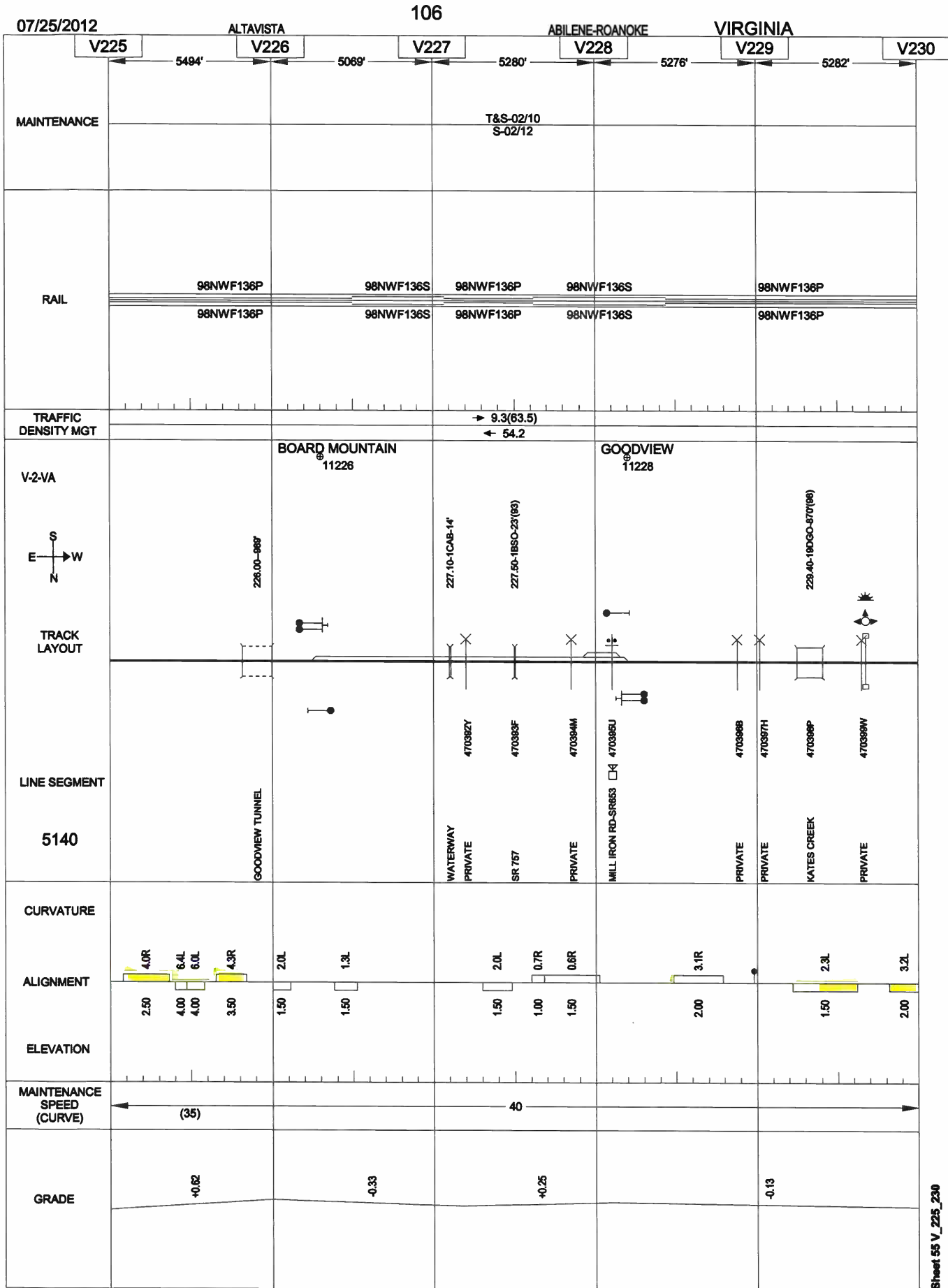


General Reference Only - Not for Operational Purposes



General Reference Only - Not for Operational Purposes

Sheet 55 V_220_225



General Reference Only - Not for Operational Purposes

Sheet 55 V_225_230

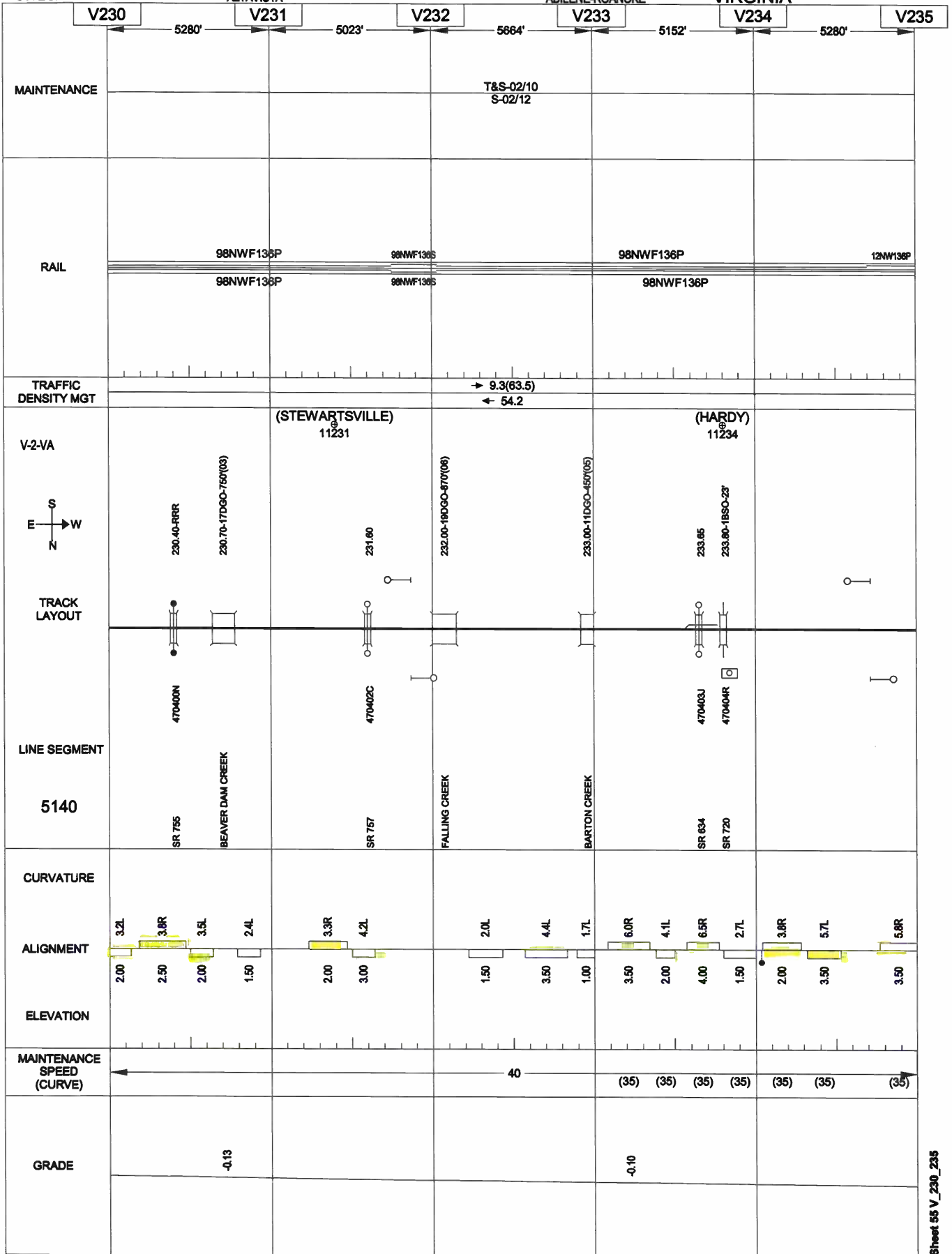
07/25/2012

107

ALTAVISTA

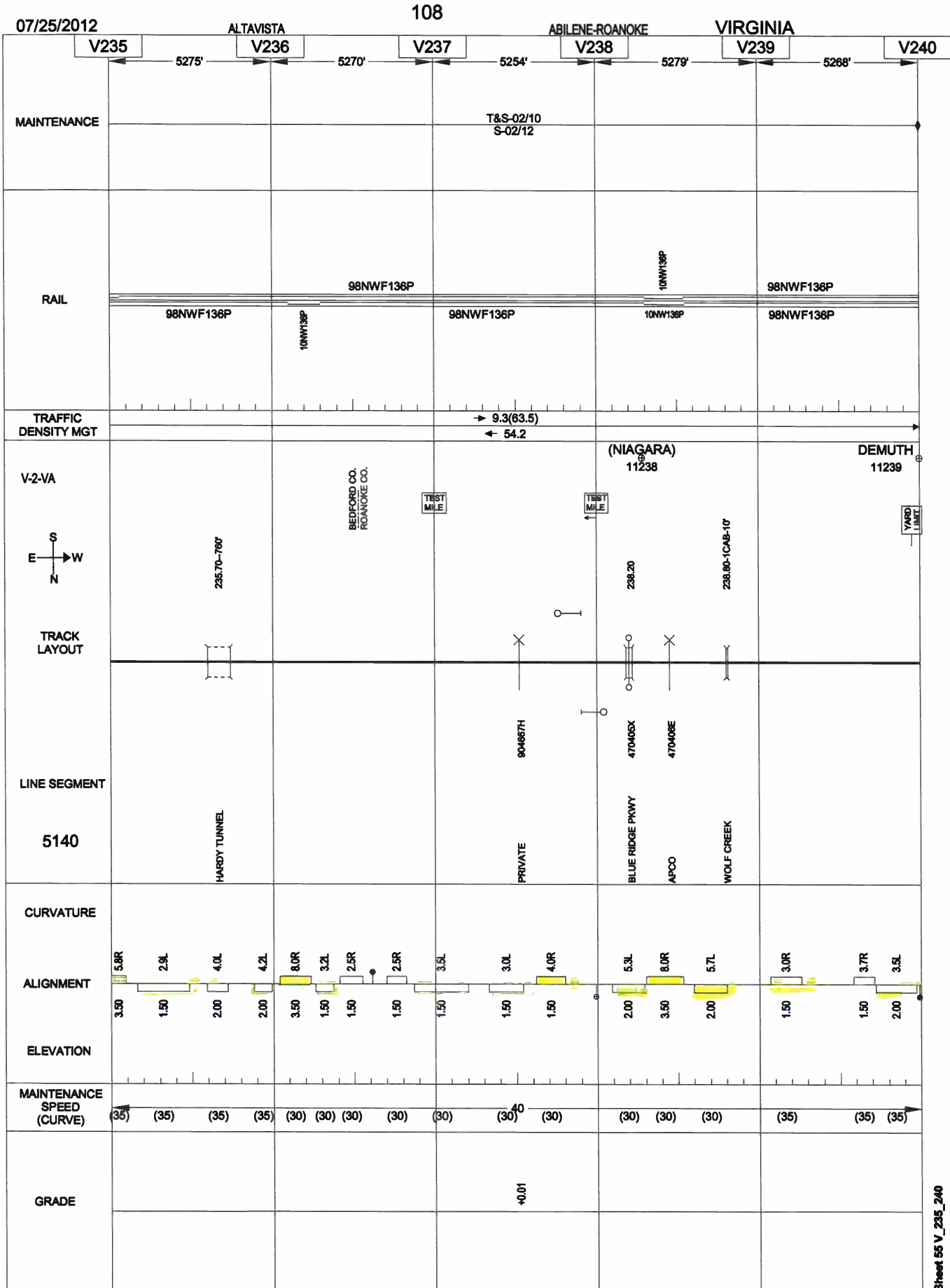
ABILENE-ROANOKE

VIRGINIA



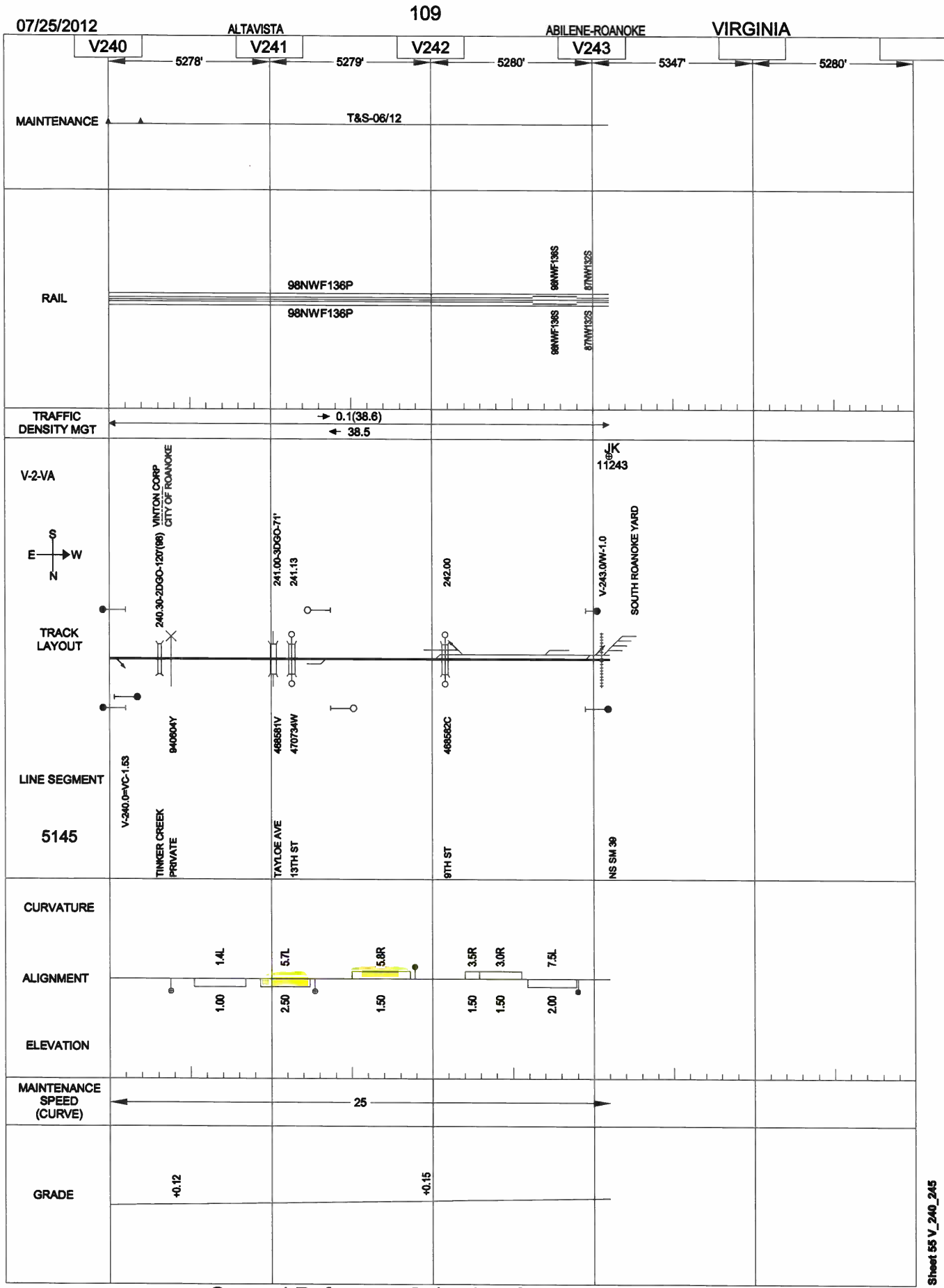
General Reference Only - Not for Operational Purposes

Sheet 55 V_230_235



General Reference Only - Not for Operational Purposes

Sheet 55 V_235_240



General Reference Only - Not for Operational Purposes

Sheet 55 V_240_245

Altavista District Siding MP V236.0 - MP V238.0

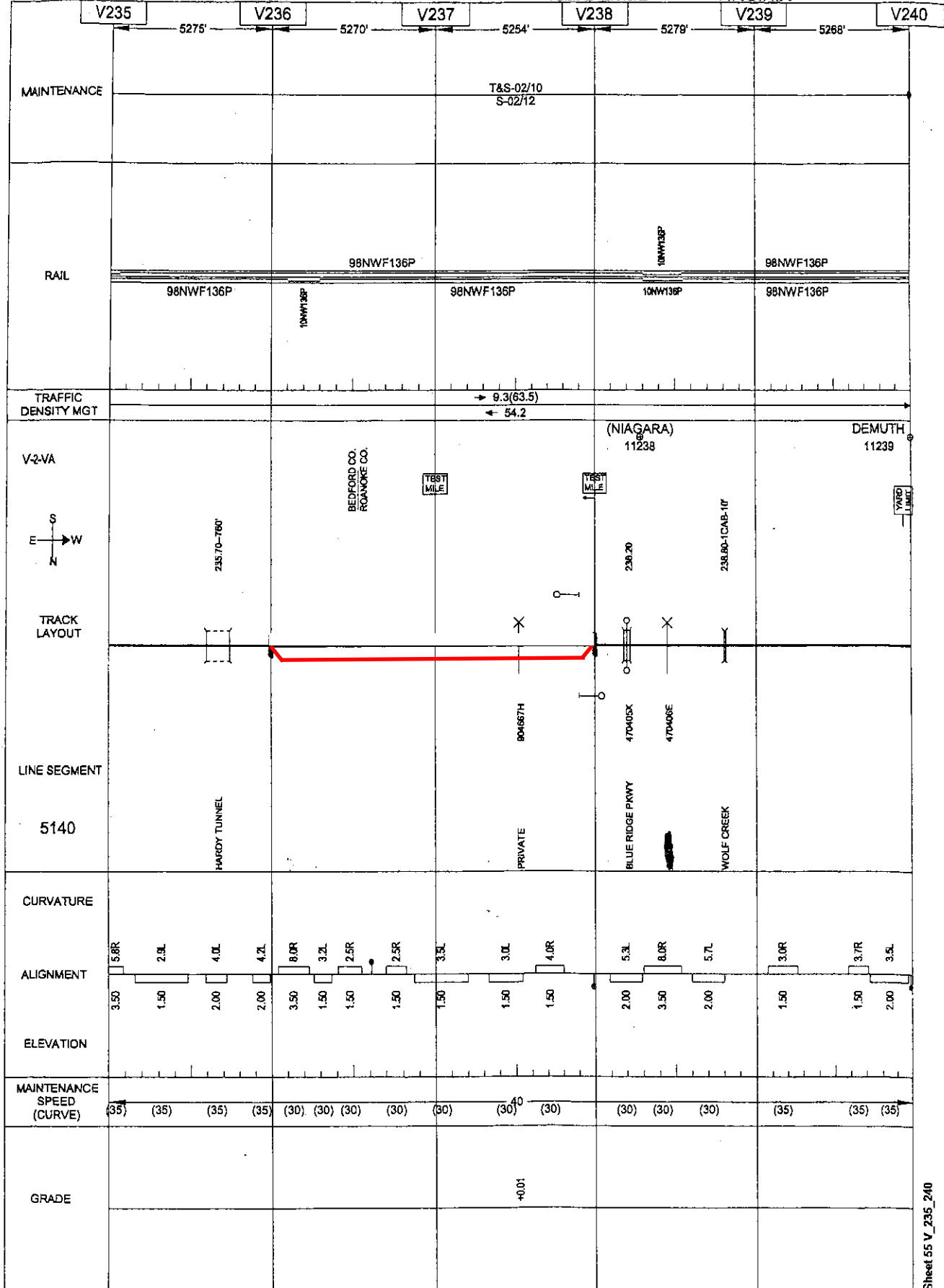
108

07/25/2012

ALTAVISTA

ABILENE-ROANOKE

VIRGINIA



General Reference Only - Not for Operational Purposes

Blue Ridge District, Extend Siding, MP N214.5 - N218.5, from Forest Westward

056

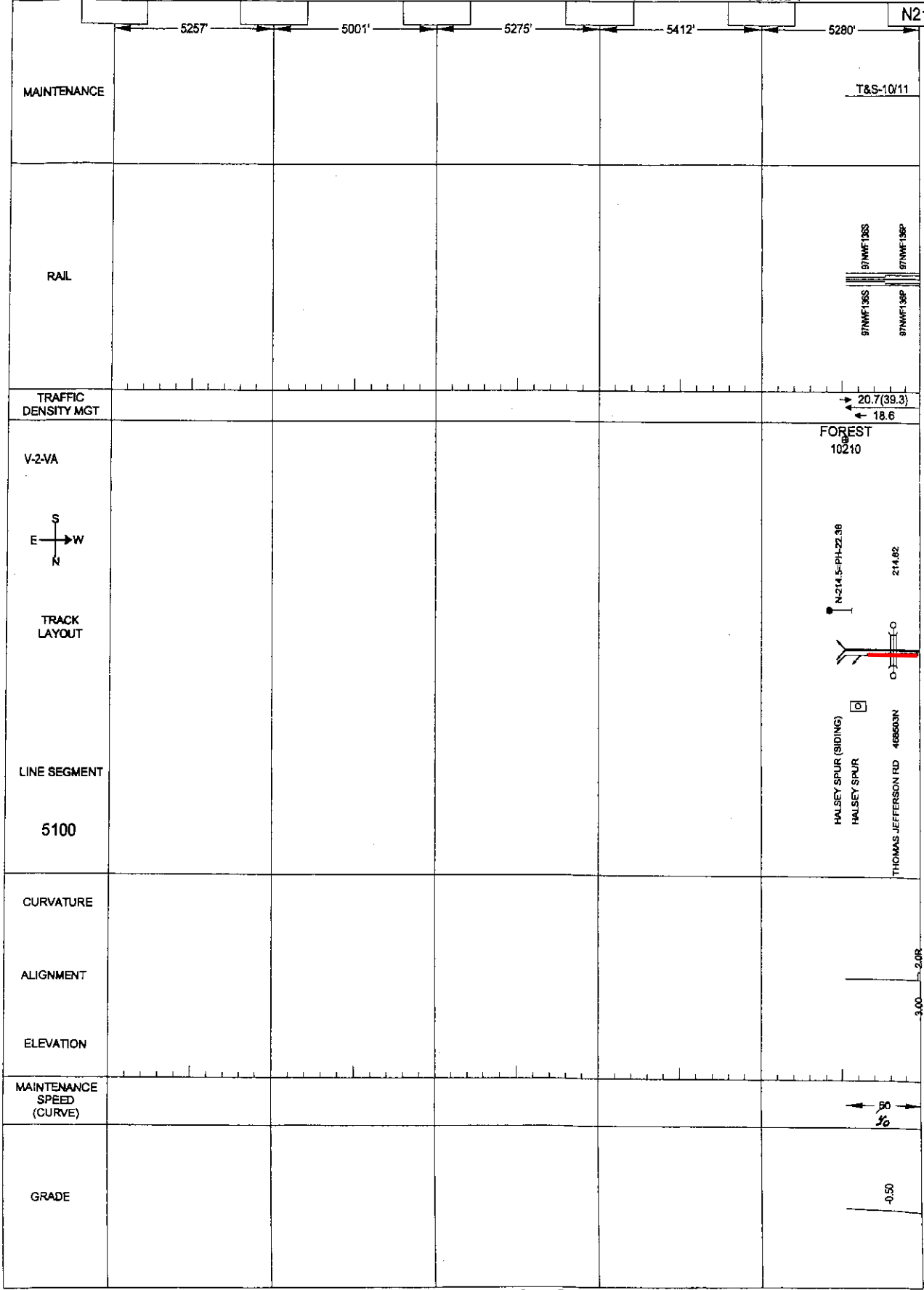
07/25/2012

BLUE RIDGE

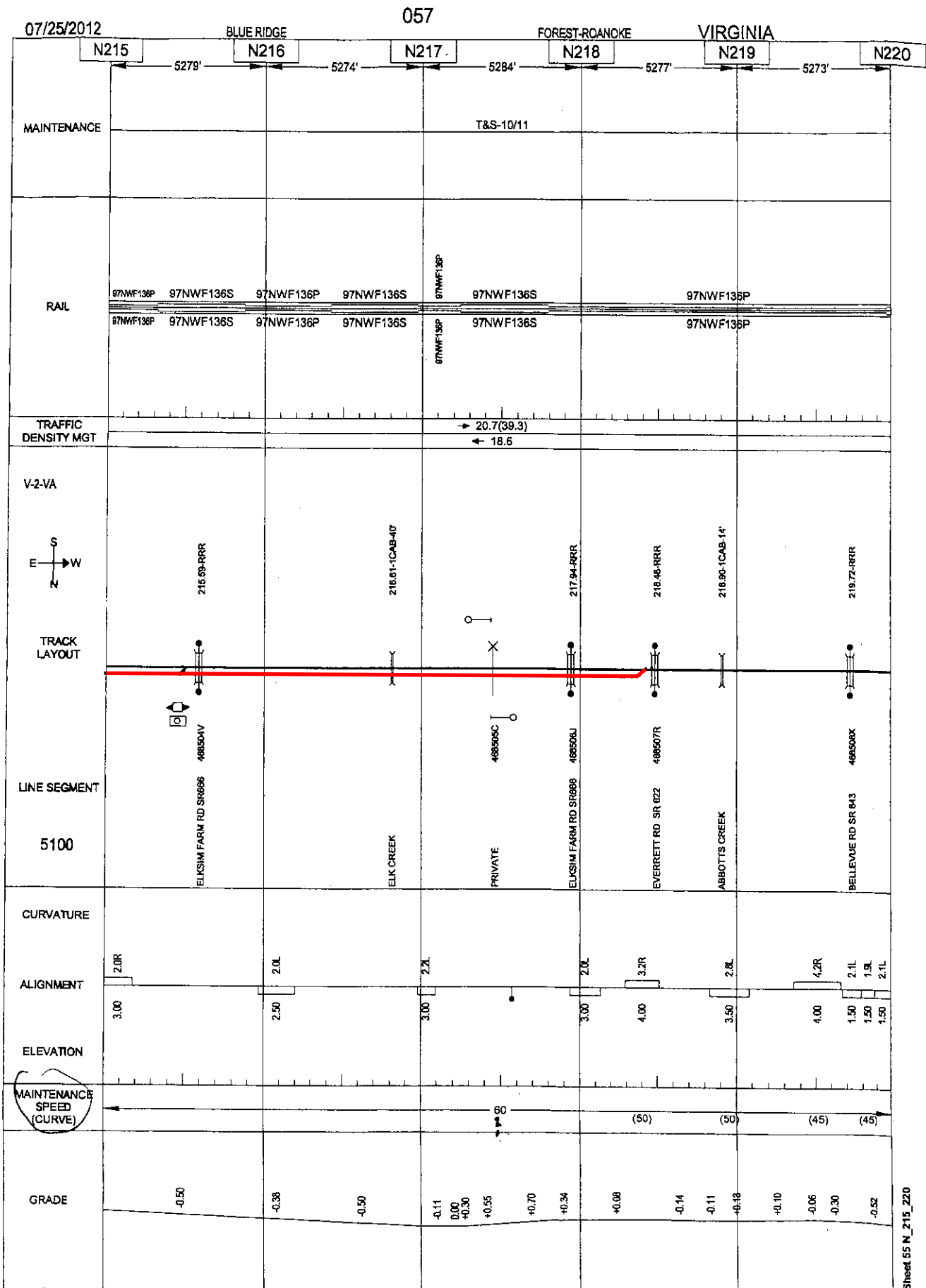
FOREST-ROANOKE

VIRGINIA

N215



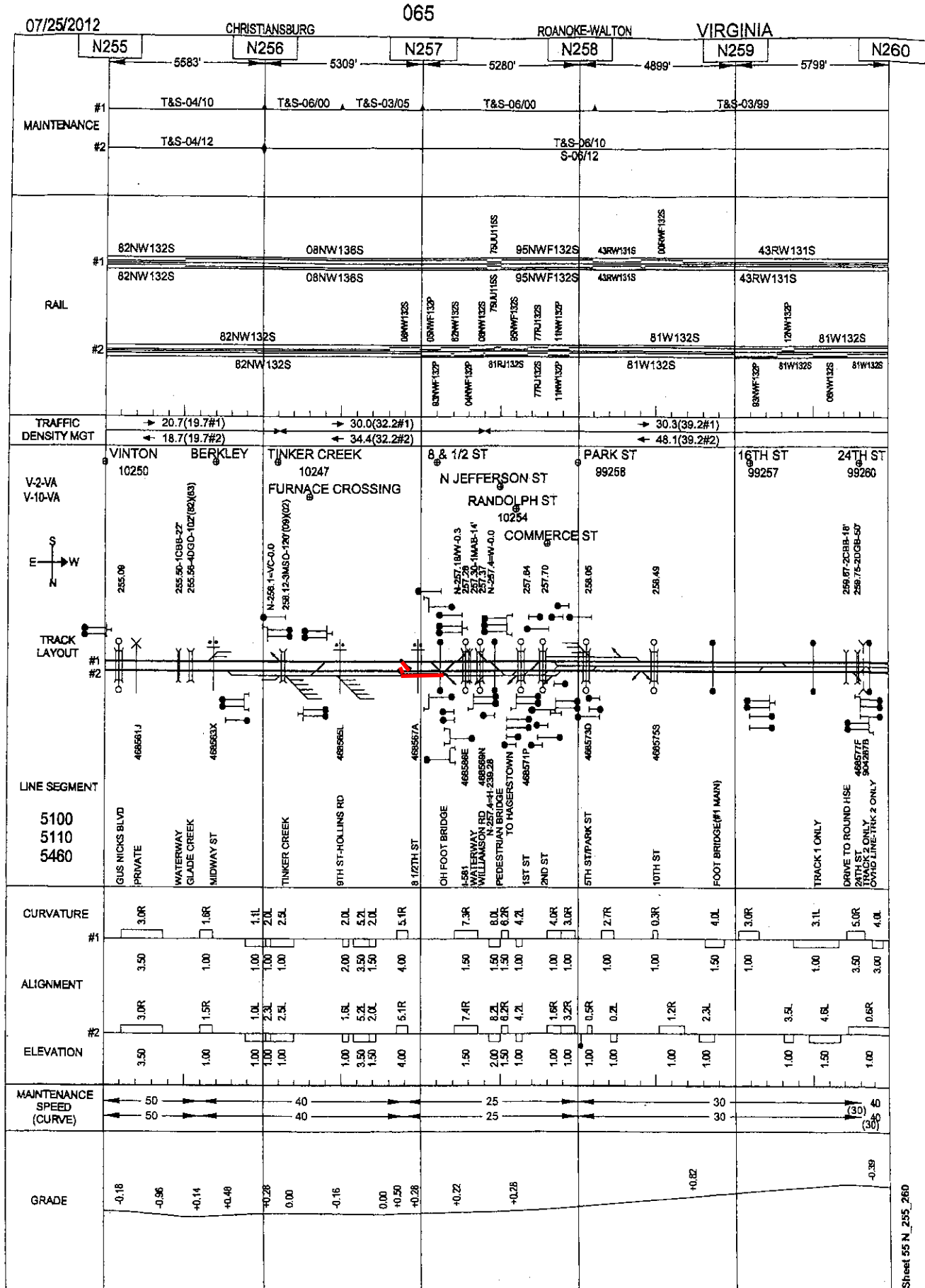
General Reference Only - Not for Operational Purposes



General Reference Only - Not for Operational Purposes

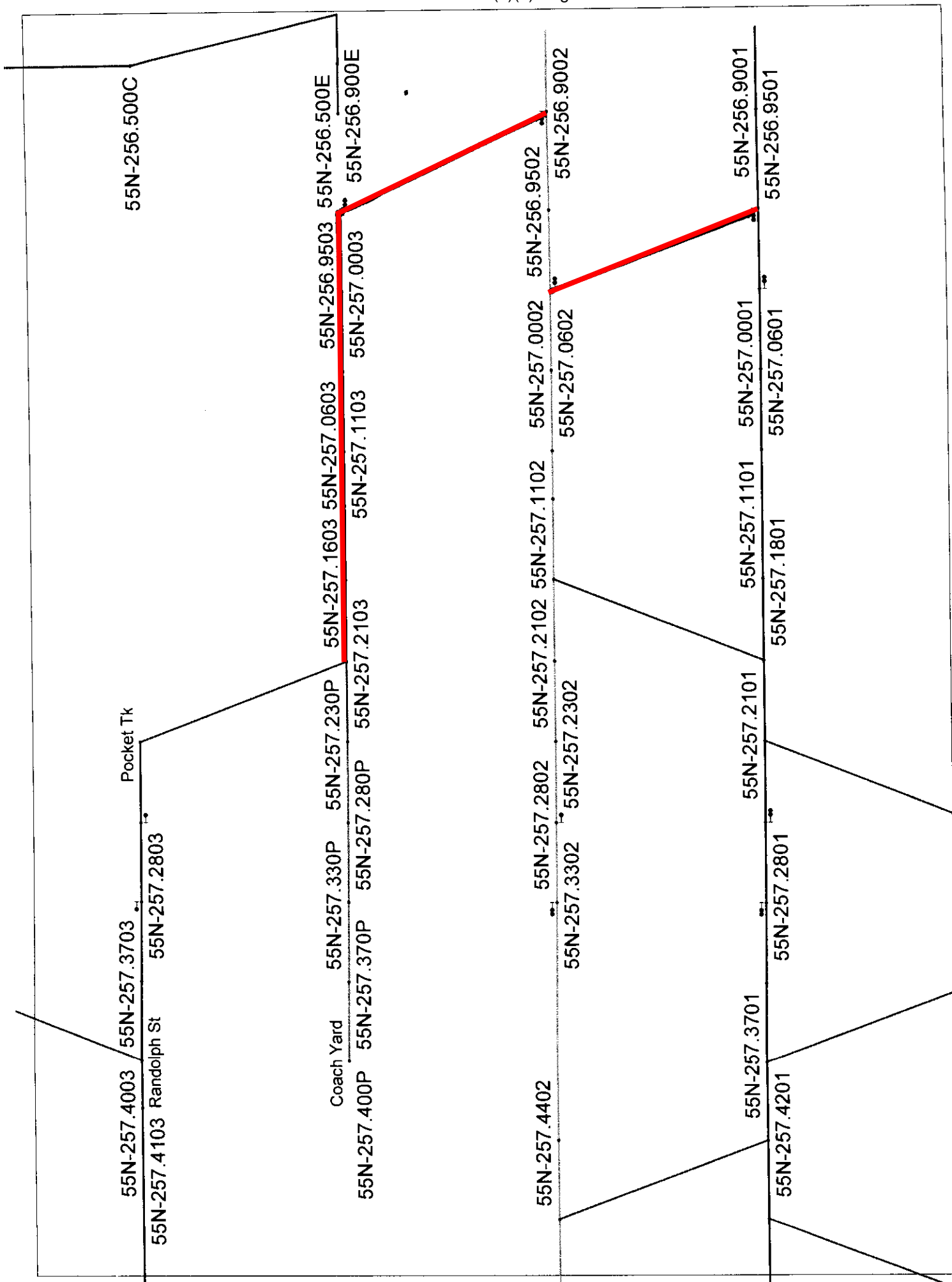
Sheet 55 N_215_220

Blue Ridge District, Extend Pocket Track and Relocate Crossover, about MP N256.9, Roanoke Yard



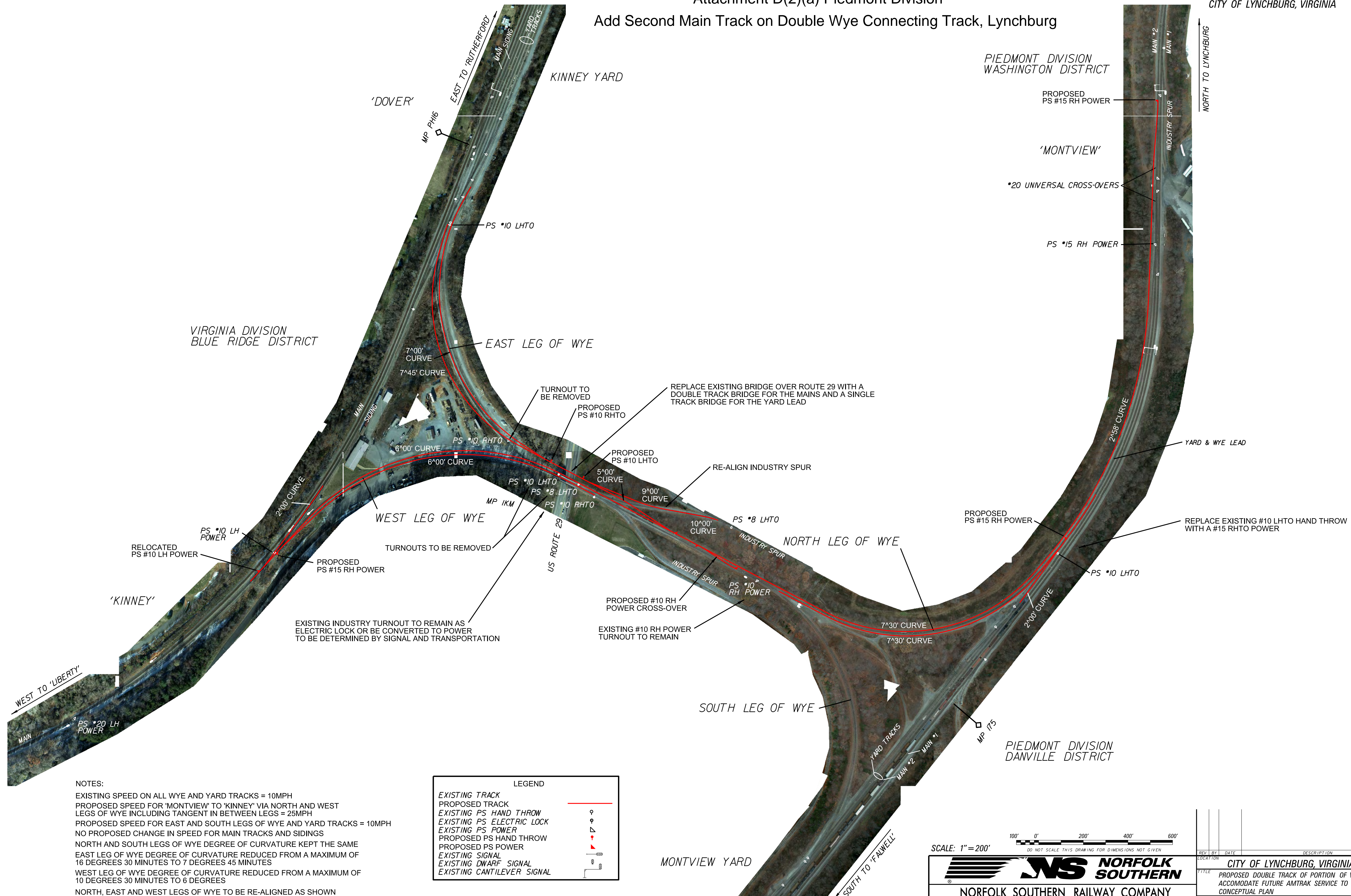
General Reference Only - Not for Operational Purposes

Sheet 55 N_255_260



Attachment D(2)(a) Piedmont Division
 Add Second Main Track on Double Wye Connecting Track, Lynchburg

CITY OF LYNCHBURG, VIRGINIA

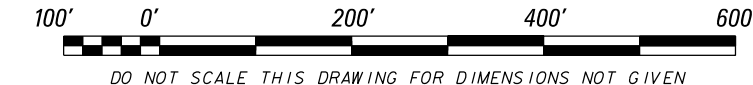


NOTES:

- EXISTING SPEED ON ALL WYE AND YARD TRACKS = 10MPH
- PROPOSED SPEED FOR 'MONTVIEW' TO 'KINNEY' VIA NORTH AND WEST LEGS OF WYE INCLUDING TANGENT IN BETWEEN LEGS = 25MPH
- PROPOSED SPEED FOR EAST AND SOUTH LEGS OF WYE AND YARD TRACKS = 10MPH
- NO PROPOSED CHANGE IN SPEED FOR MAIN TRACKS AND SIDINGS
- NORTH AND SOUTH LEGS OF WYE DEGREE OF CURVATURE KEPT THE SAME
- EAST LEG OF WYE DEGREE OF CURVATURE REDUCED FROM A MAXIMUM OF 16 DEGREES 30 MINUTES TO 7 DEGREES 45 MINUTES
- WEST LEG OF WYE DEGREE OF CURVATURE REDUCED FROM A MAXIMUM OF 10 DEGREES 30 MINUTES TO 6 DEGREES
- NORTH, EAST AND WEST LEGS OF WYE TO BE RE-ALIGNED AS SHOWN

LEGEND	
EXISTING TRACK	
PROPOSED TRACK	
EXISTING PS HAND THROW	
EXISTING PS ELECTRIC LOCK	
EXISTING PS POWER	
PROPOSED PS HAND THROW	
PROPOSED PS POWER	
EXISTING SIGNAL	
EXISTING DWARF SIGNAL	
EXISTING CANTILEVER SIGNAL	

SCALE: 1" = 200'



DO NOT SCALE THIS DRAWING FOR DIMENSIONS NOT GIVEN

		CITY OF LYNCHBURG, VIRGINIA	
		PROPOSED DOUBLE TRACK OF PORTION OF WYE TO ACCOMMODATE FUTURE AMTRAK SERVICE TO ROANOKE CONCEPTUAL PLAN	
DESIGNED BY: TJW DATE: 5/21/13	FILE NO.: D1959 DATE: 5/21/13	SHEET NO.: 06006 DATE: 5/21/13	MILE POST: 174.60 DRAWING NUMBER: TD-2013-29

Piedmont Division, Add Second Main Track MP 202.1 - MP 212.0, Green-Smothers

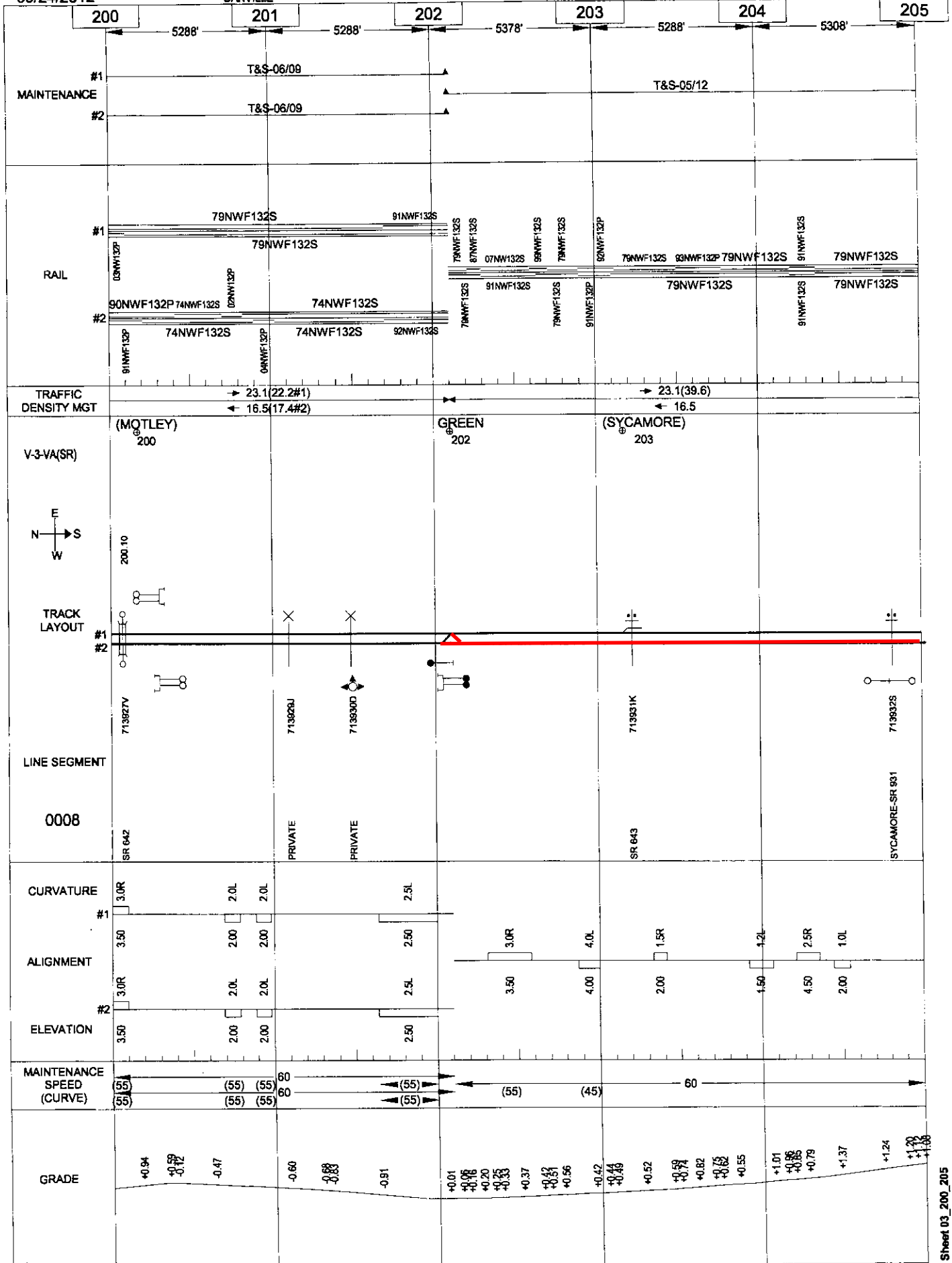
040

09/24/2012

DANVILLE

MONROE-VA/NC LINE

PIEDMONT



General Reference Only - Not for Operational Purposes

Sheet 03_200_205

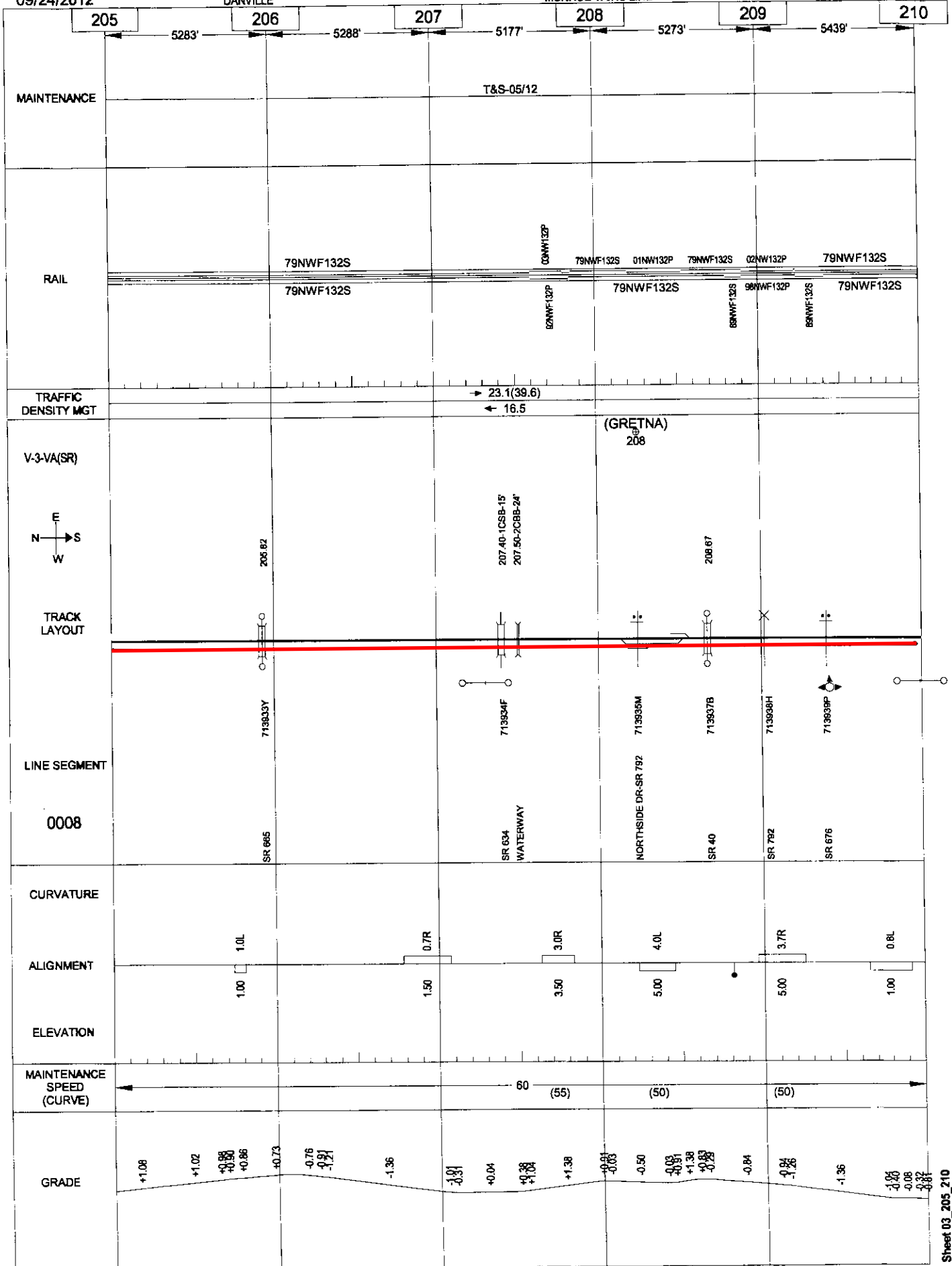
041

09/24/2012

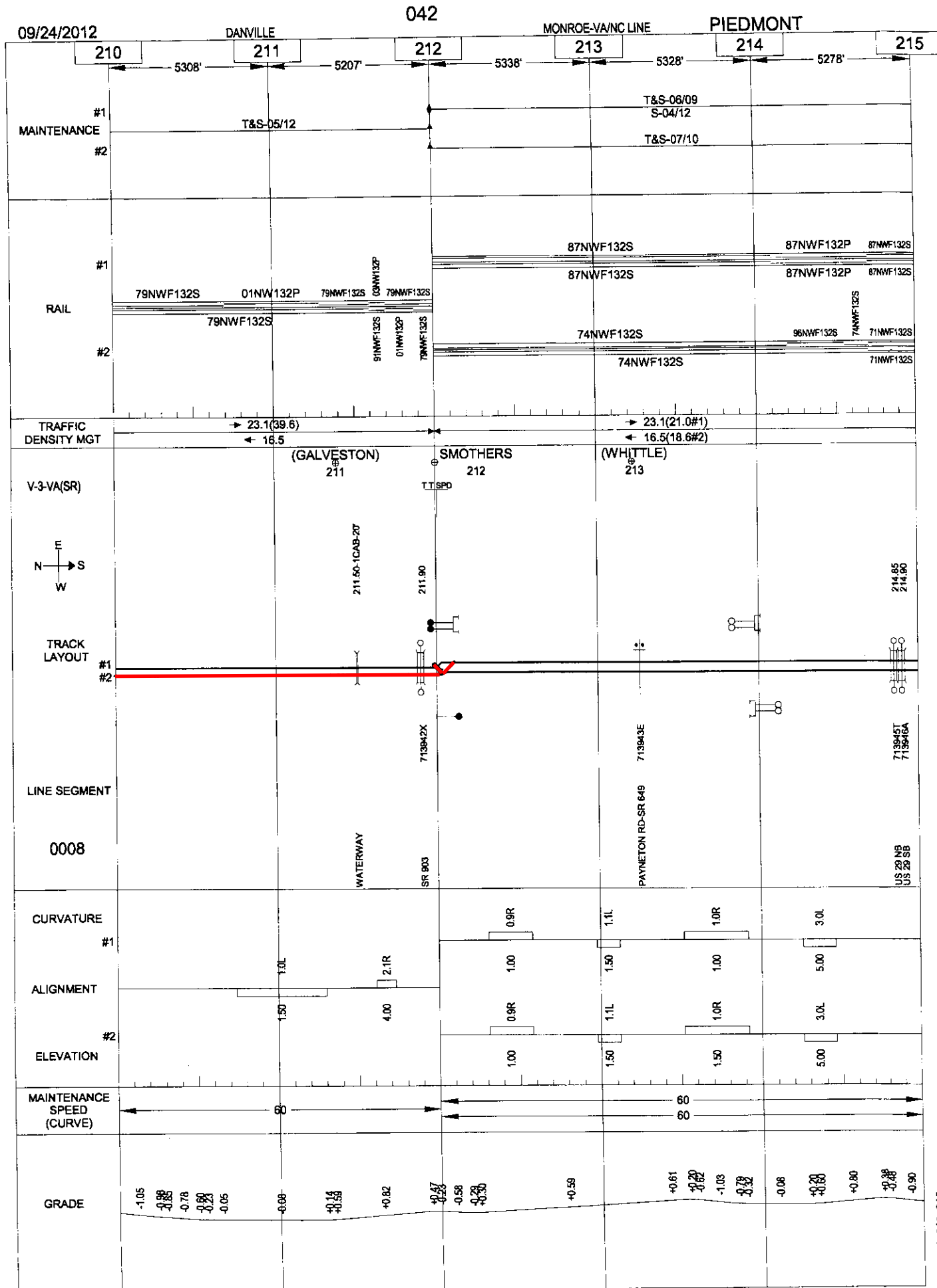
DANVILLE

MONROE-VA/NC LINE

PIEDMONT

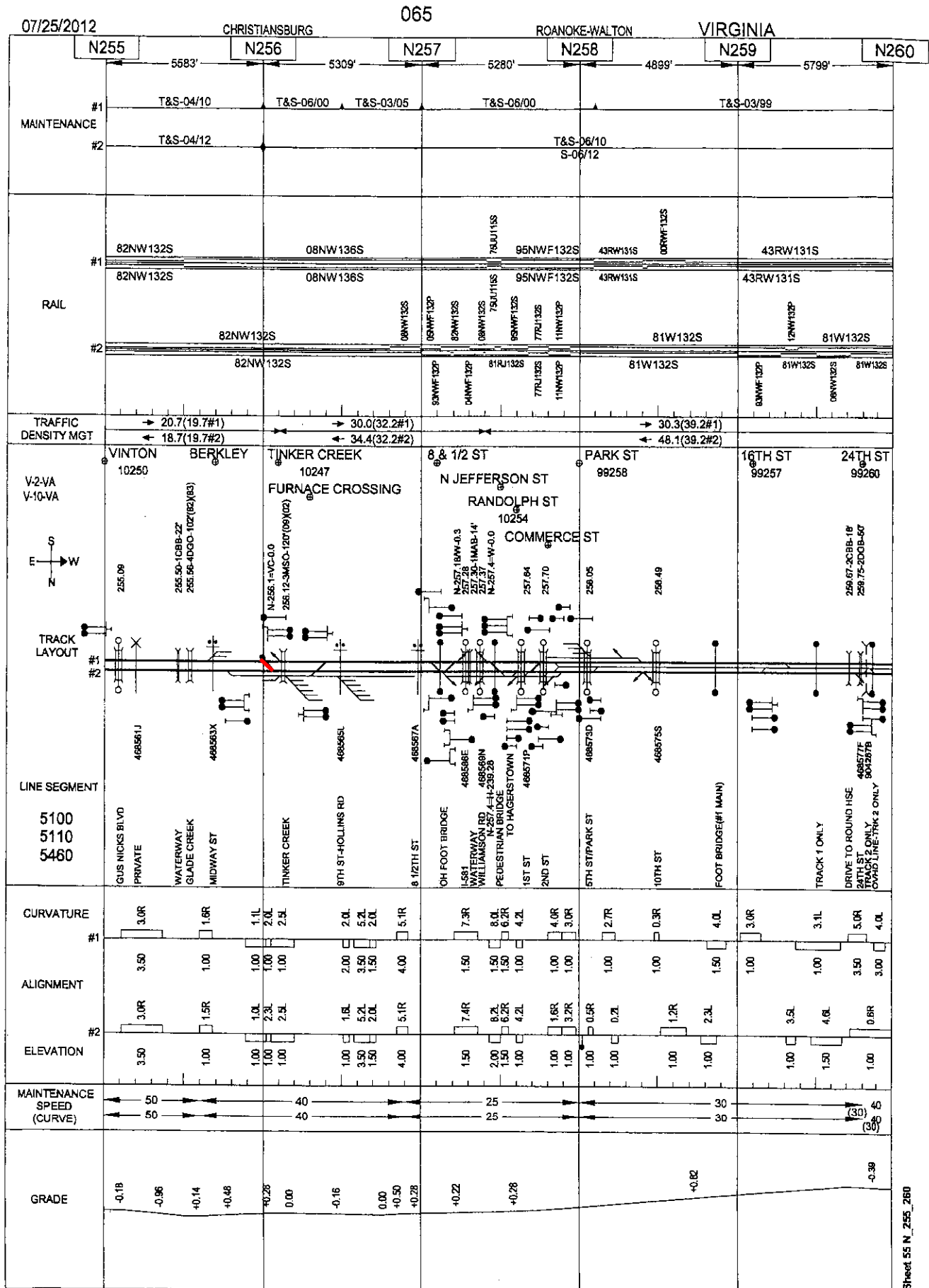


General Reference Only - Not for Operational Purposes

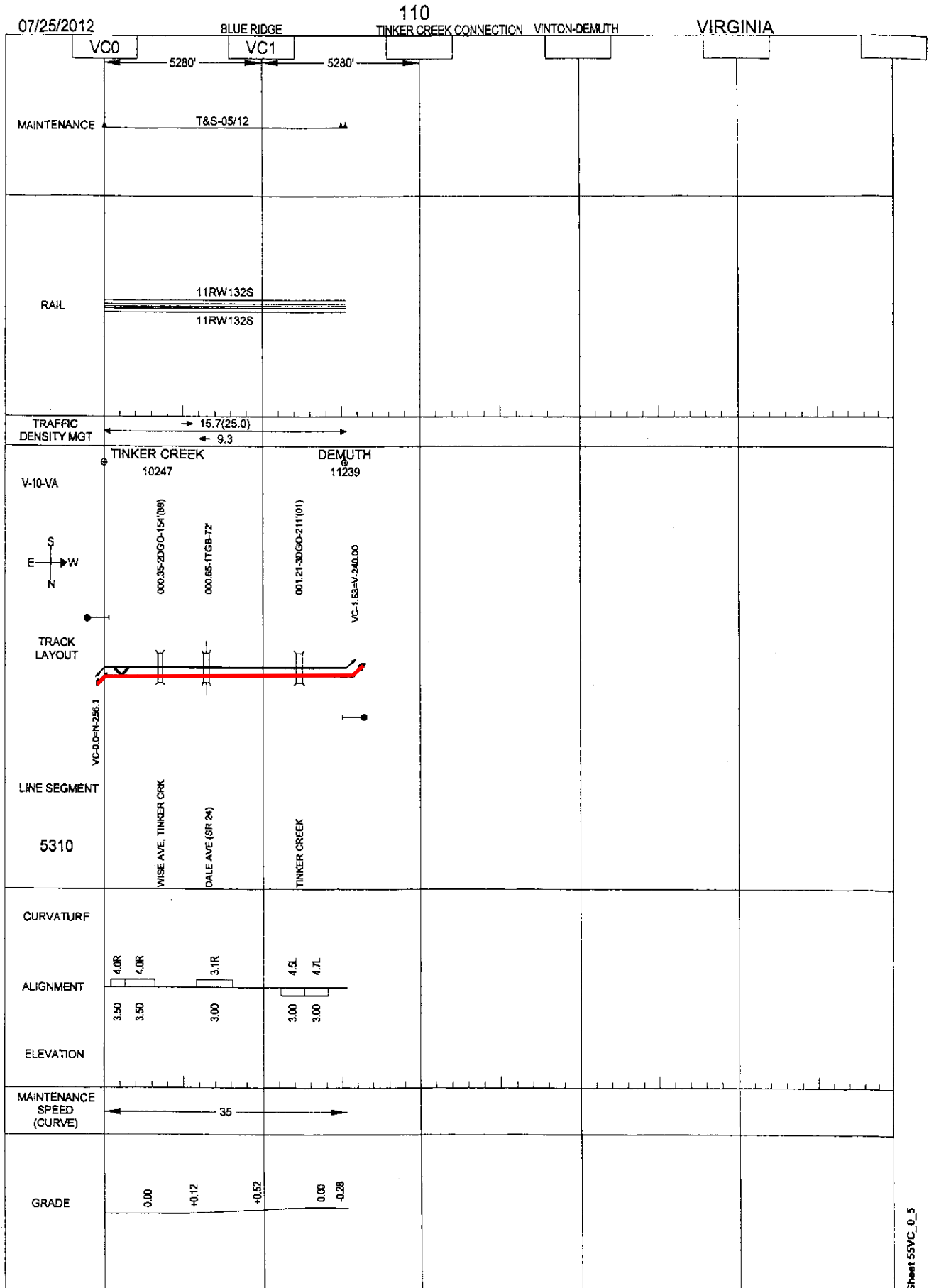


General Reference Only - Not for Operational Purposes

Altavista District, Add Second Main Track MP N256.1/VC 0.0 - VC1.53 and V240.0 - V236.0, Tinker Creek, east of Niagara



General Reference Only - Not for Operational Purposes



General Reference Only - Not for Operational Purposes

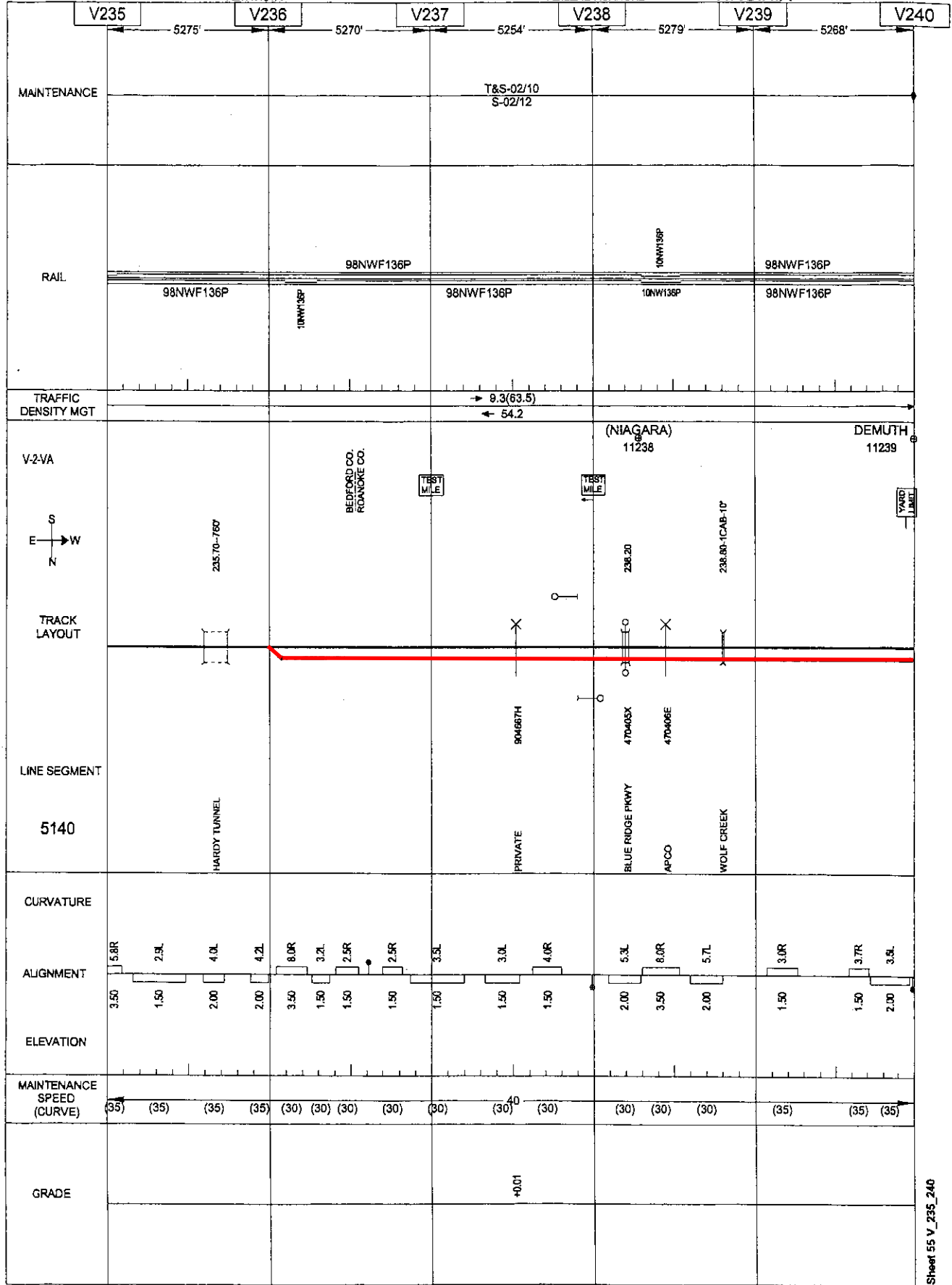
07/25/2012

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ALTAVISTA

ABILENE-ROANOKE

VIRGINIA

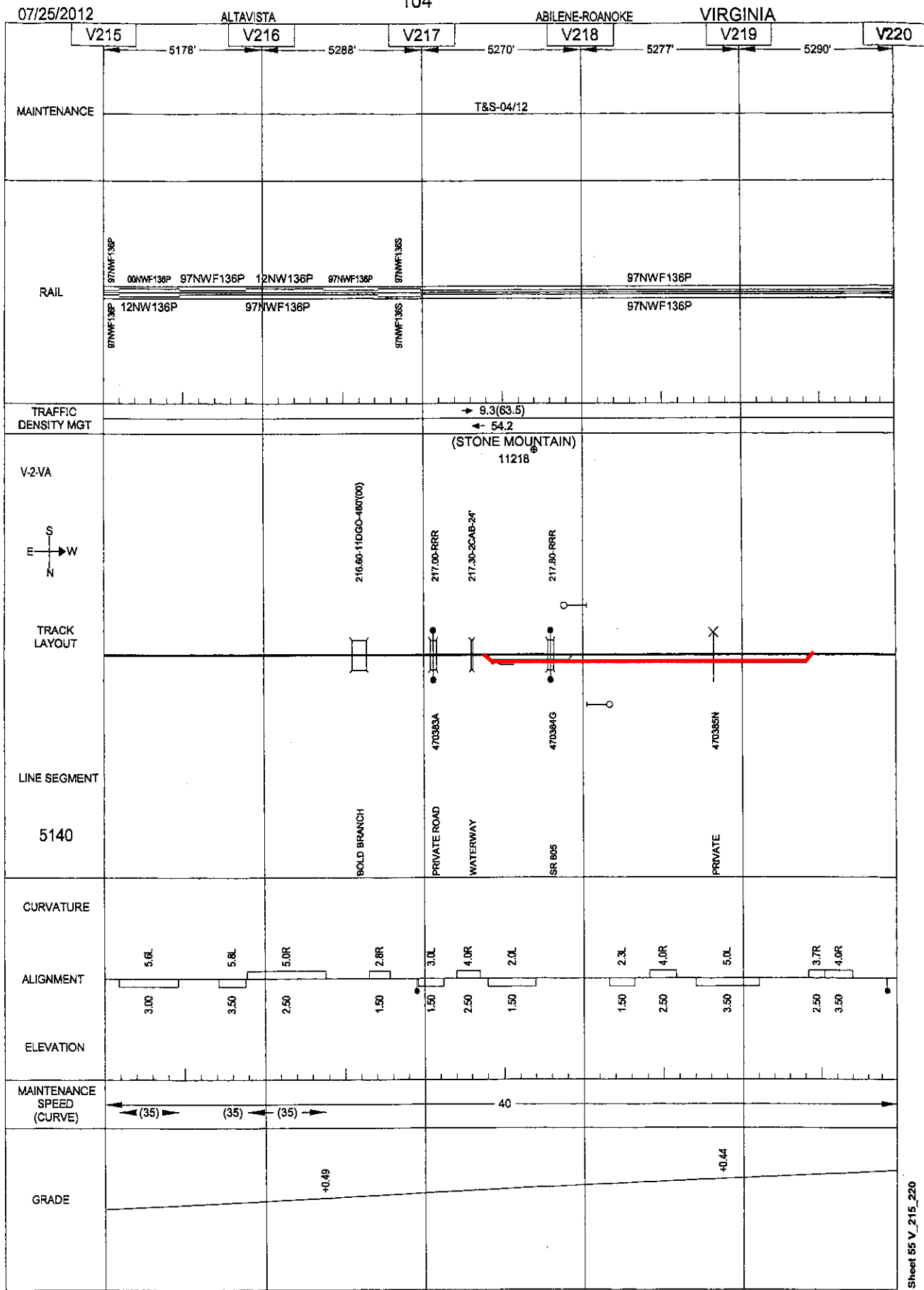


General Reference Only - Not for Operational Purposes

Sheet 55 V_235_240

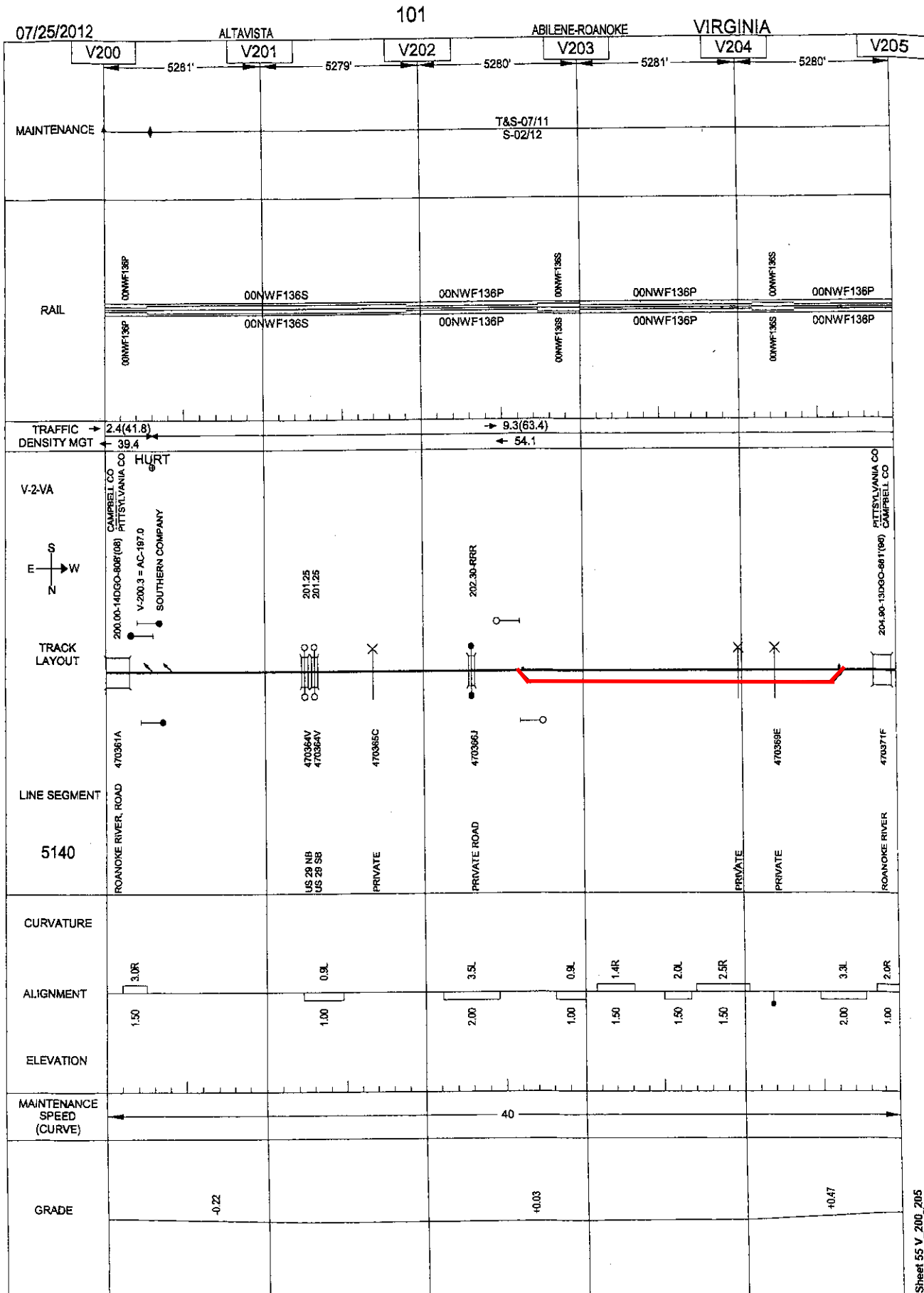
Altavista District, Add Siding MP V217.4 - V219.4, Stone Mountain

104



Sheet 55 V_215_220

Altavista District, Add Siding MP V202.6 - V204.6, west of Hurt



General Reference Only - Not for Operational Purposes

Case: VA12A Base2012 VA Project 2012 No new psgr trains

Elapsed execution time: 0:40 (HH:MM:SS)

simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 884 (495M + 389P) Gross conflicts = 960 (530M + 430P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 8 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	31	42.785	1.63	0:09:34	0:01:01	0	0:00:58	2:21:59	0	2:22:57	3035.7	7672.6	-----
E Premium Intermodal	59	32.547	6.58	1:00:48	0	0:00:03	0:09:52	7:06:54	0	7:16:47	6014.3	41644.2	-----
E Intermodal	55	31.786	4.08	1:08:07	0	0:00:04	0:06:54	8:09:45	0	8:16:23	6624.0	42123.7	-----
F Multi-level	12	27.097	16.52	0:02:55	0	0	0:03:13	0:22:24	0	1:01:38	694.6	3505.0	-----
F General Merchandise	114	24.424	9.11	4:00:23	0	0:00:52	1:03:41	16:16:40	0	17:20:03	10455.2	86334.6	-----
F Coal	103	22.471	10.18	1:21:36	0	0	1:02:45	12:20:29	0:01:17	13:23:08	7530.8	76394.1	-----
F Unit	19	24.755	7.51	0:05:10	0	0:00:00	0:02:52	1:19:25	0:00:38	1:22:16	1145.7	9226.2	-----
F Local	77	12.119	7.45	5:17:45	0	0:07:45	0:08:31	10:12:19	0:00:02	10:20:49	3160.8	9667.4	-----
F Work Train	6	26.278	19.81	0:03:30	0	0:00:00	0:03:09	0:19:27	0:00:31	0:22:37	594.5	3861.6	-----
F Yard	19	2.926	10.75	1:11:20	0	0:00:34	0:01:44	2:04:35	0	2:05:13	155.7	150.3	-----
All train types	495	24.091	7.97	16:09:08	0:01:01	0:09:21	3:19:42	64:10:01	0:02:29	68:03:55	39411.5	280579.7	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	31	42.785	1.63	0:09:34	0:01:01	0	0:00:58	2:21:59	0	2:22:57	3035.7	7672.6	1.91	-----
Expedited	114	32.144	5.25	2:08:55	0	0:00:08	0:16:47	15:16:40	0	16:09:10	12638.3	83767.9	7.97	-----
Freight	350	20.257	9.59	13:14:39	0	0:09:13	3:01:57	45:19:22	0:02:29	48:19:47	23737.4	189139.2	18.69	-----
All groups	495	24.091	7.97	16:09:08	0:01:01	0:09:21	3:19:42	64:10:01	0:02:29	68:03:55	39411.5	280579.7	13.96	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late.

All others are on time.

warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case 2012A Base Case

Case: VA12A Base2012 VA Project 2012 No new psgr trains

Elapsed execution time: 0:40 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 884 (495M + 389P) Gross conflicts = 960 (530M + 430P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 8 (scale 0-100)

G R P	Train Type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	30	42.701	0.09	0:09:14	0:01:01	0	0:00:02	2:17:24	0	2:18:19	2832.4	6666.6	-----
E	Premium Intermodal	47	33.269	3.88	0:22:48	0	0:00:03	0:05:03	6:03:52	0	6:14:18	5267.0	37411.7	-----
E	Intermodal	12	31.688	2.74	0:02:50	0	0	0:00:35	1:00:24	0	1:00:43	783.2	4398.2	-----
F	Multi-level	5	30.616	15.71	0:01:45	0	0	0:02:35	0:17:39	0	0:20:50	638.0	2922.2	-----
F	General Merchandise	77	22.831	7.14	2:20:03	0	0:00:22	0:11:41	9:00:31	0	10:03:25	5557.6	48057.9	-----
F	Coal	11	27.074	14.76	0:02:50	0	0	0:01:45	0:12:48	0	0:16:27	445.6	4024.6	-----
F	Unit	5	22.160	1.17	0:02:20	0	0:00:00	0:00:05	0:08:36	0	0:10:02	222.6	2433.6	-----
F	Local	16	25.622	5.30	0:10:22	0	0:00:13	0:01:46	1:19:26	0	1:21:42	1171.3	3147.5	-----
F	Work Train	6	26.266	10.15	0:03:30	0	0:00:00	0:01:20	0:15:53	0:00:31	0:17:58	472.1	3472.5	-----
F	Yard	19	3.496	19.90	0:15:50	0	0:00:17	0:02:10	1:04:55	0	1:04:58	101.3	131.9	-----
All train types		228	27.641	5.83	5:19:32	0:01:01	0:00:57	1:03:07	24:05:32	0:00:31	26:08:47	17491.2	112666.6	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	30	42.701	0.09	0:09:14	0:01:01	0	0:00:02	2:17:24	0	2:18:19	2832.4	6666.6	0.10	-----
Expedited	59	33.056	3.72	1:01:38	0	0:00:03	0:05:38	7:04:16	0	7:15:01	6050.2	41809.9	5.60	-----
Freight	139	22.451	8.32	4:08:40	0	0:00:53	0:21:25	14:07:50	0:00:31	15:23:25	8608.5	64190.2	14.93	-----
All groups	228	27.641	5.83	5:19:32	0:01:01	0:00:57	1:03:07	24:05:32	0:00:31	26:08:47	17491.2	112666.6	9.30	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case 2012A Base Case

Case: VA12A Base2012 VA Project 2012 No new psgr trains

Elapsed execution time: 0:40 (HH:MM:SS)

Simulation start time: Sa:00:00

Duration: 9:00:00 (DD:HH:MM)

warm-up exclusion: 1:00:00 (DD:HH:MM)

Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 884 (495M + 389P) Gross conflicts = 960 (530M + 430P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 8 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	2	41.820	0.00	0:00:40	0	0	0	0:04:20	0	0:04:50	202.8	1001.0	-----
E	Premium Intermodal	15	33.370	0.50	0:02:30	0	0	0:00:04	0:12:46	0	0:15:55	531.3	2535.0	-----
E	Intermodal	55	33.099	1.76	1:05:17	0	0:00:04	0:02:29	6:15:19	0	7:04:49	5720.4	37235.8	-----
F	Multi-level	7	0.120	0.00	0:01:10	0	0	0	0	0	0:01:10	0.1	0.0	-----
F	General Merchandise	77	25.016	5.57	1:11:00	0	0:00:30	0:04:47	4:14:57	0	5:05:55	3150.1	24654.5	-----
F	Coal	83	19.937	9.51	0:19:20	0	0	0:04:28	2:04:29	0	2:22:51	1412.7	14251.0	-----
F	Unit	15	27.377	1.33	0:03:10	0	0	0:00:06	0:09:03	0	0:11:57	327.4	2232.3	-----
F	Local	37	9.653	6.88	2:03:44	0	0:05:17	0:02:20	3:03:22	0	3:16:02	849.9	2764.9	-----
F	Work Train	1	35.699	4.13	0:00:10	0	0	0:00:04	0:02:00	0	0:02:10	77.5	277.6	-----
F	Yard	13	1.952	0.00	0:23:50	0	0:00:17	0	0:23:39	0	1:03:53	54.4	18.4	-----
All train types		305	23.632	4.22	6:22:51	0	0:06:09	0:14:21	18:17:59	0	21:17:35	12326.6	84970.5	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	2	41.820	0.00	0:00:40	0	0	0	0:04:20	0	0:04:50	202.8	1001.0	0.00	-----
Expedited	70	33.122	1.65	1:07:47	0	0:00:04	0:02:33	7:04:05	0	7:20:44	6251.7	39770.8	2.45	-----
Freight	233	17.903	6.49	5:14:24	0	0:06:04	0:11:48	11:09:33	0	13:16:00	5872.1	44198.6	12.06	-----
All groups	305	23.632	4.22	6:22:51	0	0:06:09	0:14:21	18:17:59	0	21:17:35	12326.6	84970.5	6.99	-----

* Dwell times include time spent at initial and final terminals.

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Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

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Warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case 2012A Base Case

Case: VA12A Base2012 VA Project 2012 No new psgr trains

Elapsed execution time: 0:40 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM)

warm-up exclusion: 1:00:00 (DD:HH:MM)

Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 884 (495M + 389P) Gross conflicts = 960 (530M + 430P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 8 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	2	0.090	0.00	0:00:40	0	0	0	0	0	0:00:40	0.1	0.0	-----
E Intermodal	55	0.133	0.00	0:13:45	0	0	0	0:00:01	0	0:13:49	1.8	3.0	-----
F Multi-level	7	0.340	0.00	0:01:10	0	0	0	0:00:02	0	0:01:14	0.4	3.2	-----
F General Merchandise	64	24.922	1.38	0:11:50	0	0	0:00:29	1:10:43	0	1:23:28	1183.0	7408.5	-----
F Coal	101	22.830	4.20	1:21:16	0	0	0:07:14	7:19:39	0	9:09:13	5142.0	47086.0	-----
F Unit	18	25.553	2.05	0:04:00	0	0	0:00:18	0:14:58	0	0:19:28	497.8	2961.7	-----
F Local	31	17.314	1.79	0:14:40	0	0	0:00:20	1:04:41	0	1:09:57	588.0	1866.9	-----
F Work Train	2	17.206	41.88	0:00:30	0	0	0:00:37	0:01:23	0	0:02:38	45.3	112.4	-----
All train types	280	21.650	3.70	3:19:51	0	0	0:09:00	11:03:31	0	14:08:30	7458.5	59441.8	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	2	0.090	0.00	0:00:40	0	0	0	0	0	0:00:40	0.1	0.0	0.00	-----
Expedited	55	0.133	0.00	0:13:45	0	0	0	0:00:01	0	0:13:49	1.8	3.0	0.00	-----
Freight	223	22.595	3.70	3:05:26	0	0	0:09:00	11:03:30	0	13:18:00	7456.6	59438.8	7.25	-----
All groups	280	21.650	3.70	3:19:51	0	0	0:09:00	11:03:31	0	14:08:30	7458.5	59441.8	7.25	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

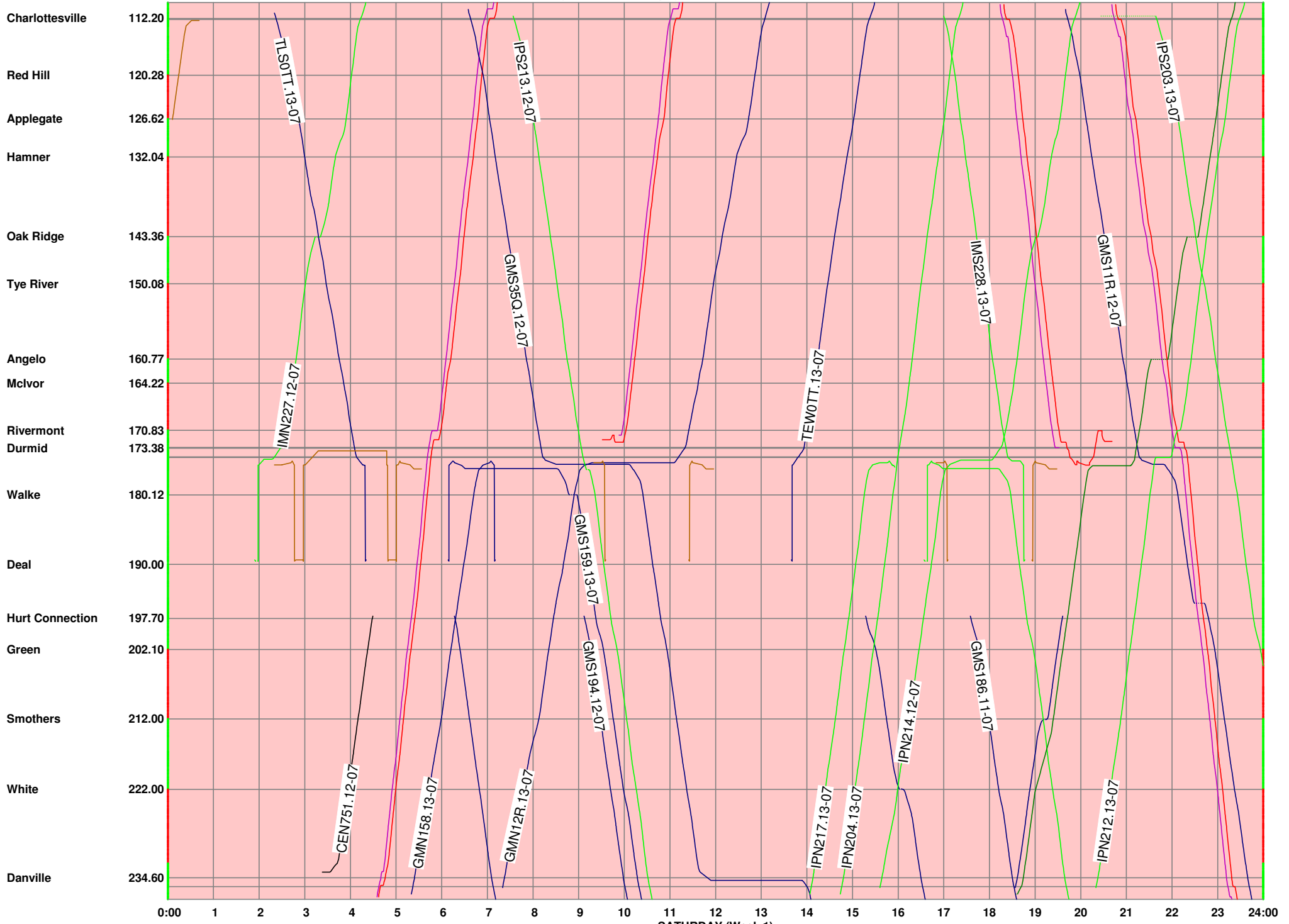
Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

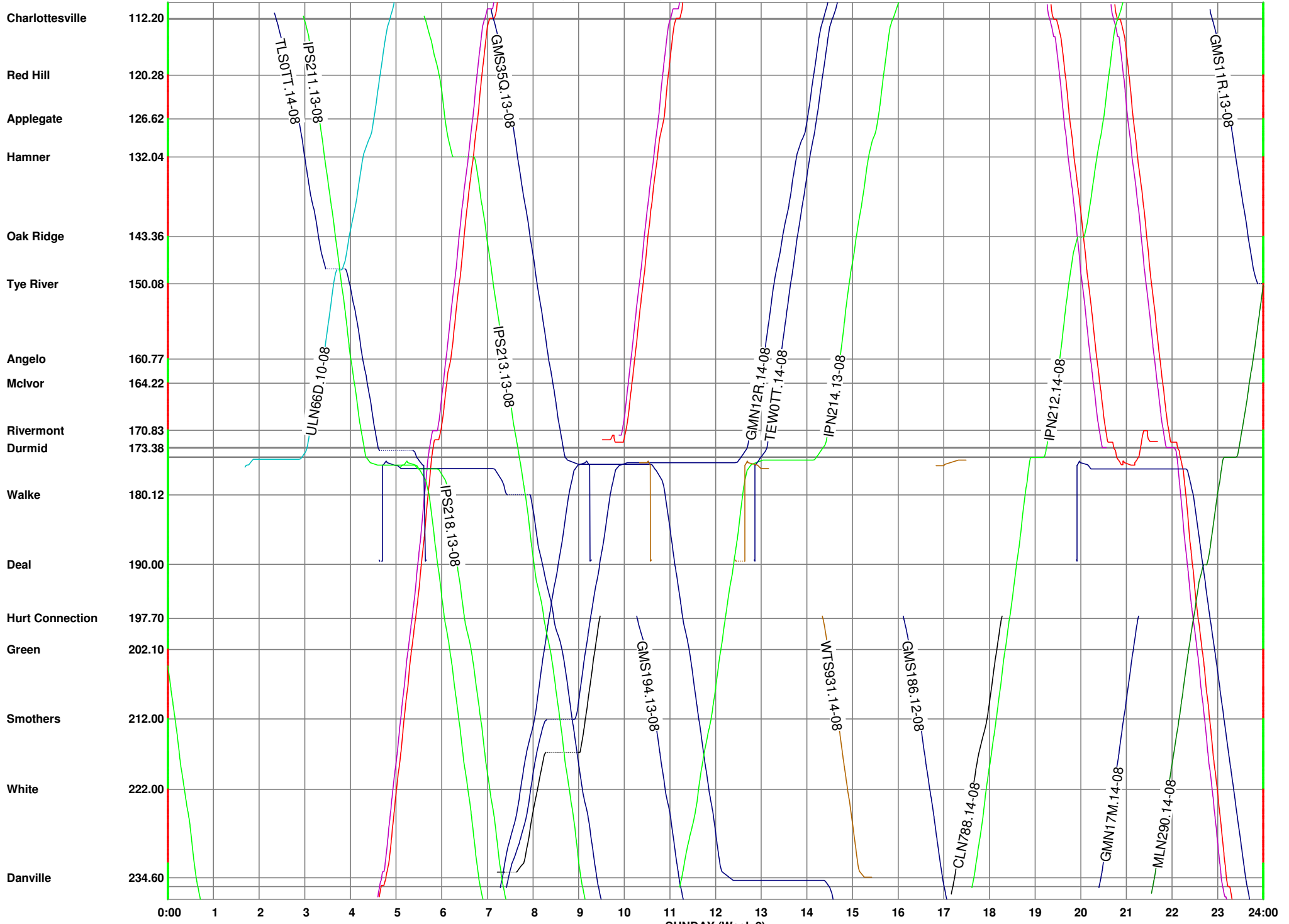
Delay % = 100 * True delay / (Total elapsed - True delay - total dwell - wait on schedule)

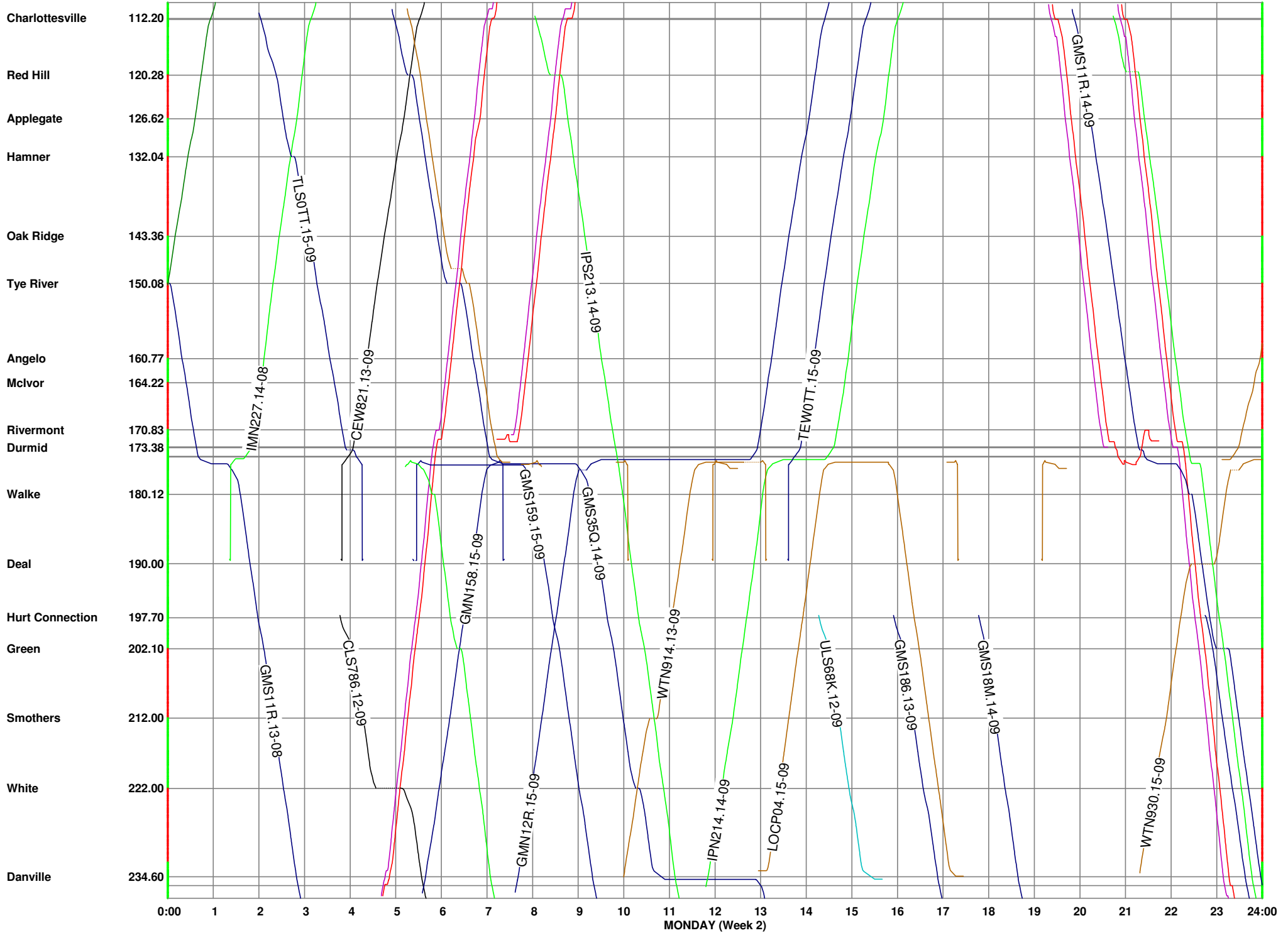
OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

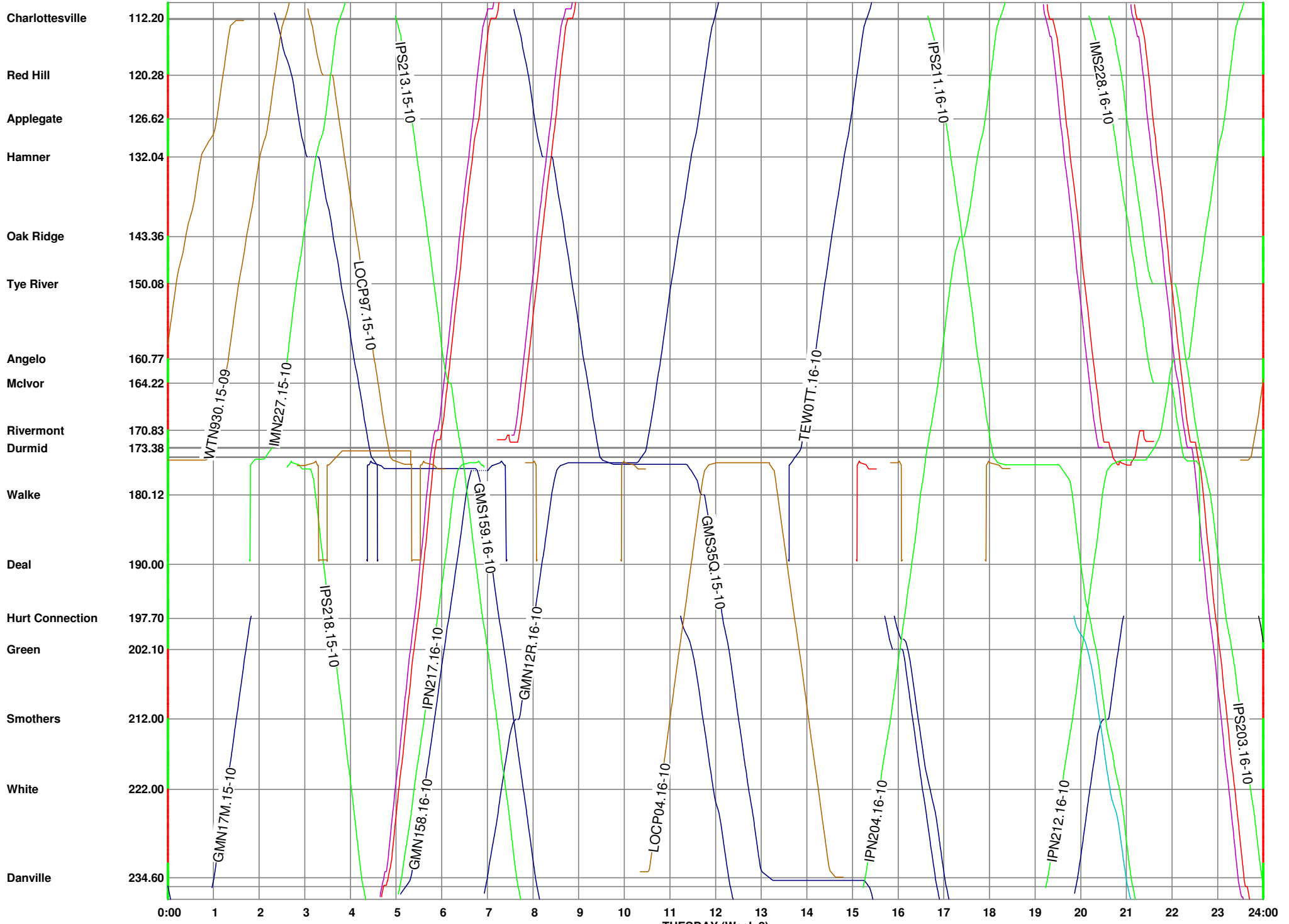
Warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case 2012A Base Case







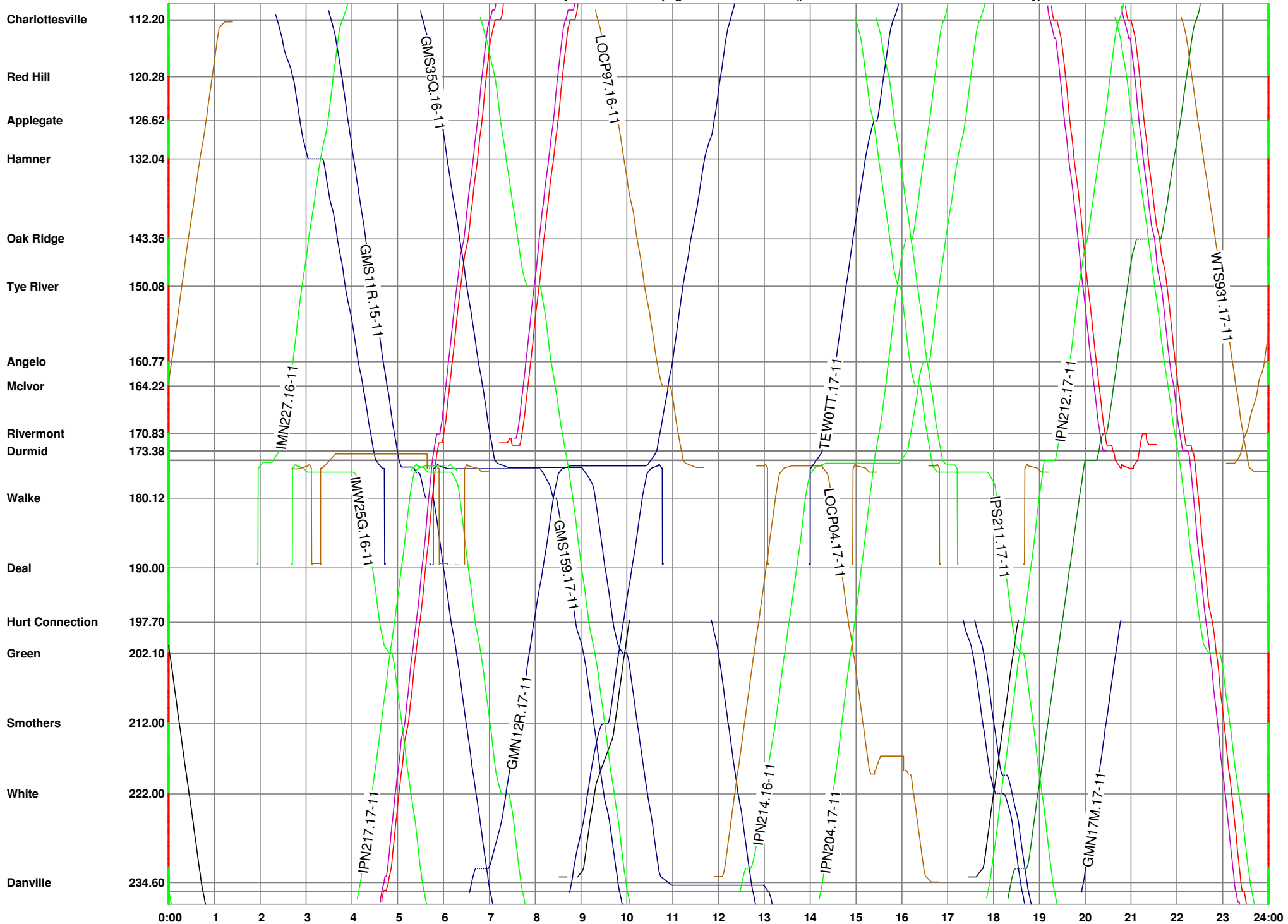


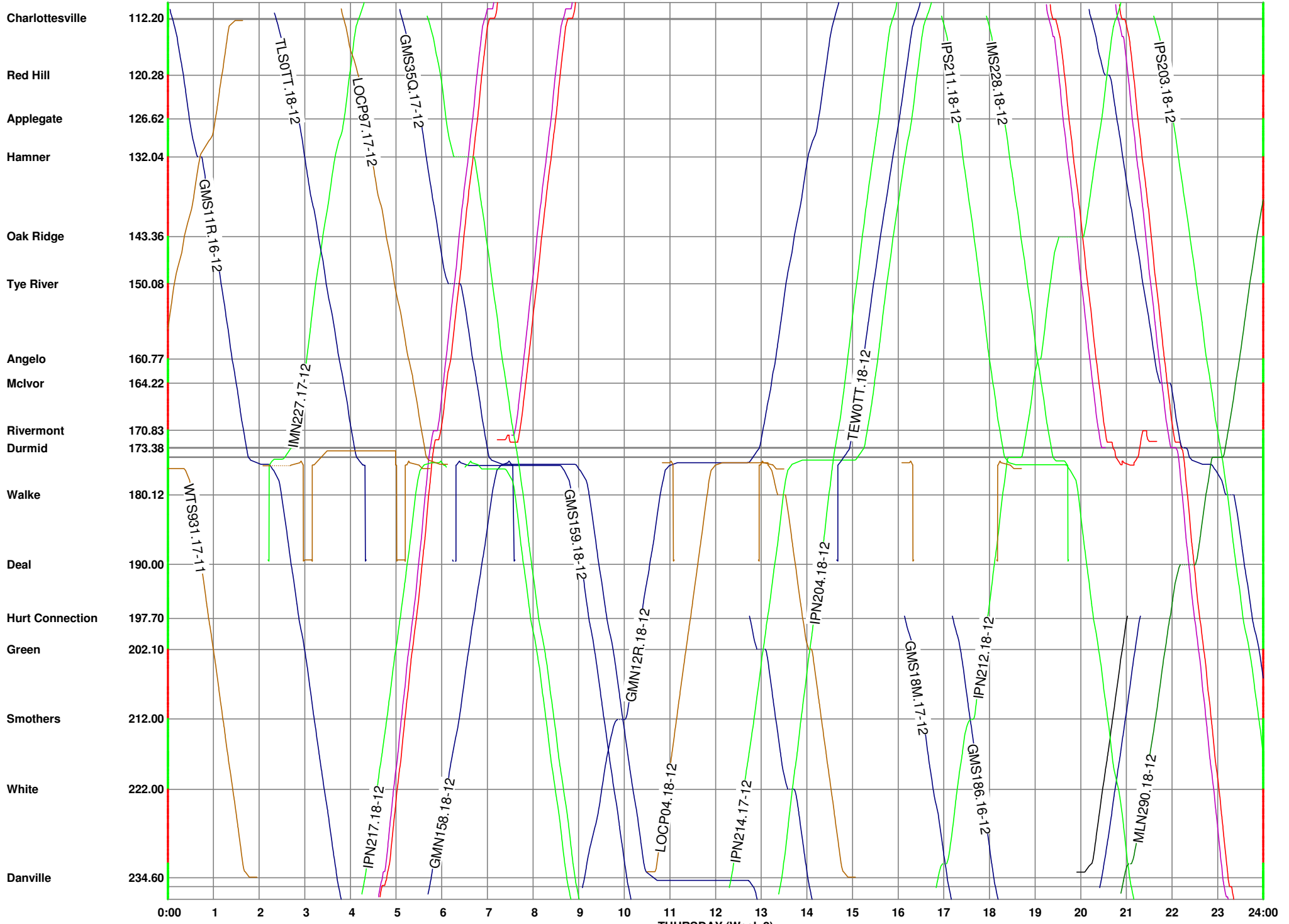
TUESDAY (Week 2)

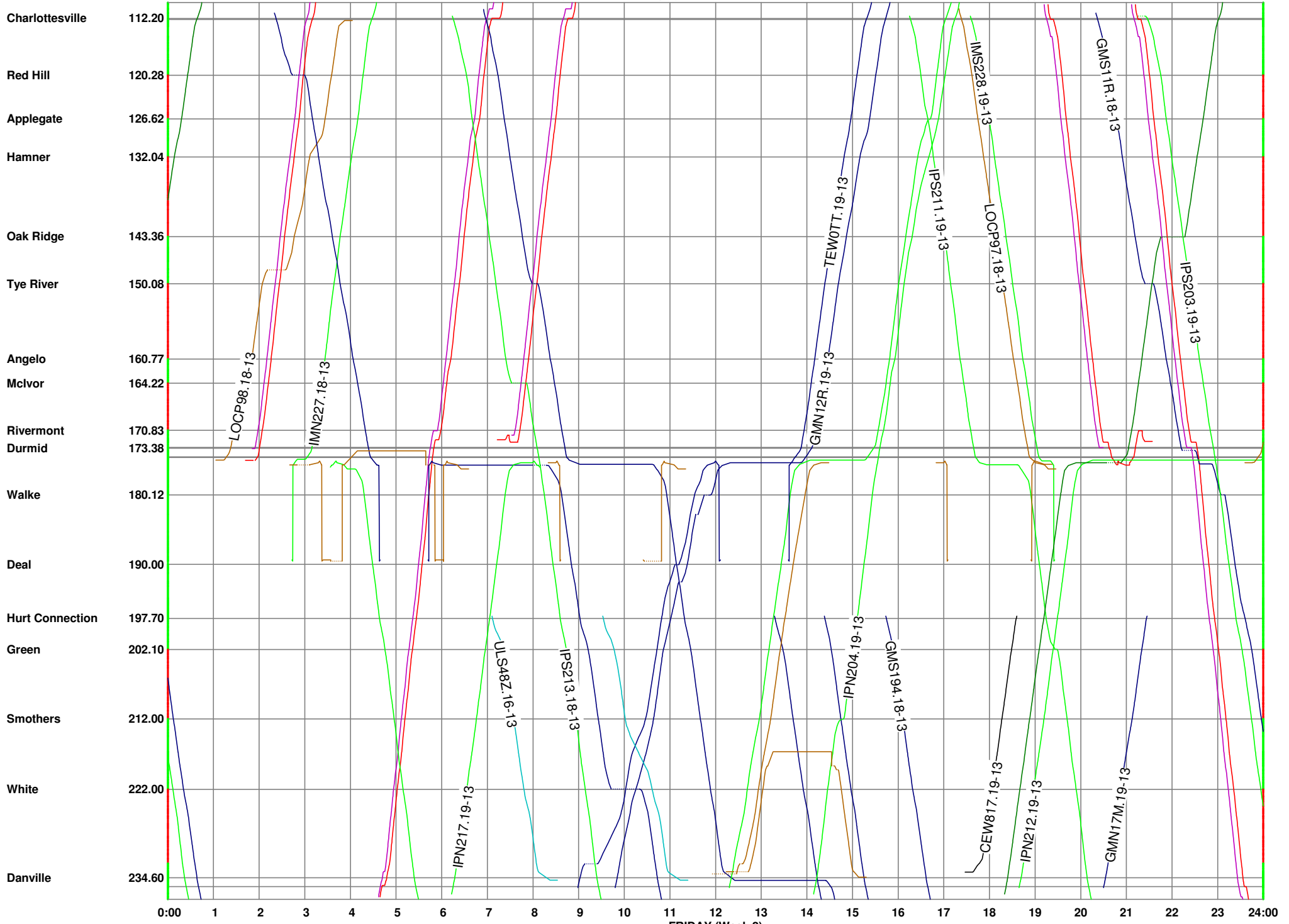
All times displayed in Eastern time

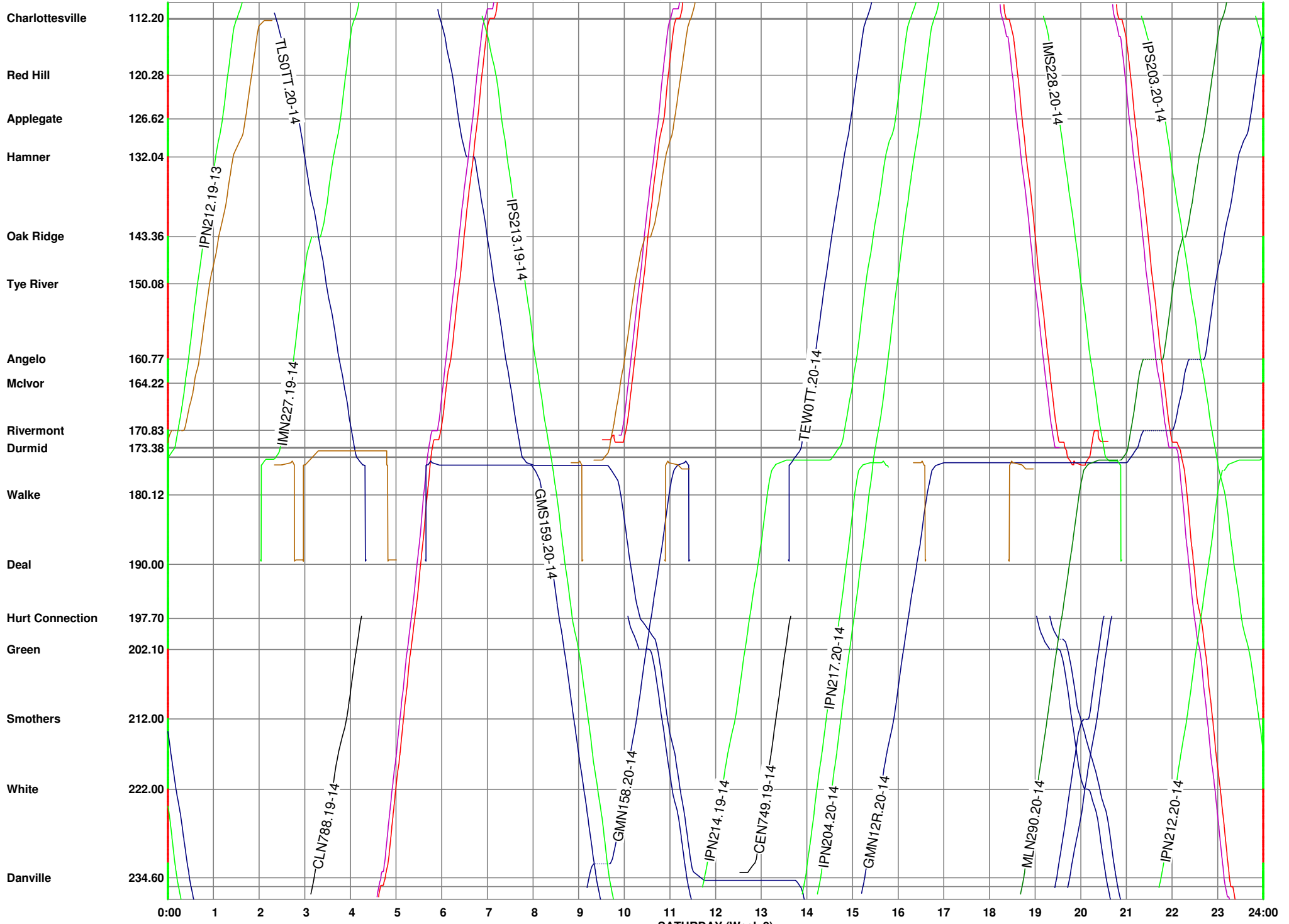
RTC version: 67T L67T

Run time: 02 August 2013 10:36:50







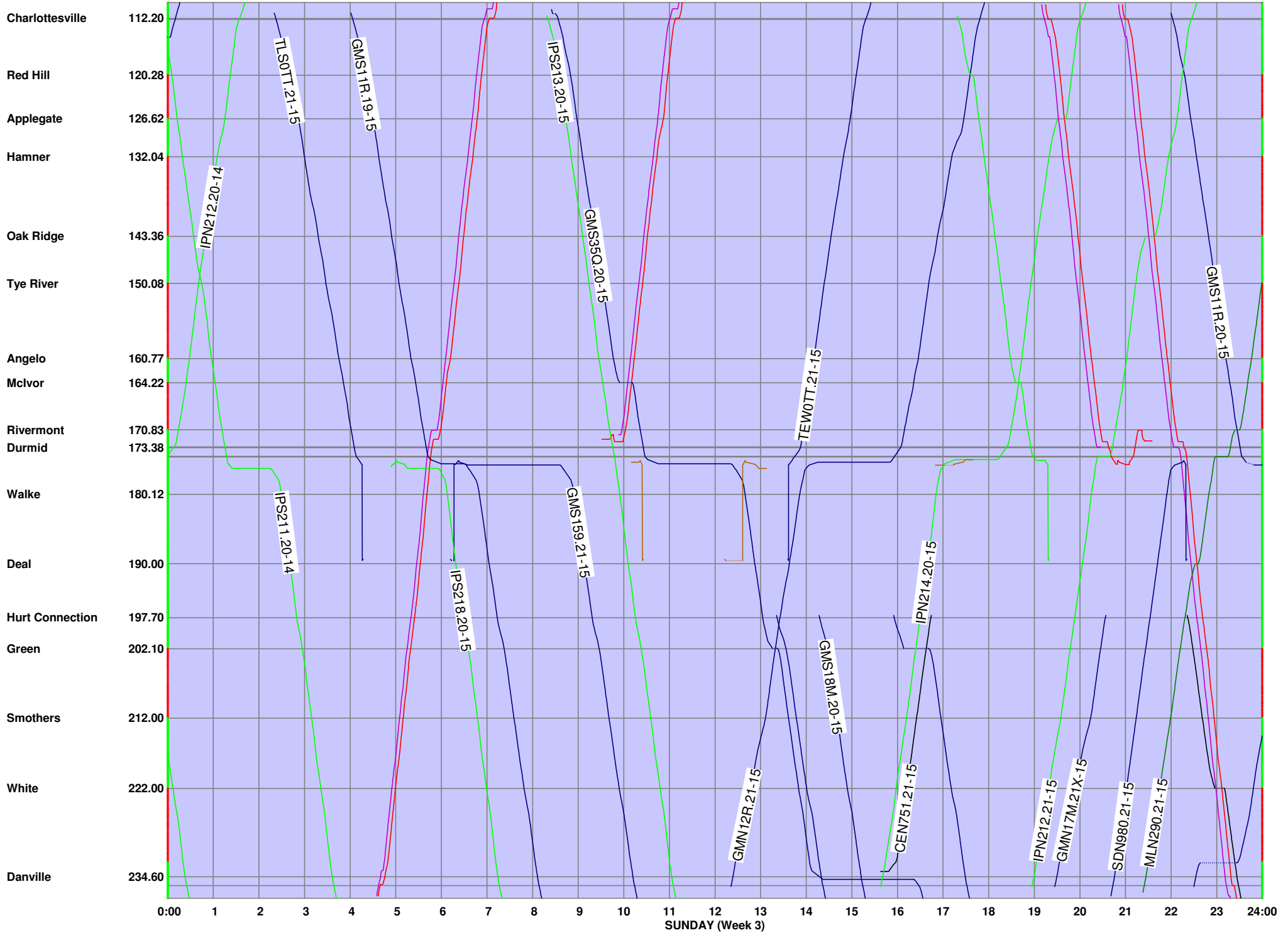


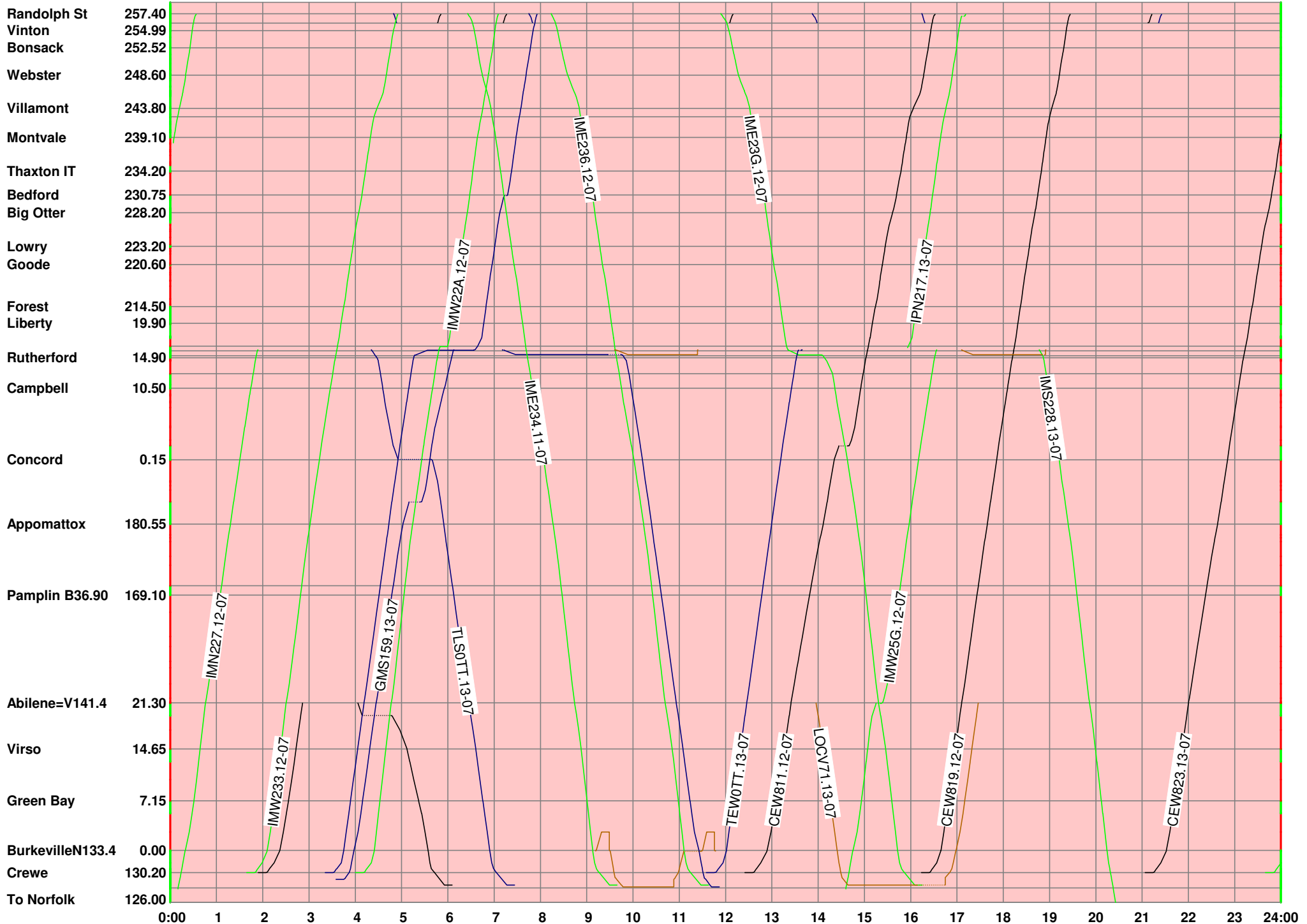
SATURDAY (Week 2)

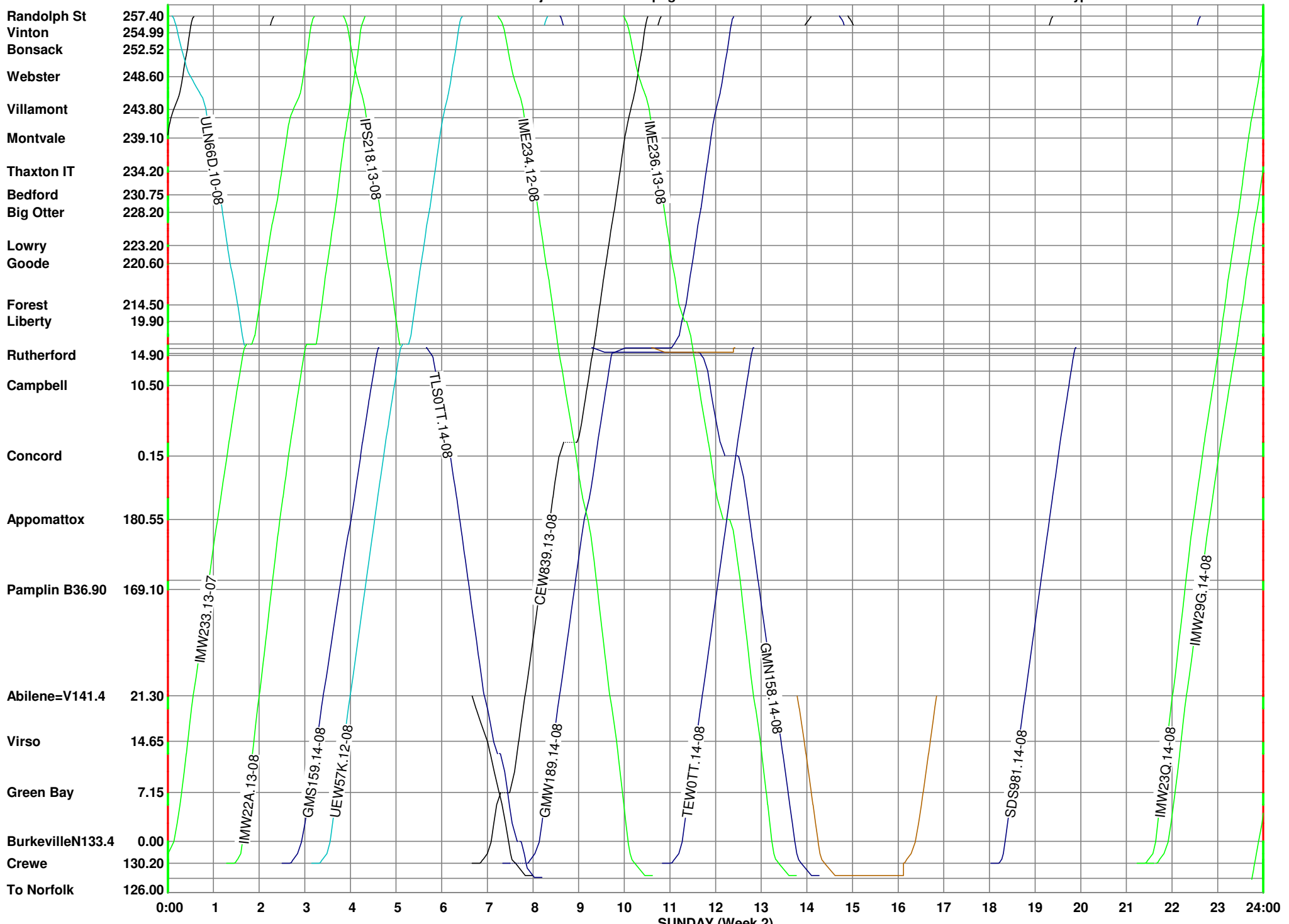
All times displayed in Eastern time

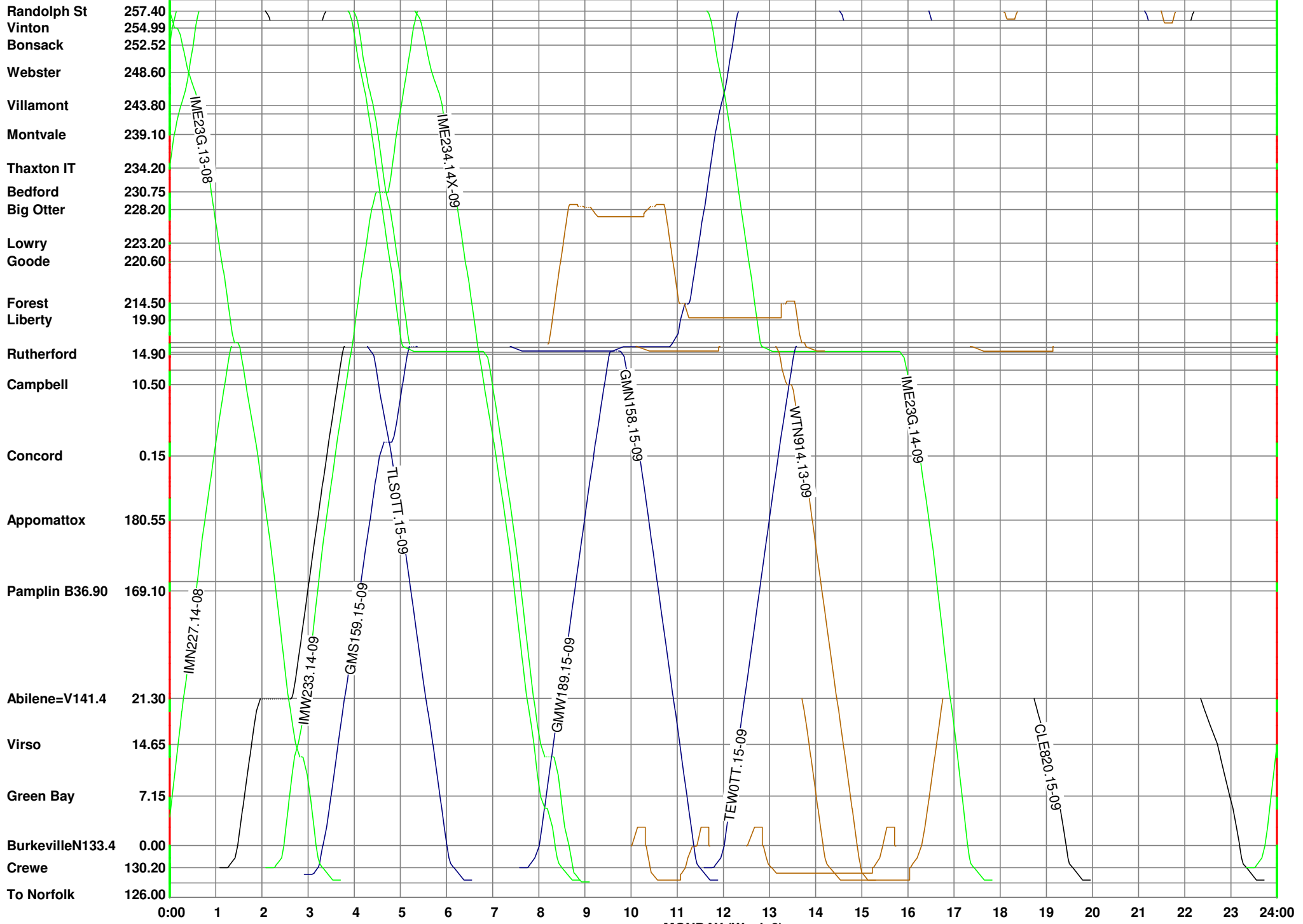
RTC version: 67T L67T

Run time: 02 August 2013 10:37:48

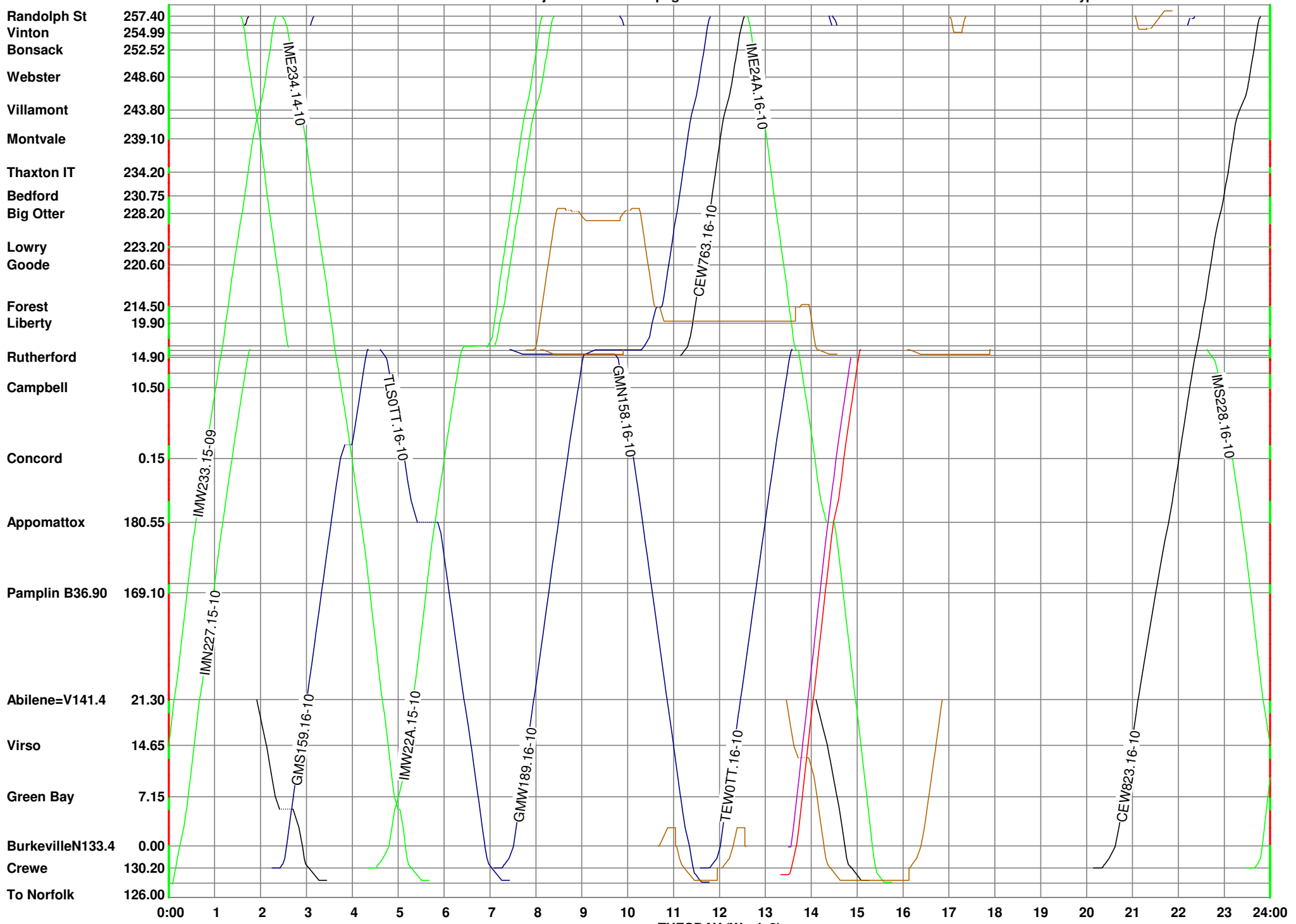


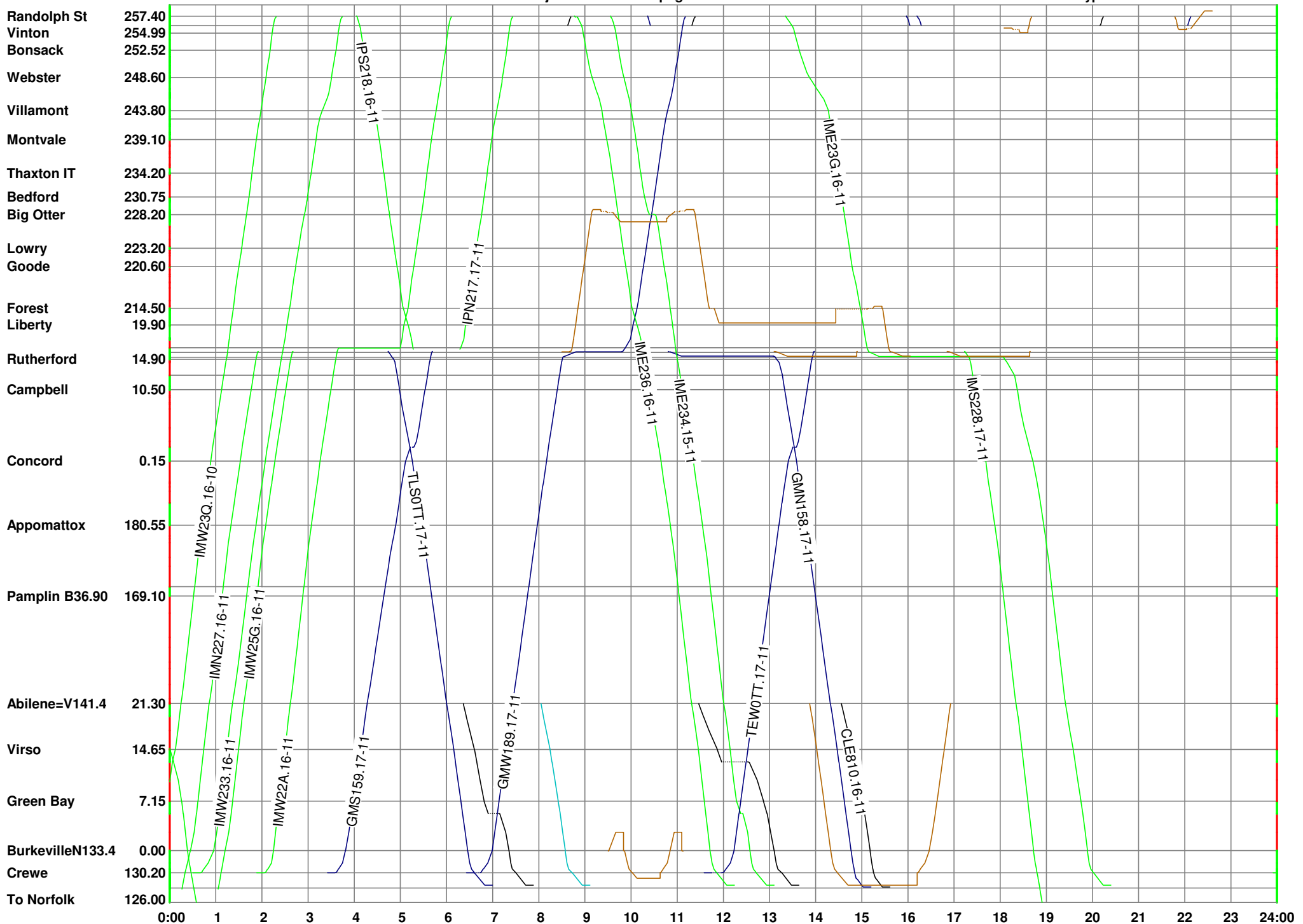


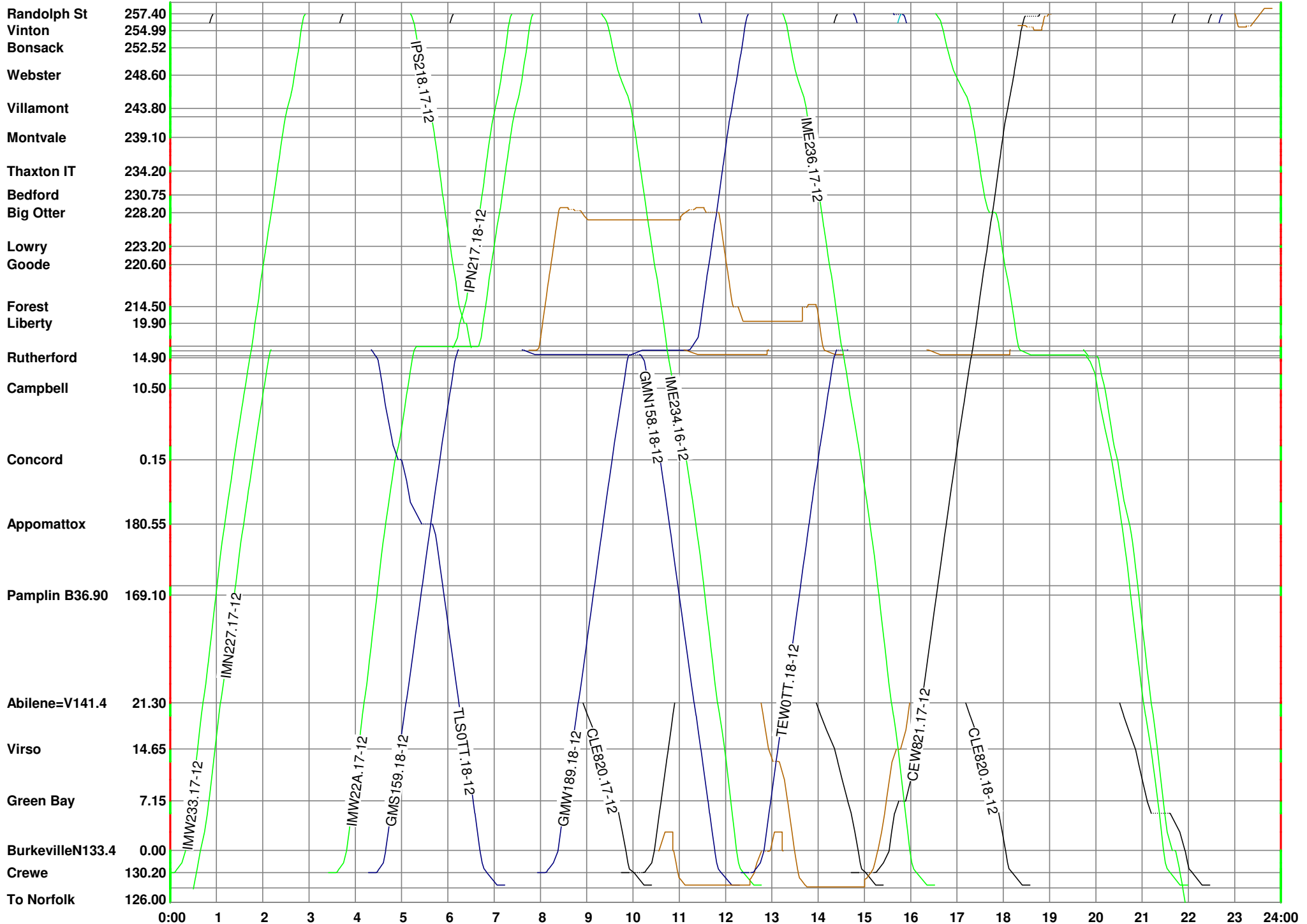


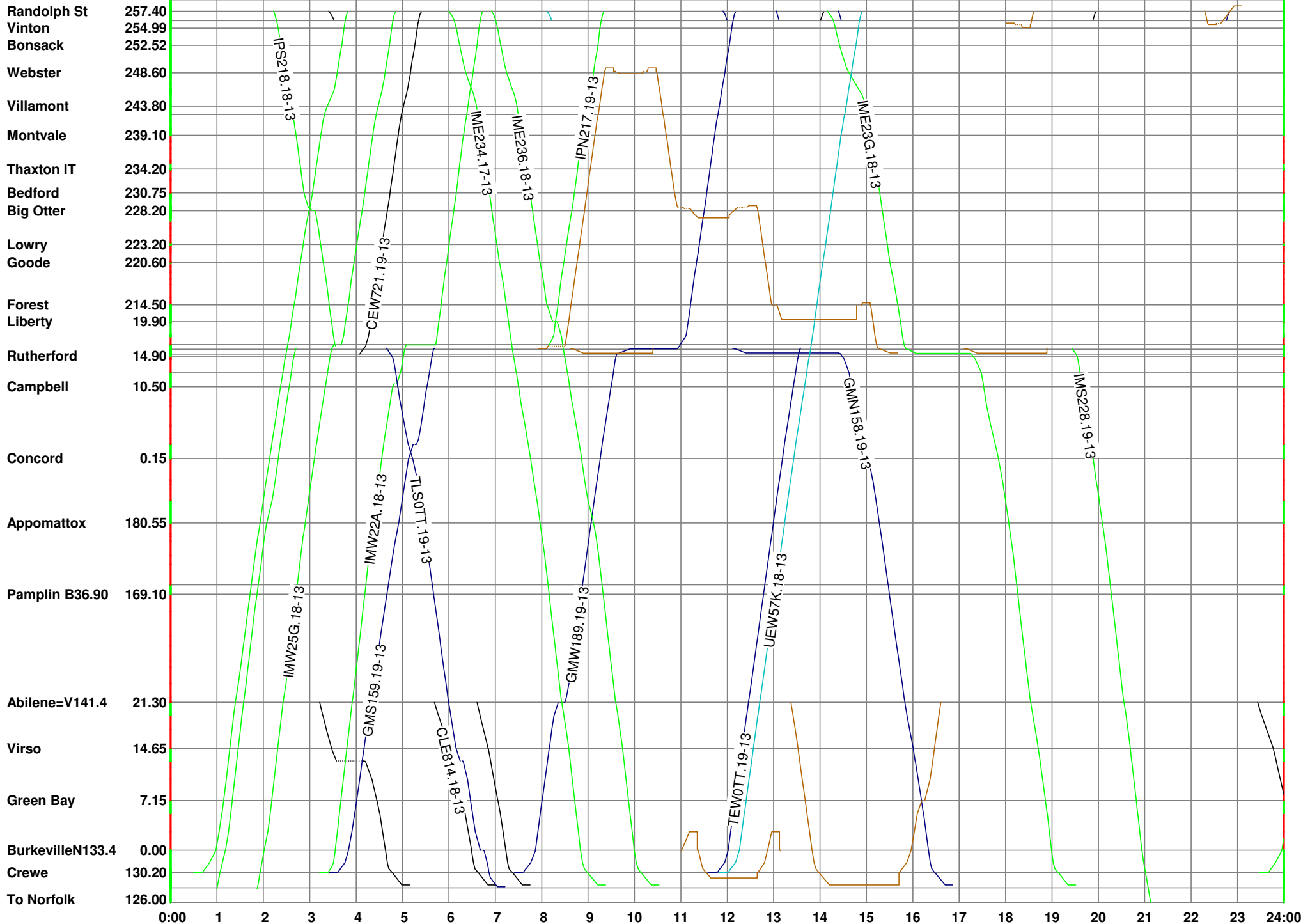


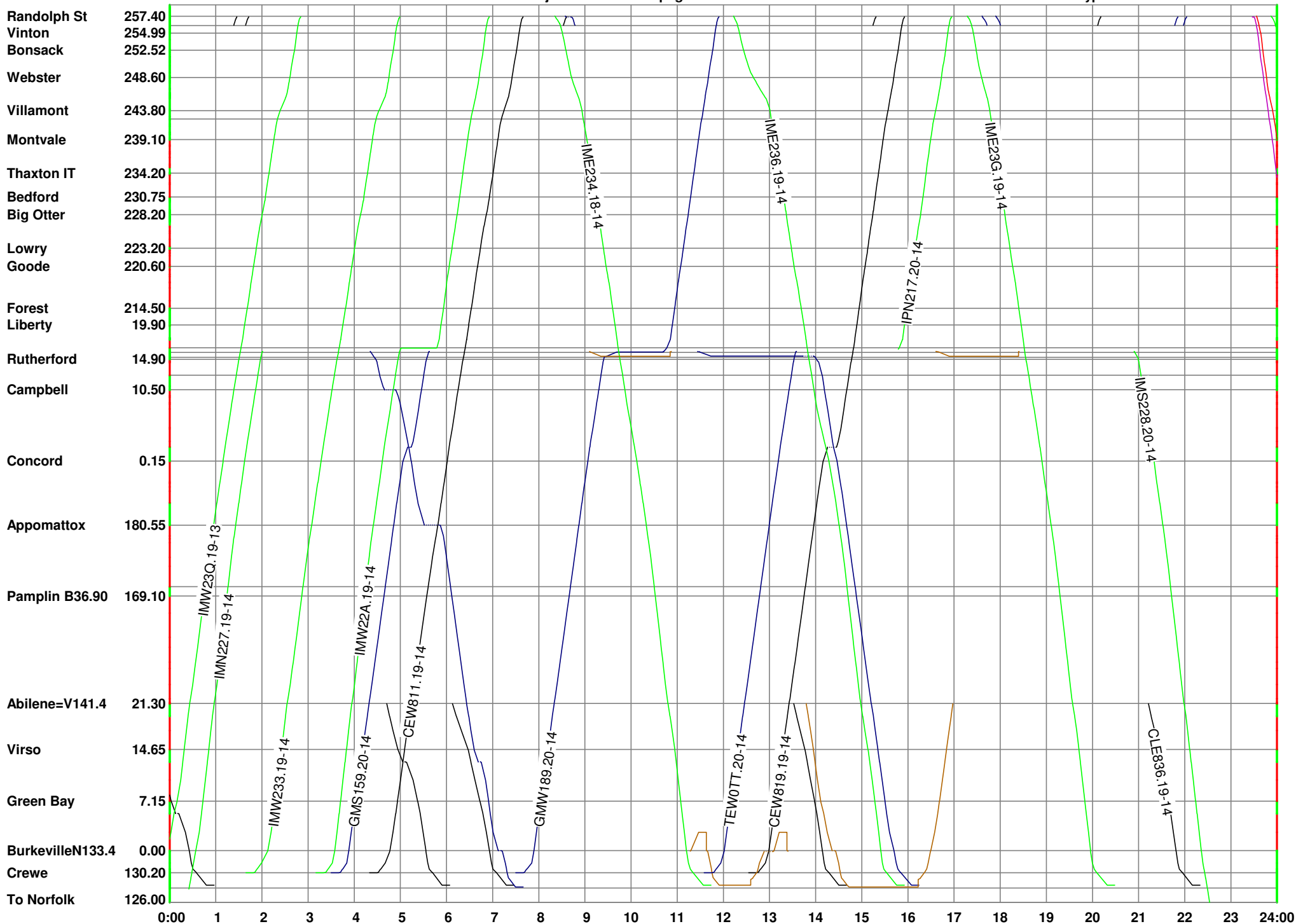
MONDAY (Week 2)



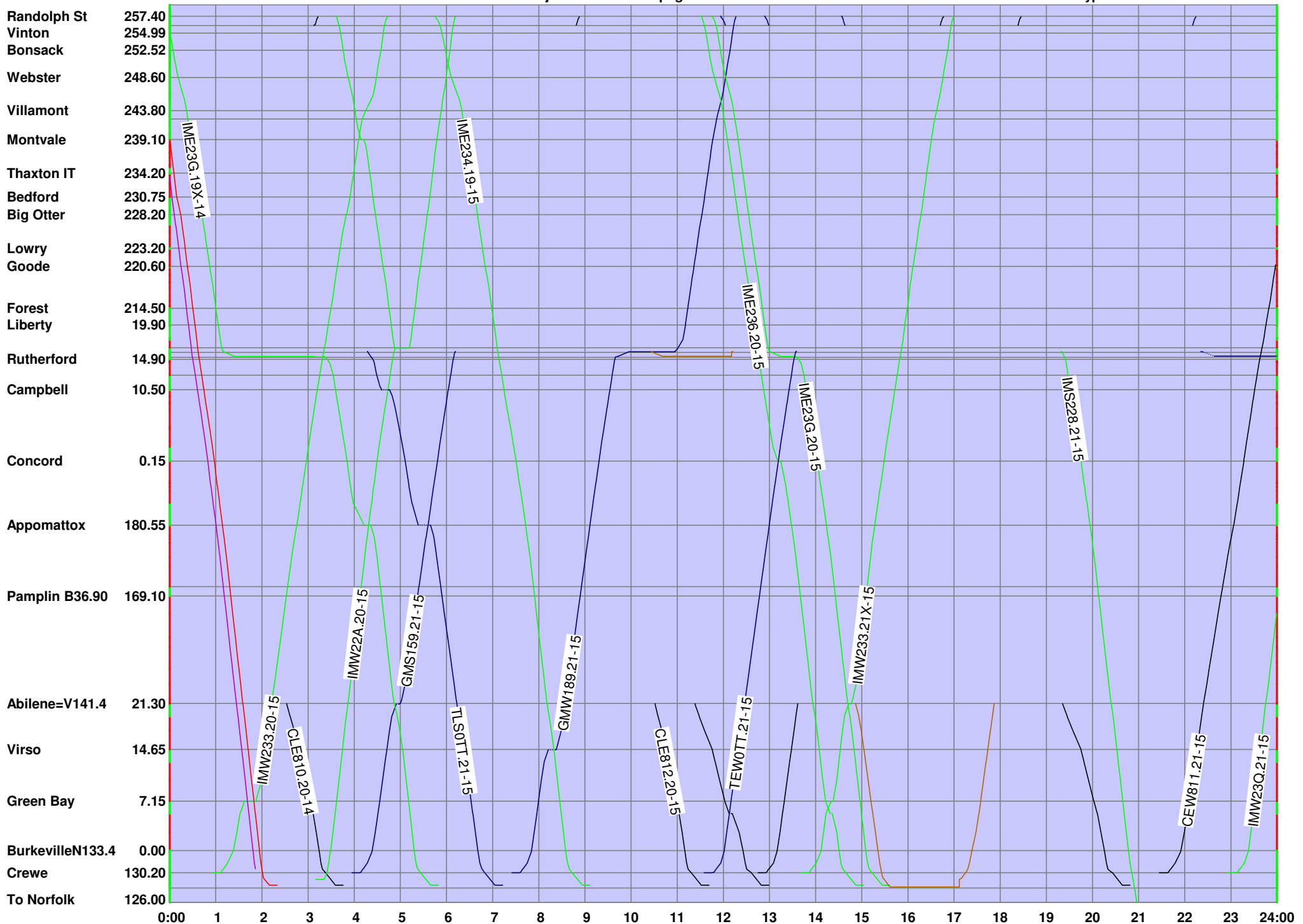




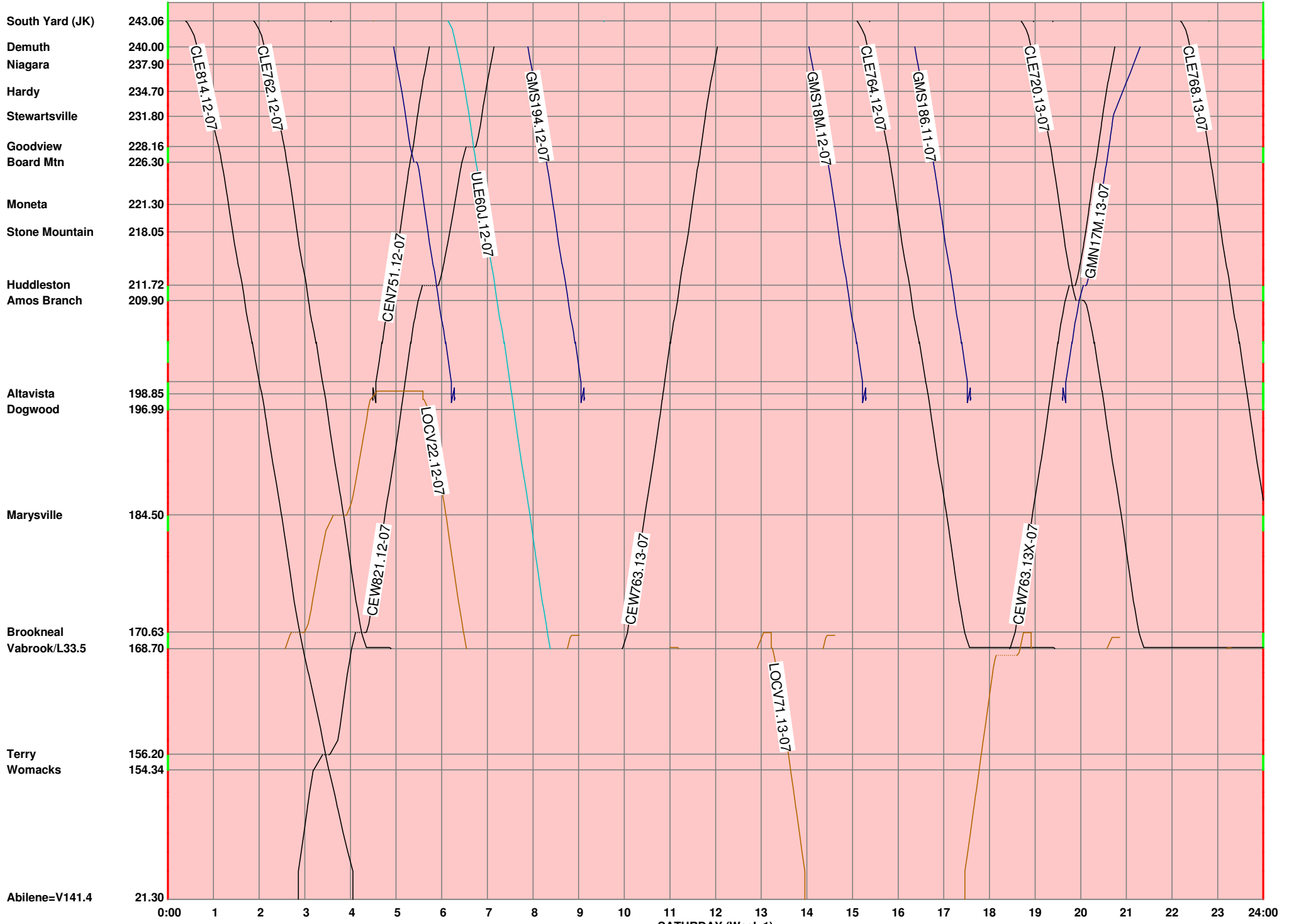


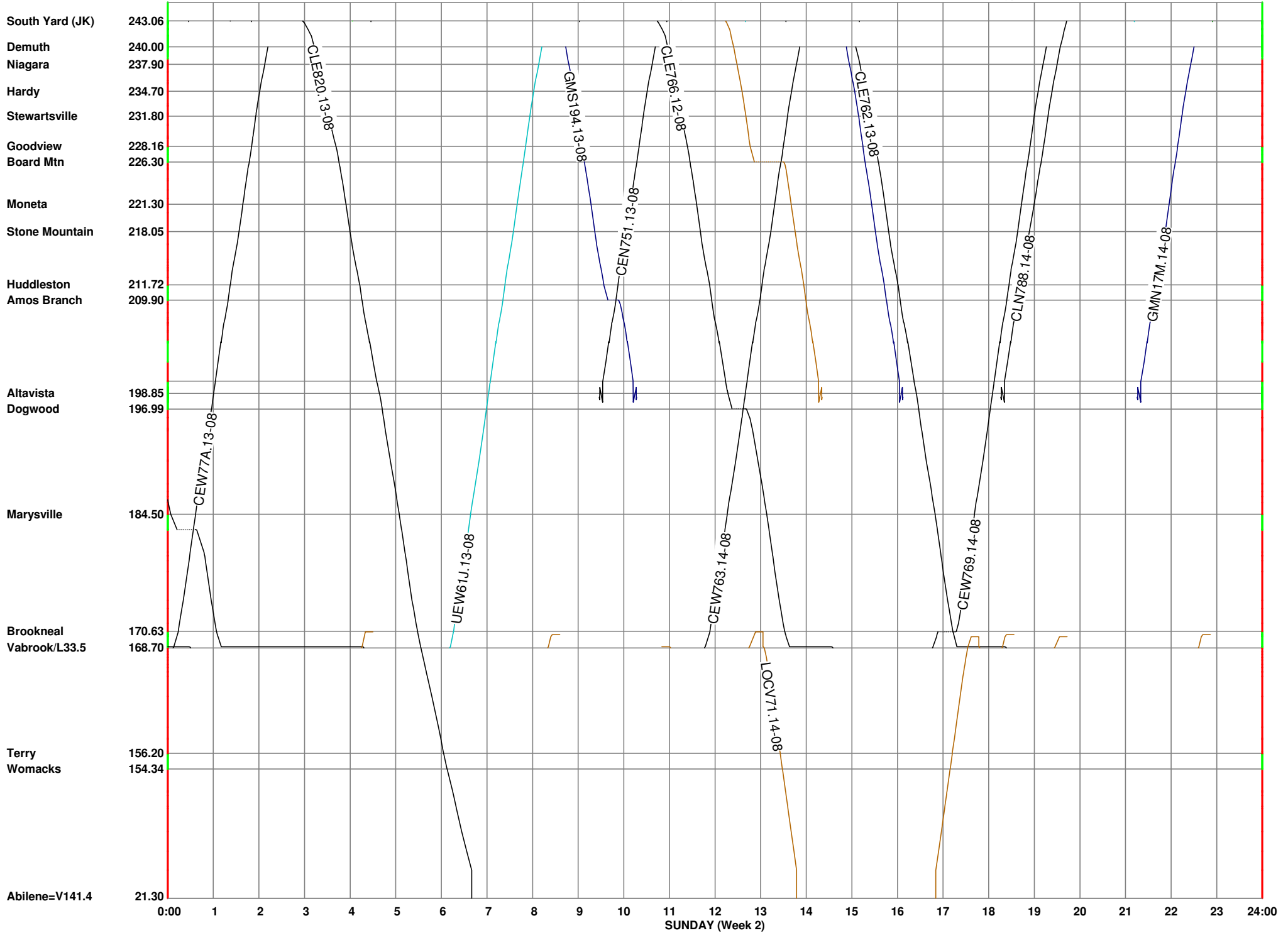


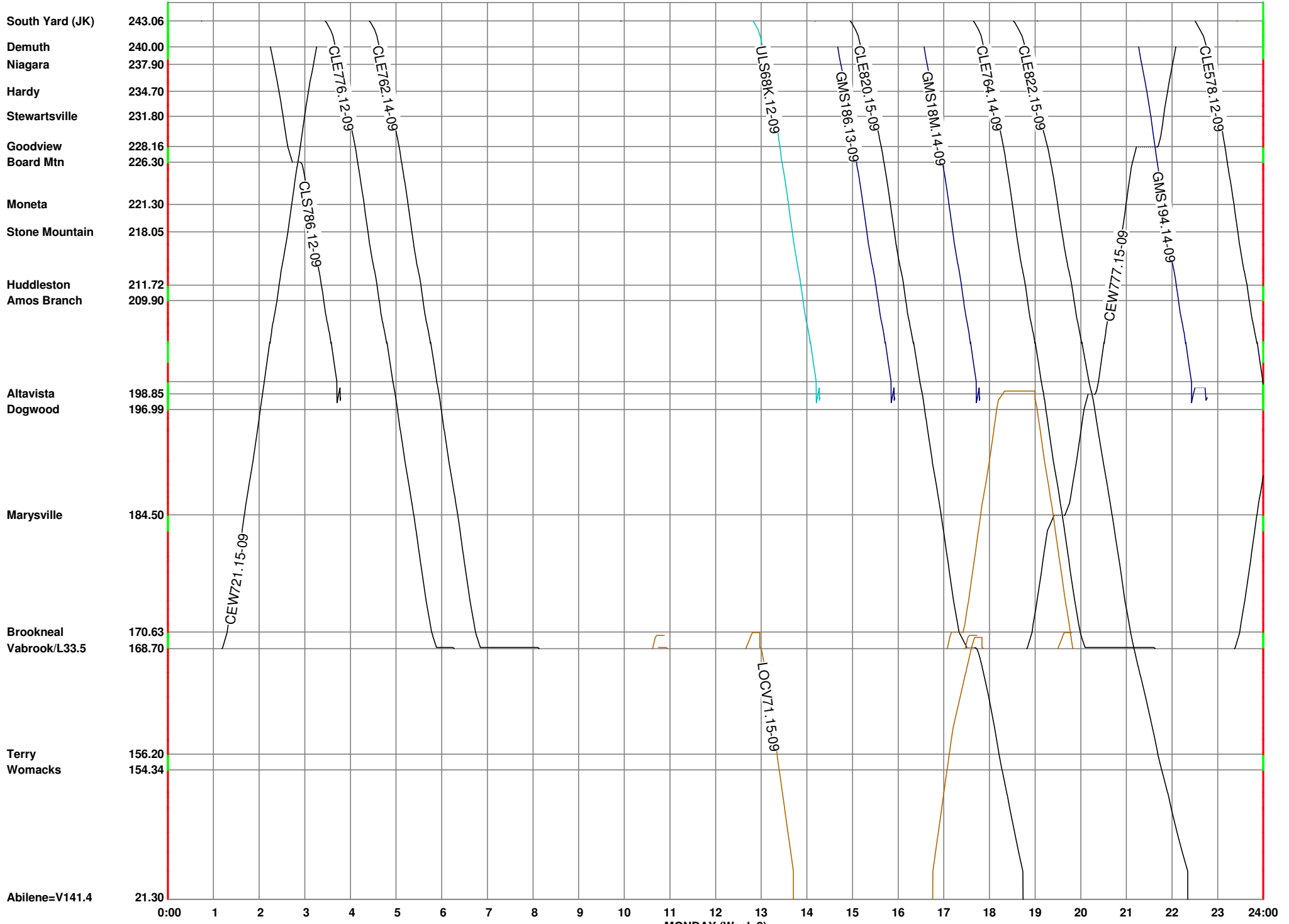
0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00
SATURDAY (Week 2)

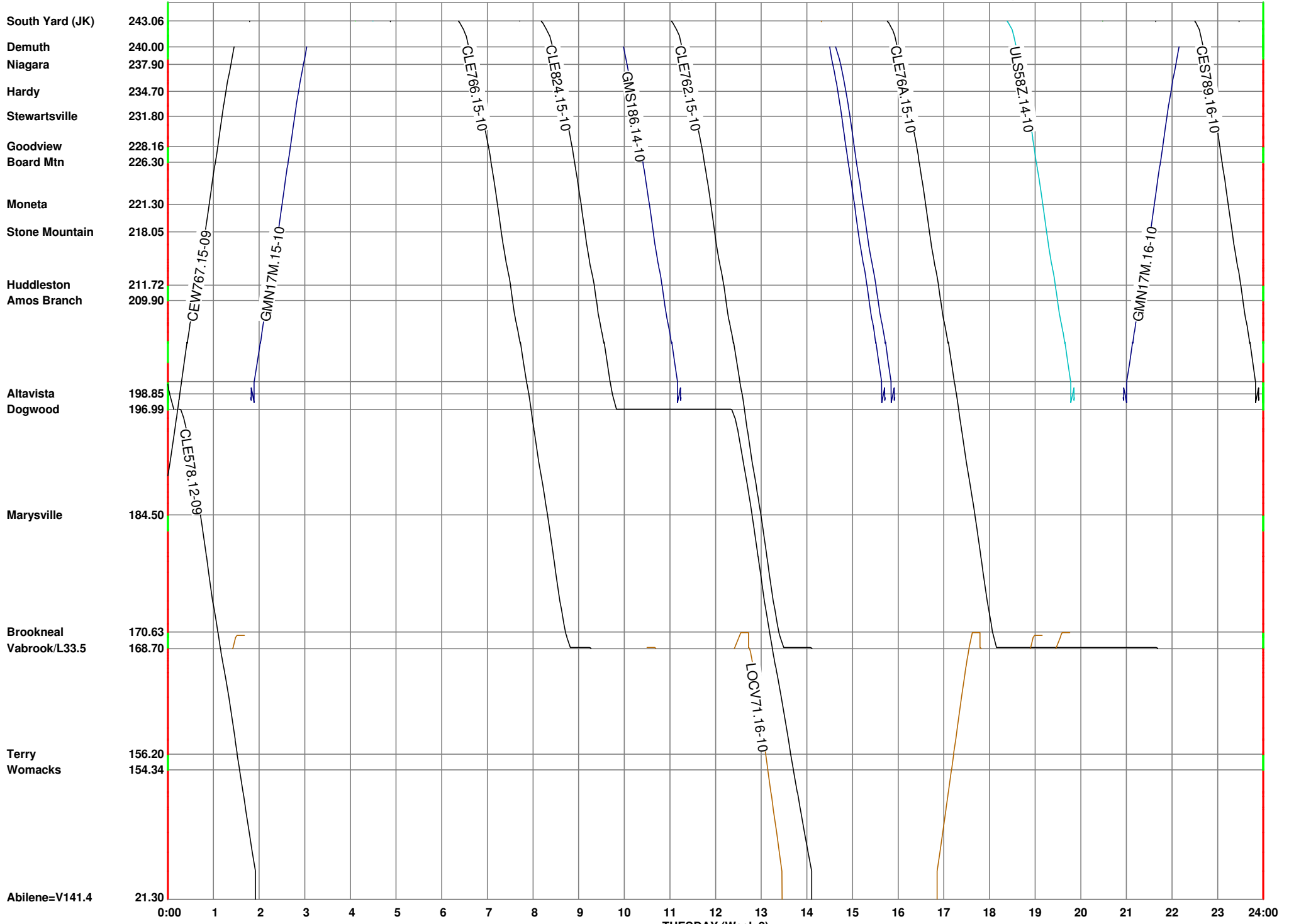


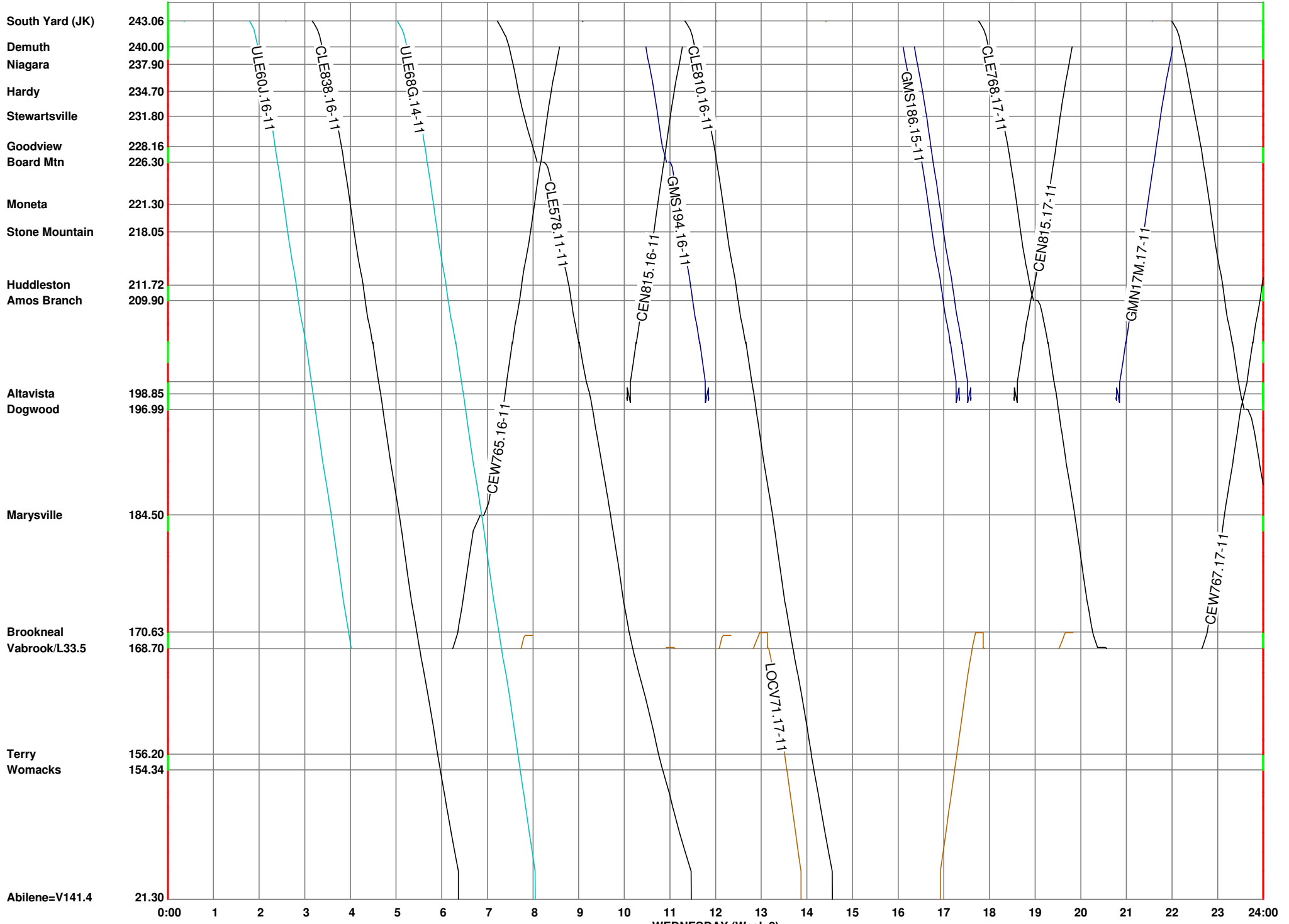
SUNDAY (Week 3)

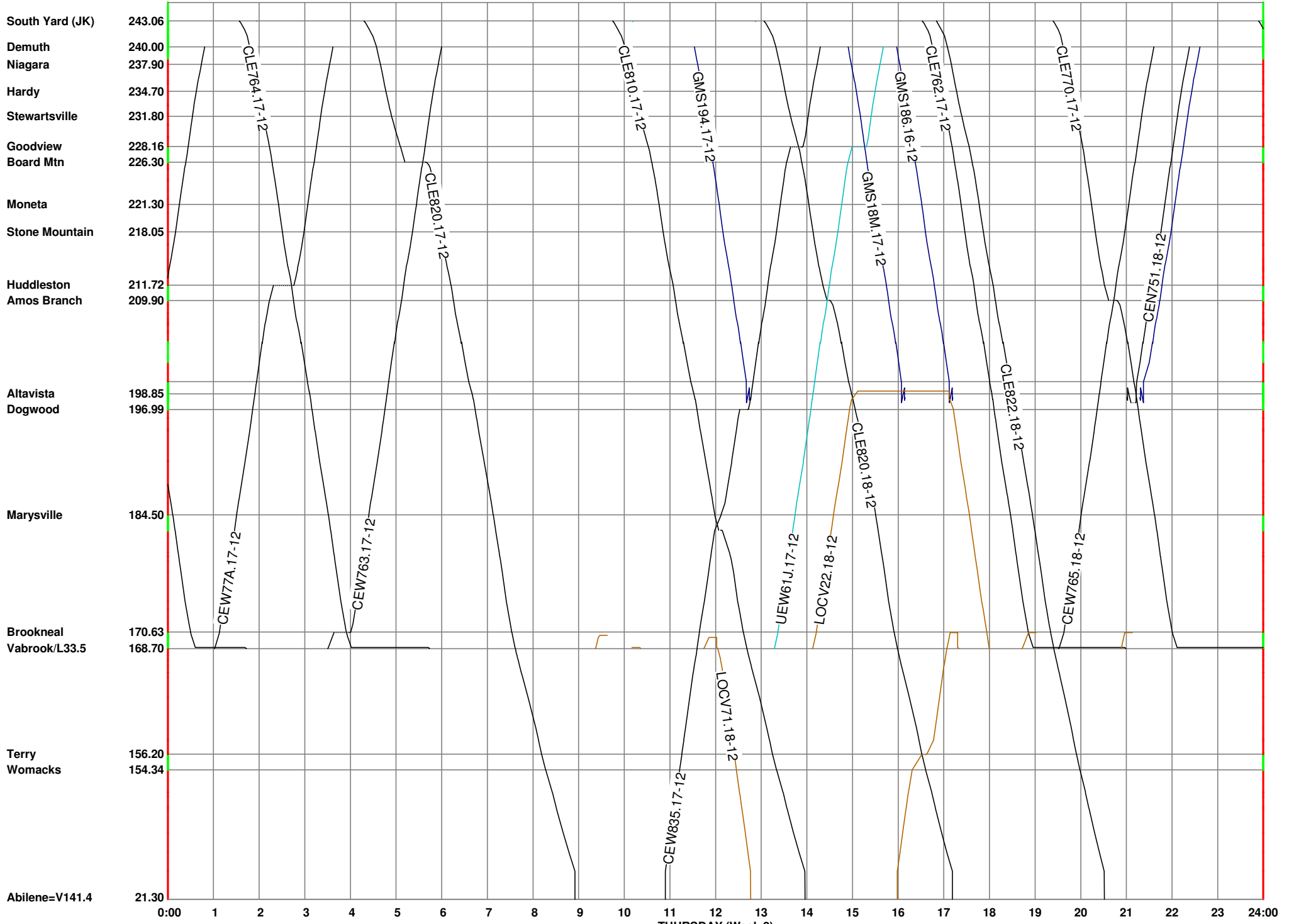










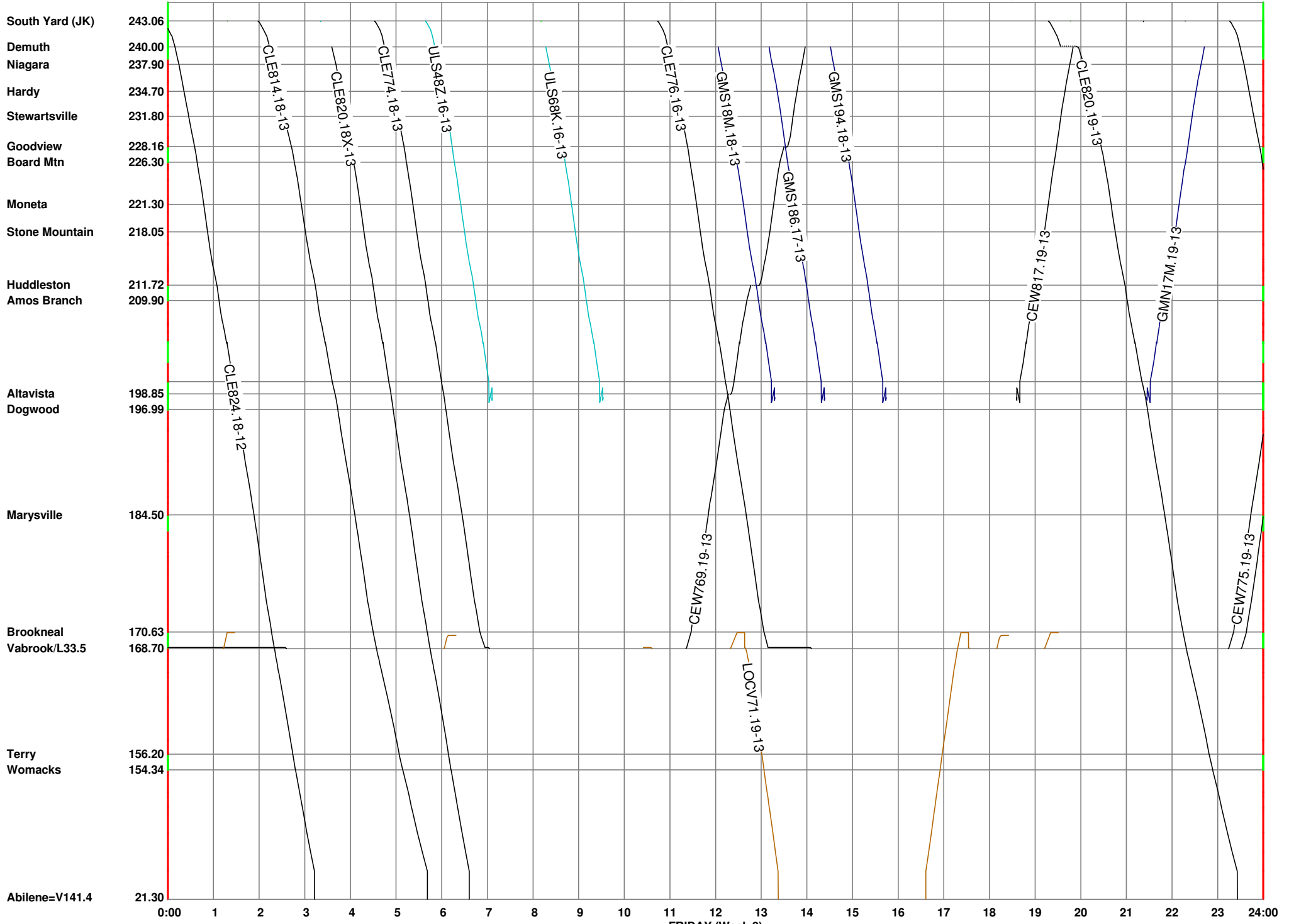


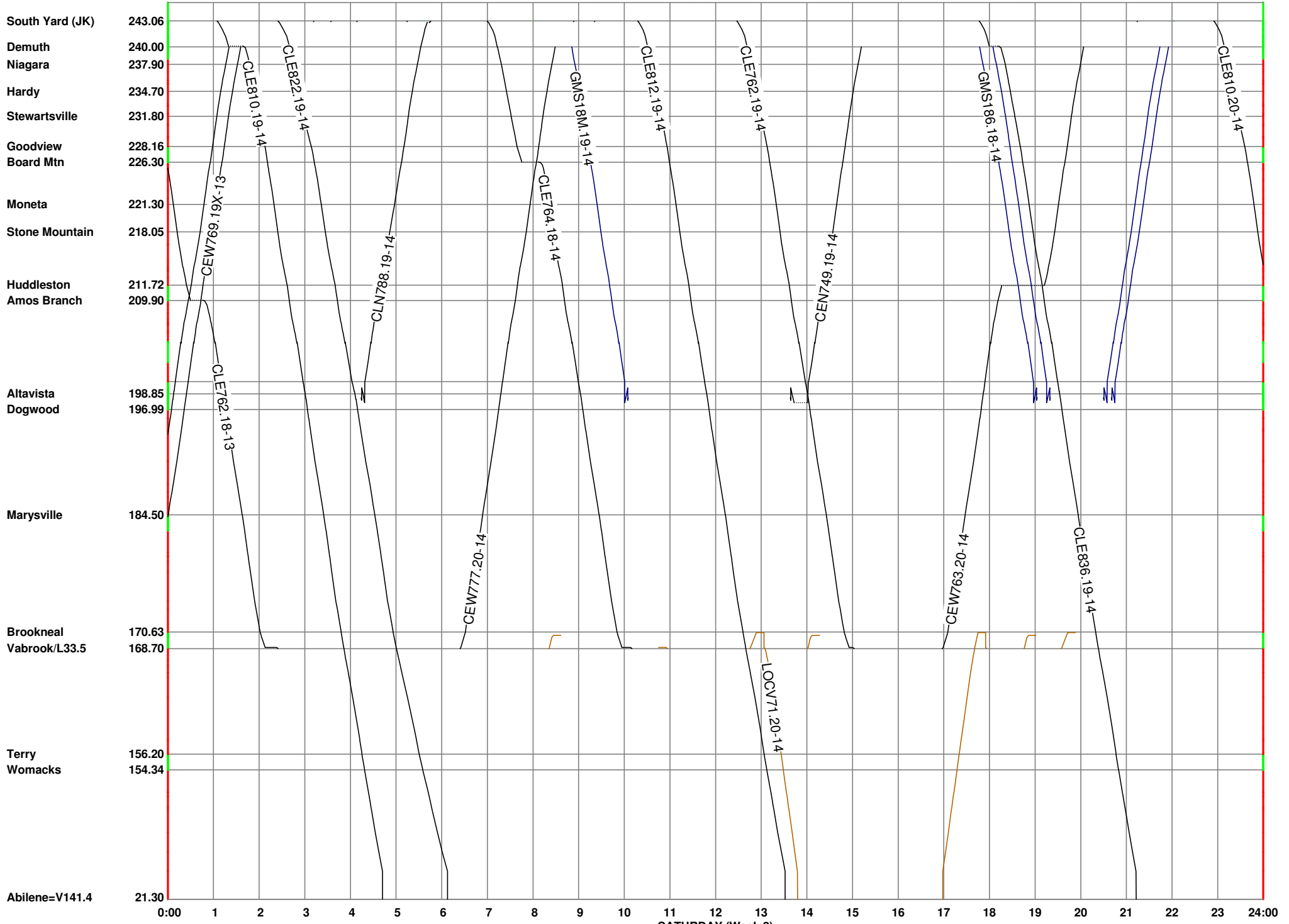
THURSDAY (Week 2)

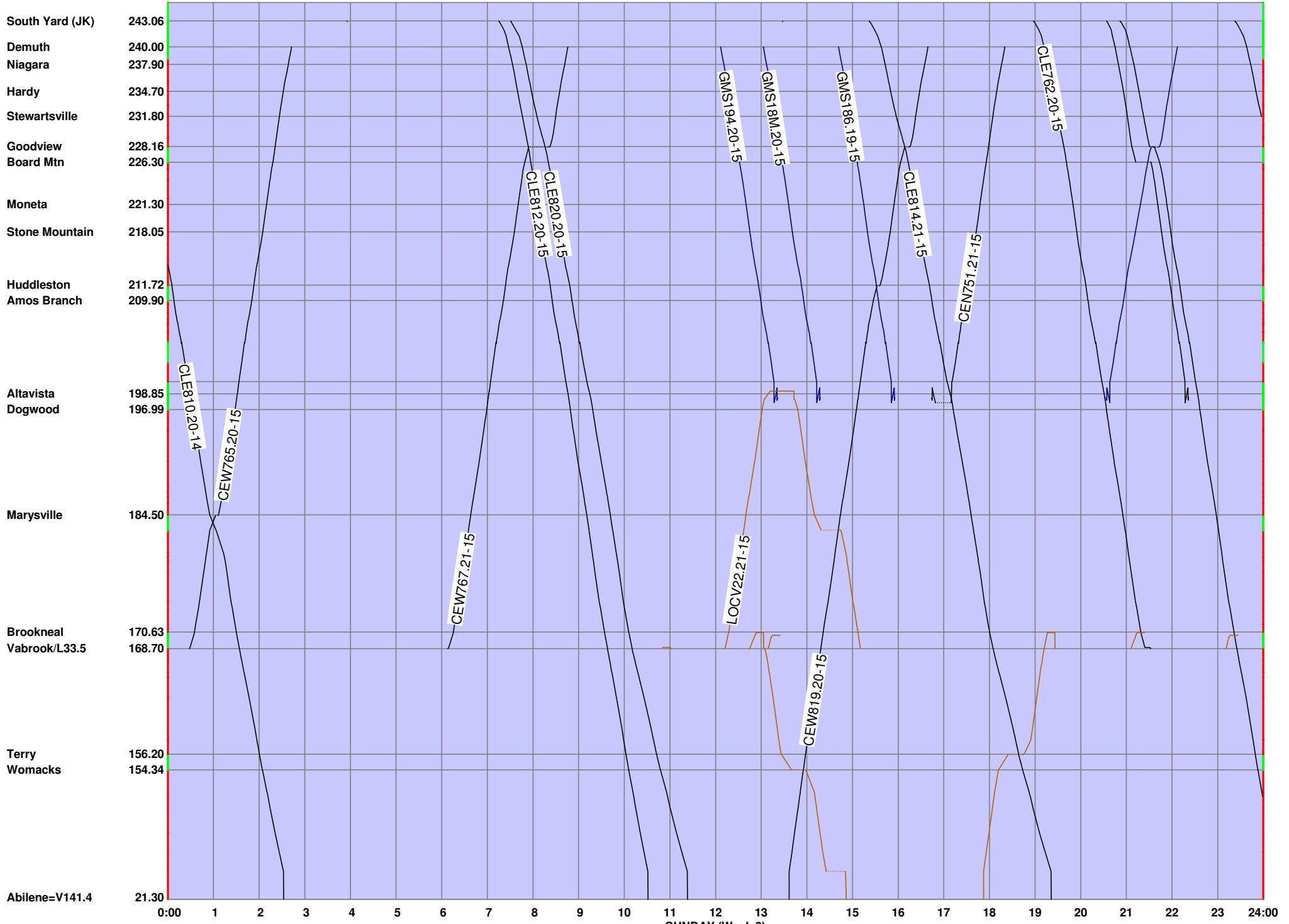
All times displayed in Eastern time

RTC version: 67T L67T

Run time: 02 August 2013 10:41:11







South Yard (JK) 243.06
 Demuth 240.00
 Niagara 237.90
 Hardy 234.70
 Stewartville 231.80
 Goodview 228.16
 Board Mtn 226.30
 Moneta 221.30
 Stone Mountain 218.05
 Huddleston 211.72
 Amos Branch 209.90
 Altavista 198.85
 Dogwood 196.99
 Marysville 184.50
 Brookneal 170.63
 Vabrook/L33.5 168.70
 Terry 156.20
 Womacks 154.34
 Abilene=V141.4 21.30

0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00

SUNDAY (Week 3)

Case: VA12B 2012PgrNoInf VA Project 2012 New pgr trains No infrastructure

Elapsed execution time: 0:44 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 975 (522M + 453P) Gross conflicts = 1,093 (572M + 521P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 11 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	31	42.018	2.15	0:10:02	0:01:30	0	0:01:36	3:14:33	0	3:16:10	3704.9	8757.6	-----
E Premium Intermodal	59	32.401	7.10	1:00:48	0	0:00:03	0:10:39	7:06:54	0	7:17:33	6012.4	41674.0	-----
E Intermodal	55	31.015	7.04	1:08:07	0	0:00:21	0:11:56	8:09:45	0:00:06	8:21:36	6625.2	42043.9	-----
F Multi-level	12	27.032	16.95	0:02:55	0	0	0:03:17	0:22:23	0	1:01:41	694.3	3496.3	-----
F General Merchandise	114	24.305	9.79	4:00:23	0	0:00:54	1:05:46	16:16:42	0	17:22:10	10455.4	86243.4	-----
F Coal	103	22.244	11.50	1:21:36	0	0	1:06:13	12:20:31	0:00:38	14:02:38	7532.7	76442.8	-----
F Unit	19	24.603	8.09	0:05:10	0	0	0:03:05	1:19:24	0:00:38	1:22:29	1143.9	9213.4	-----
F Local	77	12.006	9.29	5:17:45	0	0:07:46	0:10:38	10:12:21	0:00:02	10:22:58	3157.3	9664.3	-----
F Work Train	6	26.050	21.05	0:03:30	0	0:00:00	0:03:21	0:19:27	0:00:31	0:22:49	594.5	3852.0	-----
F Yard	19	2.916	10.90	1:11:20	0	0:00:38	0:01:46	2:04:35	0	2:05:24	155.7	144.7	-----
All train types	495	24.033	9.12	16:09:36	0:01:30	0:09:43	4:10:22	65:02:40	0:01:56	69:11:31	40076.4	281532.5	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	31	42.018	2.15	0:10:02	0:01:30	0	0:01:36	3:14:33	0	3:16:10	3704.9	8757.6	2.61	-----
Expedited	114	31.659	7.07	2:08:55	0	0:00:24	0:22:35	15:16:39	0:00:06	16:15:10	12637.6	83717.9	10.73	-----
Freight	350	20.110	10.65	13:14:39	0	0:09:19	3:10:10	45:19:26	0:01:49	49:04:10	23733.9	189057.0	20.77	-----
All groups	495	24.033	9.12	16:09:36	0:01:30	0:09:43	4:10:22	65:02:40	0:01:56	69:11:31	40076.4	281532.5	15.93	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case 12B 2012 New pgr trns; no new infrastructure

Case: VA12B 2012PgrNoInf VA Project 2012 New pgr trains No infrastructure

Elapsed execution time: 0:44 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 975 (522M + 453P) Gross conflicts = 1,093 (572M + 521P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 11 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	30	44.361	0.44	0:06:26	0:01:30	0	0:00:14	2:11:02	0	2:14:41	2780.9	6527.3	-----
E	Premium Intermodal	47	33.306	4.05	0:22:48	0	0:00:03	0:05:15	6:03:52	0	6:14:08	5267.0	37436.2	-----
E	Intermodal	12	29.753	7.11	0:02:50	0	0:00:17	0:01:33	1:00:24	0	1:02:19	783.2	4426.0	-----
F	Multi-level	5	30.772	15.50	0:01:45	0	0	0:02:32	0:17:37	0	0:20:43	637.7	2913.5	-----
F	General Merchandise	77	22.869	7.39	2:20:03	0	0:00:23	0:12:02	9:00:33	0	10:03:02	5557.9	47954.1	-----
F	Coal	11	27.097	14.77	0:02:50	0	0	0:01:45	0:12:48	0	0:16:26	445.6	4029.1	-----
F	Unit	5	22.491	0.72	0:02:20	0	0	0:00:03	0:08:36	0	0:09:53	222.6	2427.4	-----
F	Local	16	25.653	5.07	0:10:22	0	0:00:13	0:01:42	1:19:26	0	1:21:39	1171.3	3155.8	-----
F	Work Train	6	26.504	12.29	0:03:30	0	0:00:00	0:01:34	0:15:53	0:00:31	0:17:48	472.1	3462.8	-----
F	Yard	19	3.523	21.45	0:15:50	0	0:00:21	0:02:16	1:04:55	0	1:04:45	101.3	127.0	-----
All train types		228	27.705	6.27	5:16:44	0:01:30	0:01:18	1:05:00	23:23:10	0:00:31	26:05:28	17439.7	112459.3	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	30	44.361	0.44	0:06:26	0:01:30	0	0:00:14	2:11:02	0	2:14:41	2780.9	6527.3	0.52	-----
Expedited	59	32.799	4.49	1:01:38	0	0:00:20	0:06:49	7:04:16	0	7:16:27	6050.2	41862.2	6.77	-----
Freight	139	22.516	8.58	4:08:40	0	0:00:58	0:21:56	14:07:51	0:00:31	15:22:19	8608.5	64069.7	15.29	-----
All groups	228	27.705	6.27	5:16:44	0:01:30	0:01:18	1:05:00	23:23:10	0:00:31	26:05:28	17439.7	112459.3	9.98	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late.

All others are on time.

warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case 12B 2012 New pgr trns; no new infrastructure

Case: VA12B 2012PgrNoInf VA Project 2012 New pgr trains No infrastructure

Elapsed execution time: 0:44 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 975 (522M + 453P) Gross conflicts = 1,093 (572M + 521P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 11 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	16	40.311	0.00	0:03:21	0	0	0	0:18:46	0	0:21:58	885.7	2165.5	-----
E	Premium Intermodal	15	31.126	6.99	0:02:30	0	0	0:00:57	0:12:46	0	0:17:04	531.3	2546.4	-----
E	Intermodal	55	32.588	2.96	1:05:17	0	0:00:04	0:04:07	6:15:18	0	7:04:31	5622.0	36751.3	-----
F	Multi-level	7	0.120	0.00	0:01:10	0	0	0	0	0	0:01:10	0.1	0.0	-----
F	General Merchandise	77	24.748	6.78	1:11:00	0	0:00:31	0:05:51	4:14:57	0	5:07:17	3150.0	24665.4	-----
F	Coal	83	19.980	8.58	0:19:20	0	0	0:04:03	2:04:29	0	2:22:42	1412.7	14288.4	-----
F	Unit	15	27.378	1.33	0:03:10	0	0	0:00:06	0:09:03	0	0:11:57	327.4	2232.3	-----
F	Local	37	9.544	9.97	2:03:44	0	0:05:17	0:03:23	3:03:22	0	3:17:02	849.9	2764.1	-----
F	Work Train	1	35.436	4.97	0:00:10	0	0	0:00:05	0:02:00	0	0:02:11	77.5	277.6	-----
F	Yard	13	1.953	0.00	0:23:50	0	0:00:17	0	0:23:39	0	1:03:52	54.4	17.8	-----
All train types		319	23.831	5.25	7:01:32	0	0:06:10	0:18:35	19:08:23	0	22:13:47	12911.1	85708.8	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	40.311	0.00	0:03:21	0	0	0	0:18:46	0	0:21:58	885.7	2165.5	0.00	-----
Expedited	70	32.456	3.32	1:07:47	0	0:00:04	0:05:04	7:04:04	0	7:21:35	6153.3	39297.7	4.95	-----
Freight	233	17.782	7.41	5:14:24	0	0:06:05	0:13:30	11:09:33	0	13:18:13	5872.1	44245.6	13.81	-----
All groups	319	23.831	5.25	7:01:32	0	0:06:10	0:18:35	19:08:23	0	22:13:47	12911.1	85708.8	8.64	-----

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G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	-----
E	Intermodal	55	6.047	0.00	0:13:45	0	0	0	0:00:01	0	0:16:31	99.9	341.8	-----
F	Multi-level	7	0.340	0.00	0:01:10	0	0	0	0:00:02	0	0:01:14	0.4	3.2	-----
F	General Merchandise	64	24.993	1.24	0:11:50	0	0	0:00:26	1:10:43	0	1:23:20	1183.0	7406.3	-----
F	Coal	101	22.825	3.95	1:21:16	0	0	0:06:50	7:19:39	0	9:09:17	5142.0	47048.5	-----
F	Unit	18	25.547	2.05	0:04:00	0	0	0:00:18	0:14:58	0	0:19:29	497.8	2962.9	-----
F	Local	31	17.316	1.79	0:14:40	0	0	0:00:20	1:04:41	0	1:09:57	588.0	1867.0	-----
F	Work Train	2	17.206	41.88	0:00:30	0	0	0:00:37	0:01:23	0	0:02:38	45.3	112.4	-----
All train types		294	21.621	3.47	3:22:11	0	0	0:08:33	11:03:33	0	14:13:32	7557.4	59743.0	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	0.00	-----
Expedited	55	6.047	0.00	0:13:45	0	0	0	0:00:01	0	0:16:31	99.9	341.8	0.00	-----
Freight	223	22.600	3.51	3:05:26	0	0	0:08:33	11:03:29	0	13:17:55	7456.6	59400.2	6.88	-----
All groups	294	21.621	3.47	3:22:11	0	0	0:08:33	11:03:33	0	14:13:32	7557.4	59743.0	6.79	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

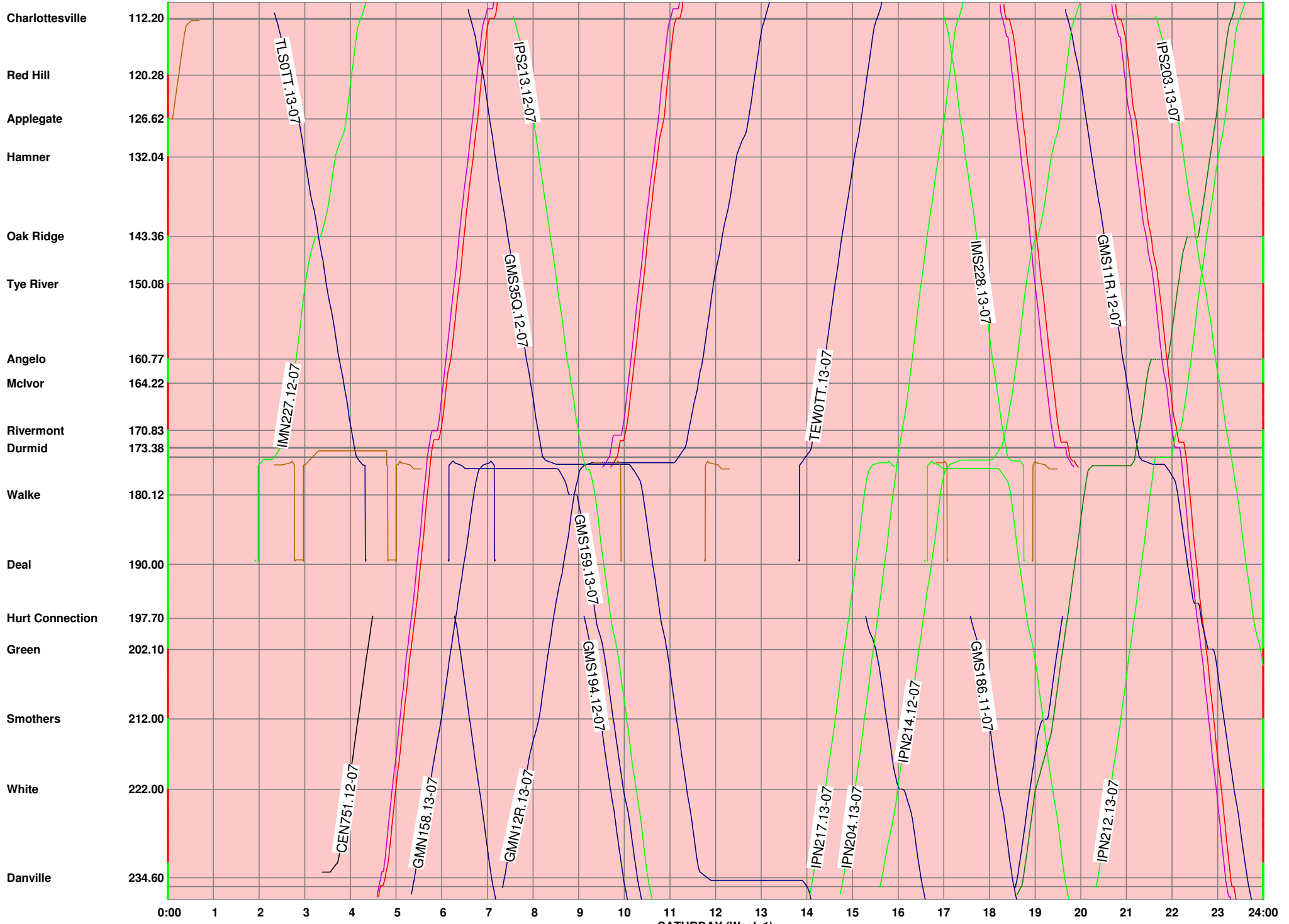
Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

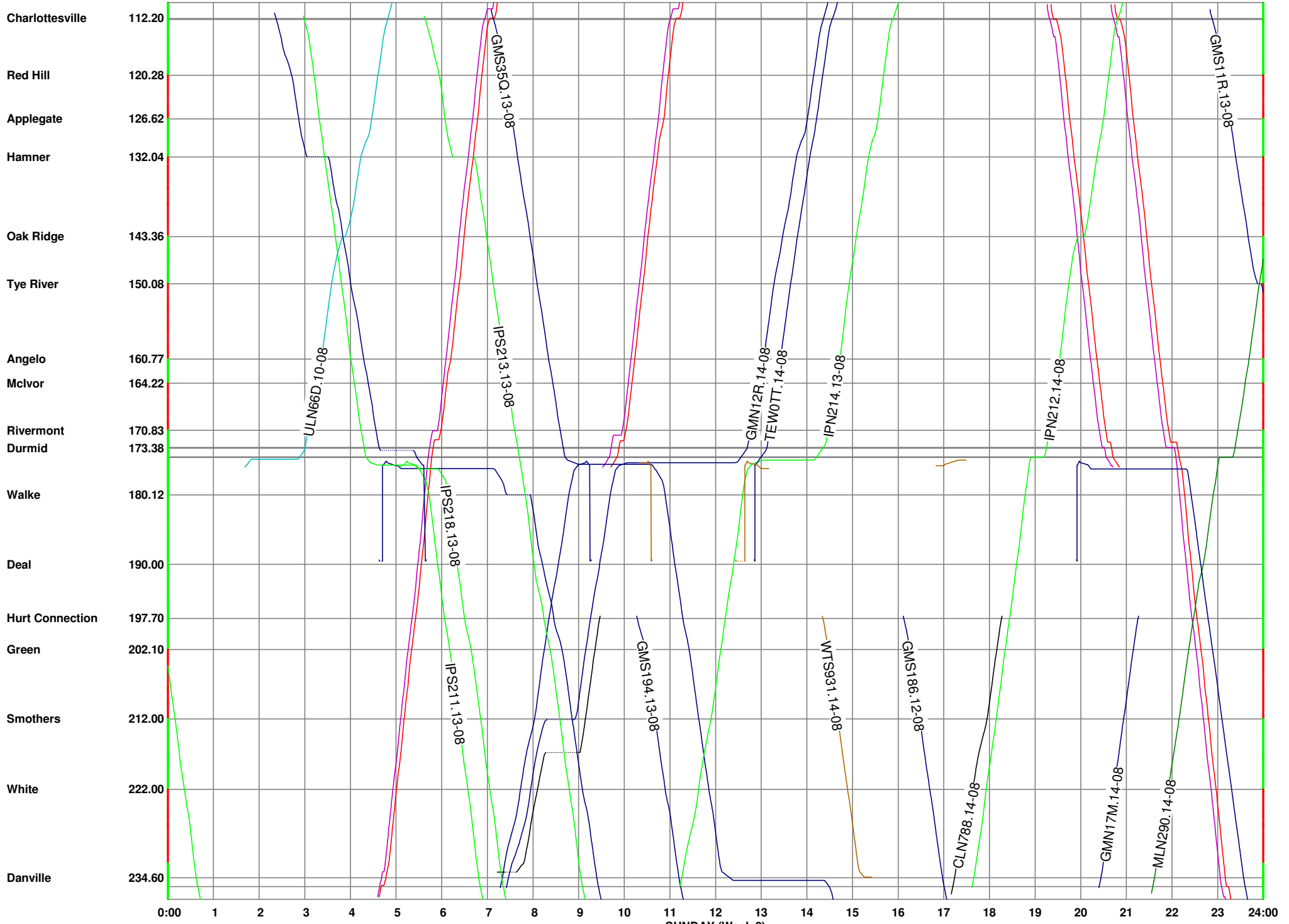
Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

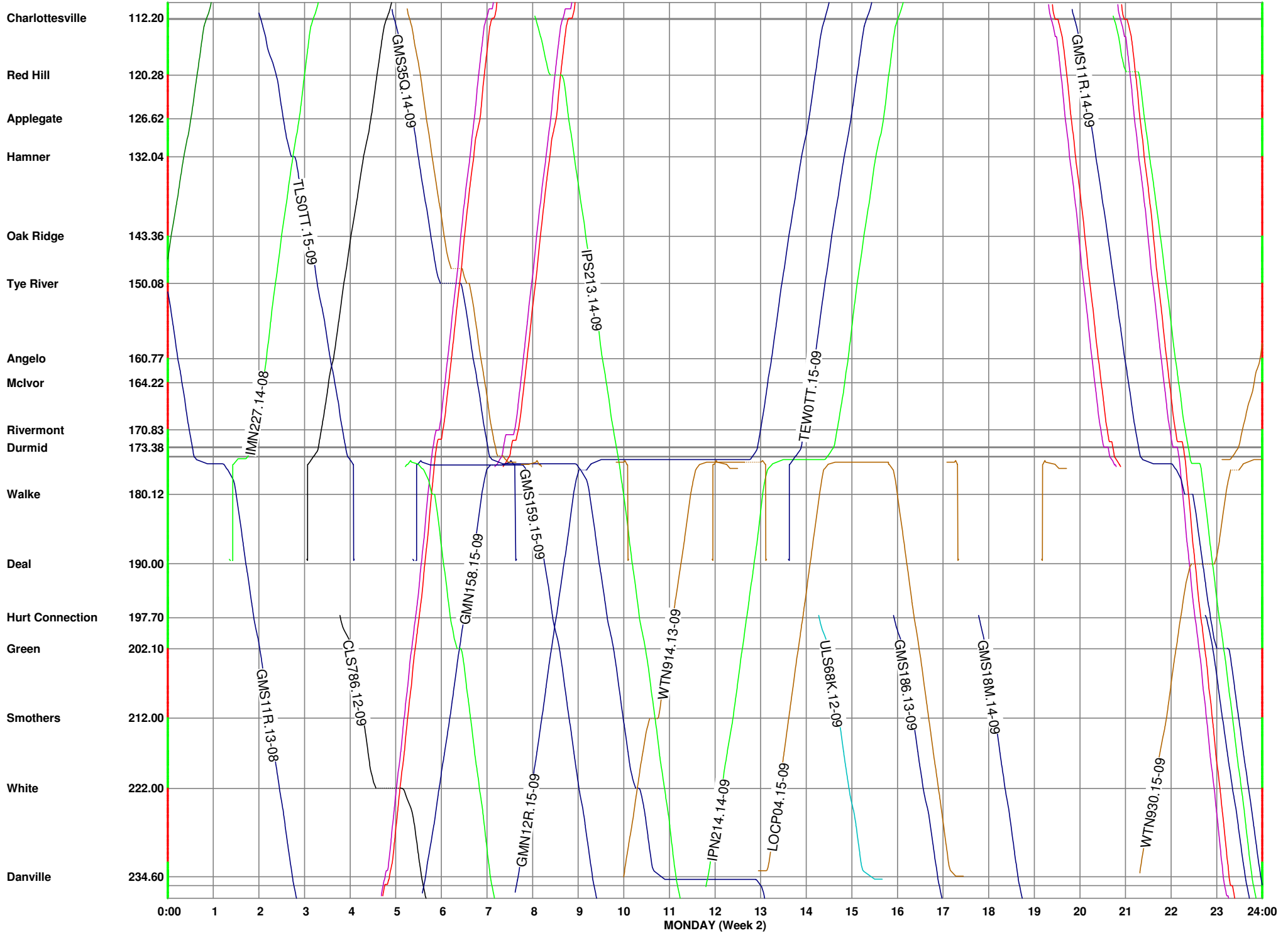
OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

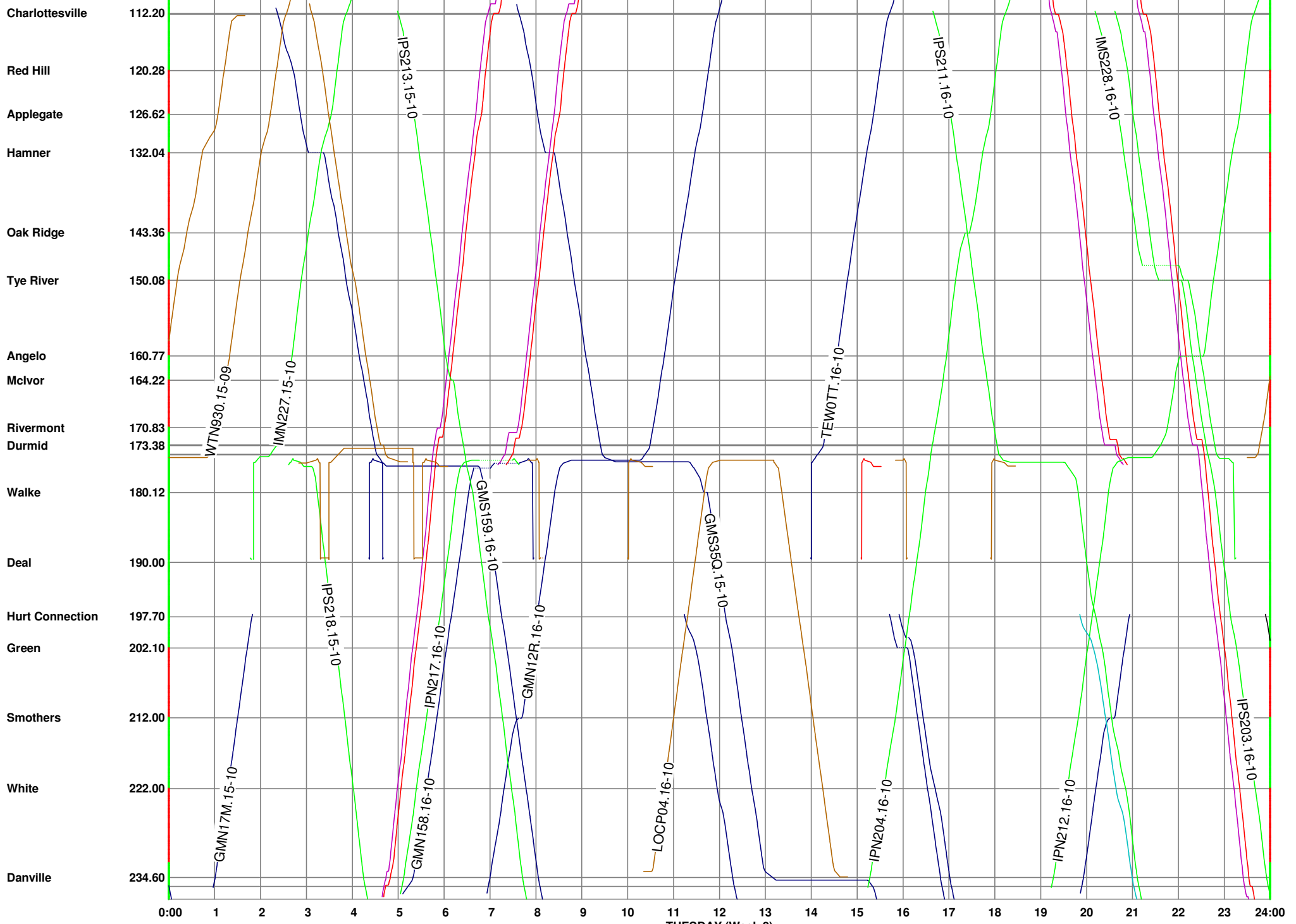
warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case 12B 2012 New pgr trns; no new infrastructure







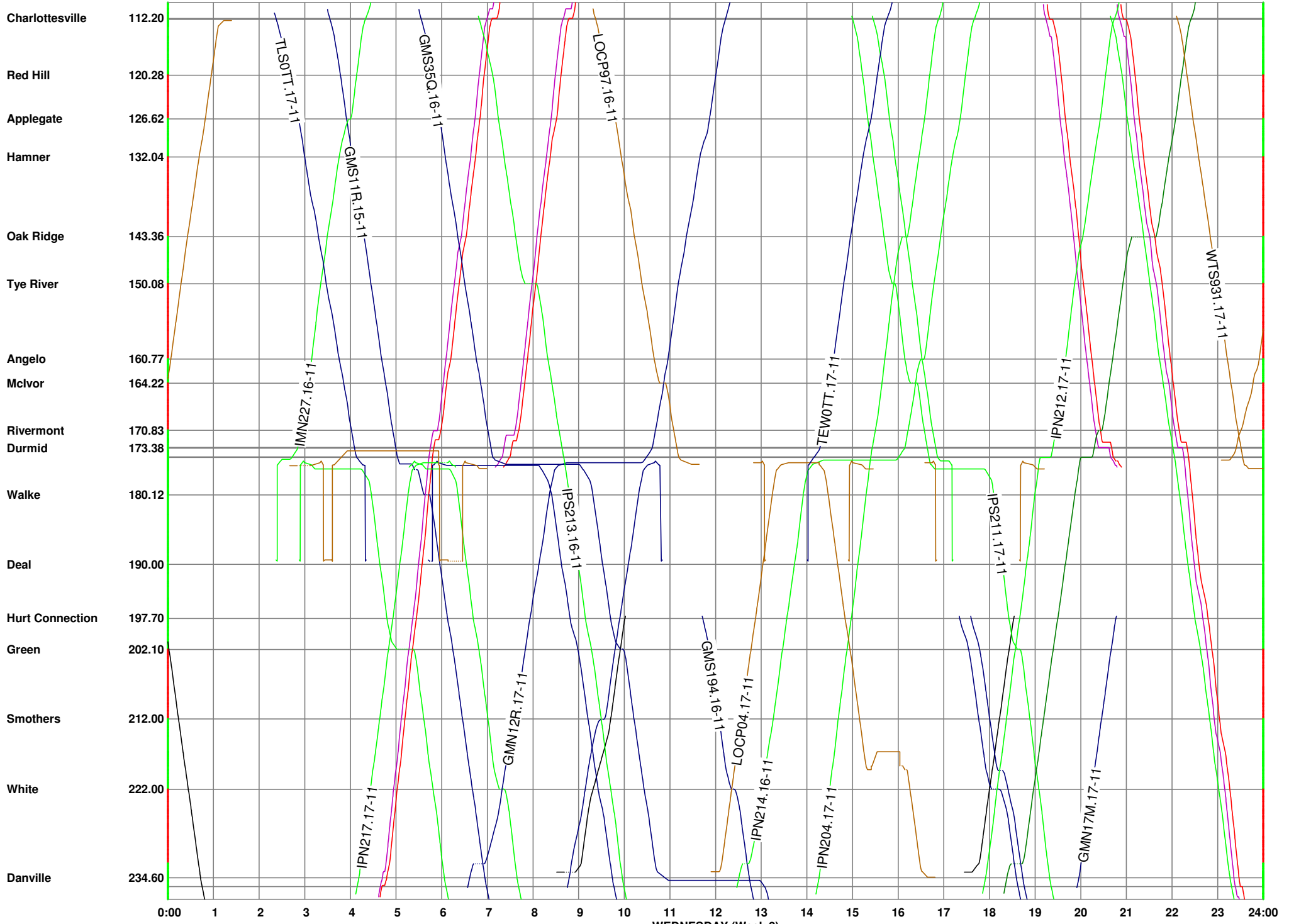


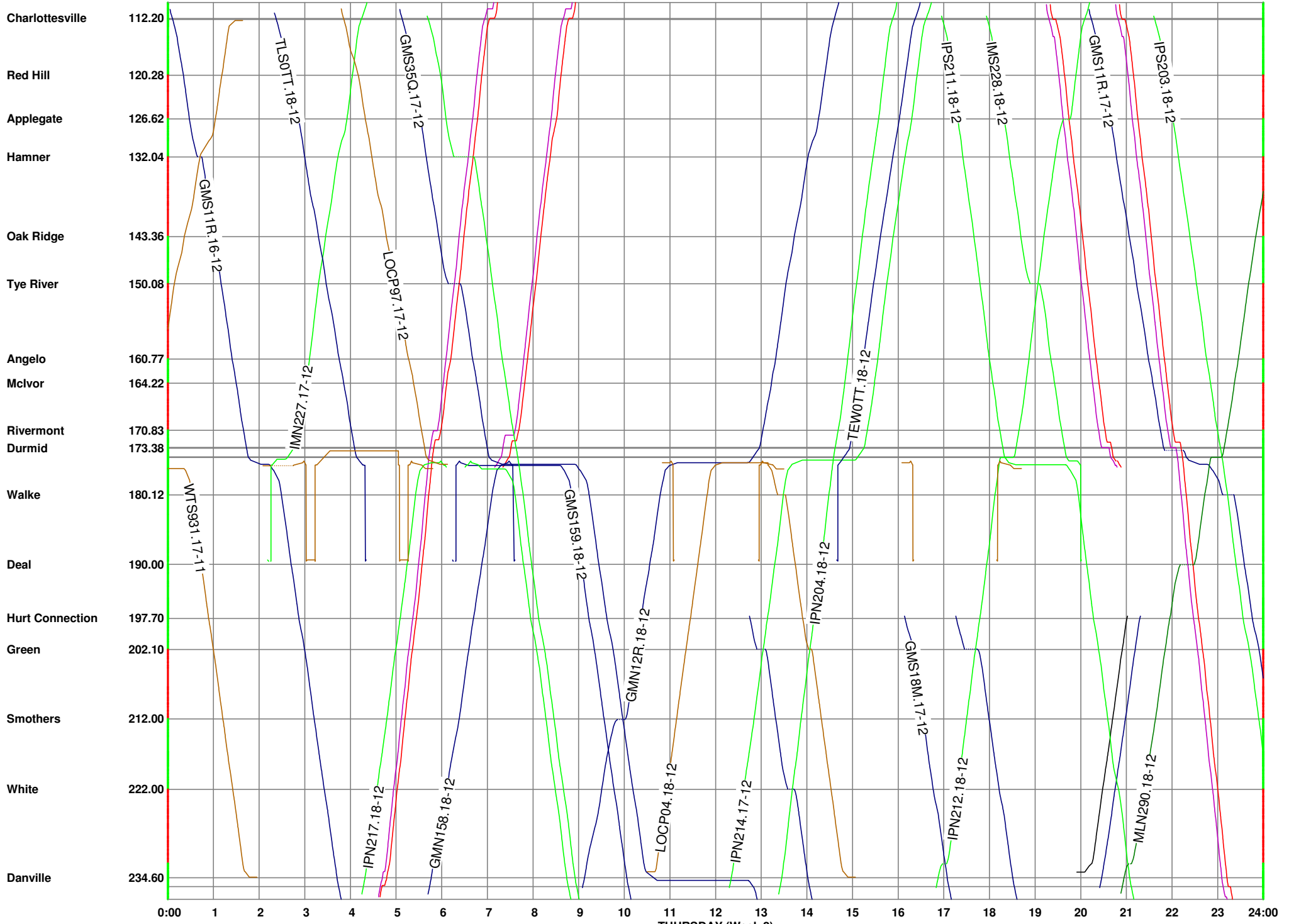
TUESDAY (Week 2)

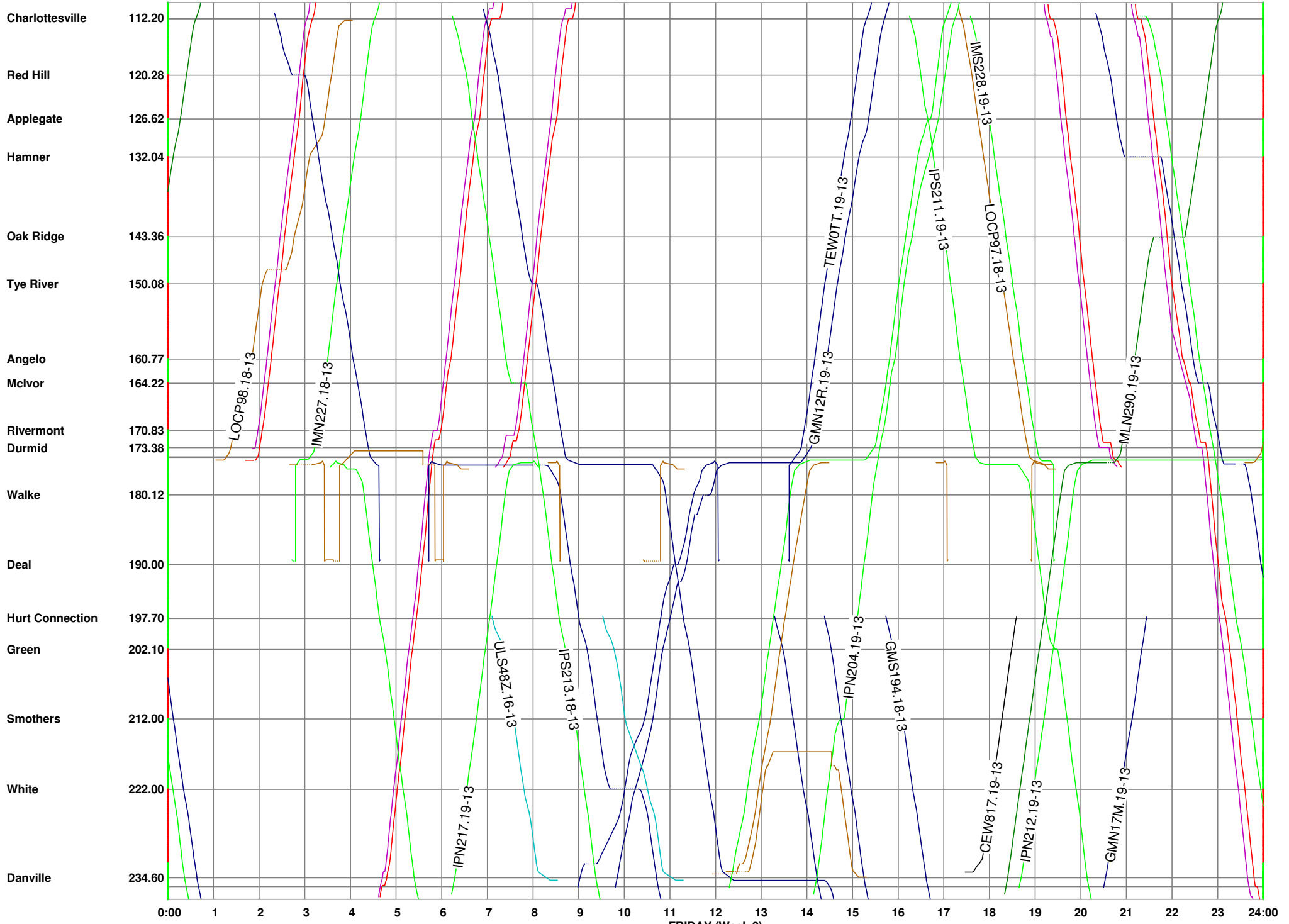
All times displayed in Eastern time

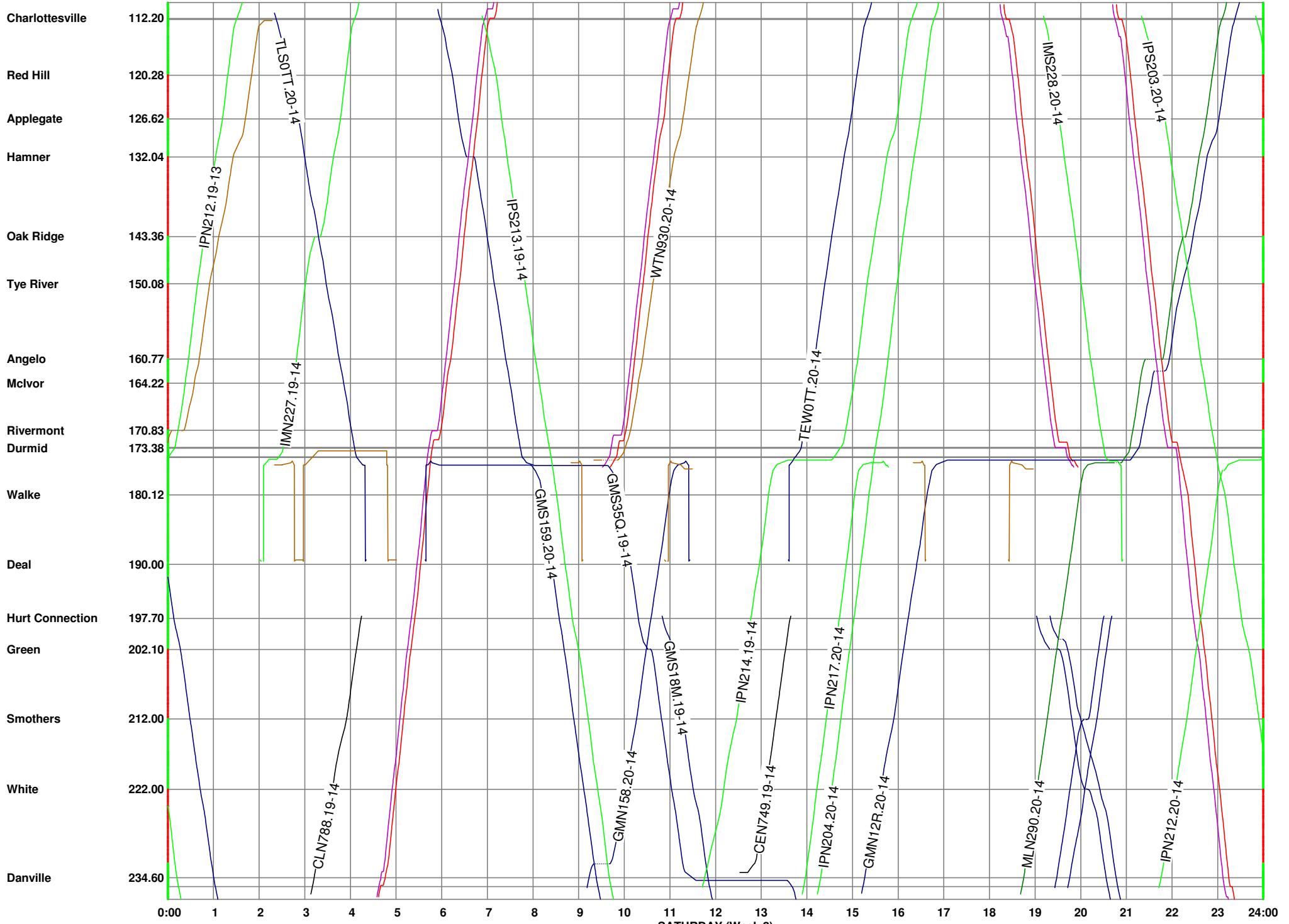
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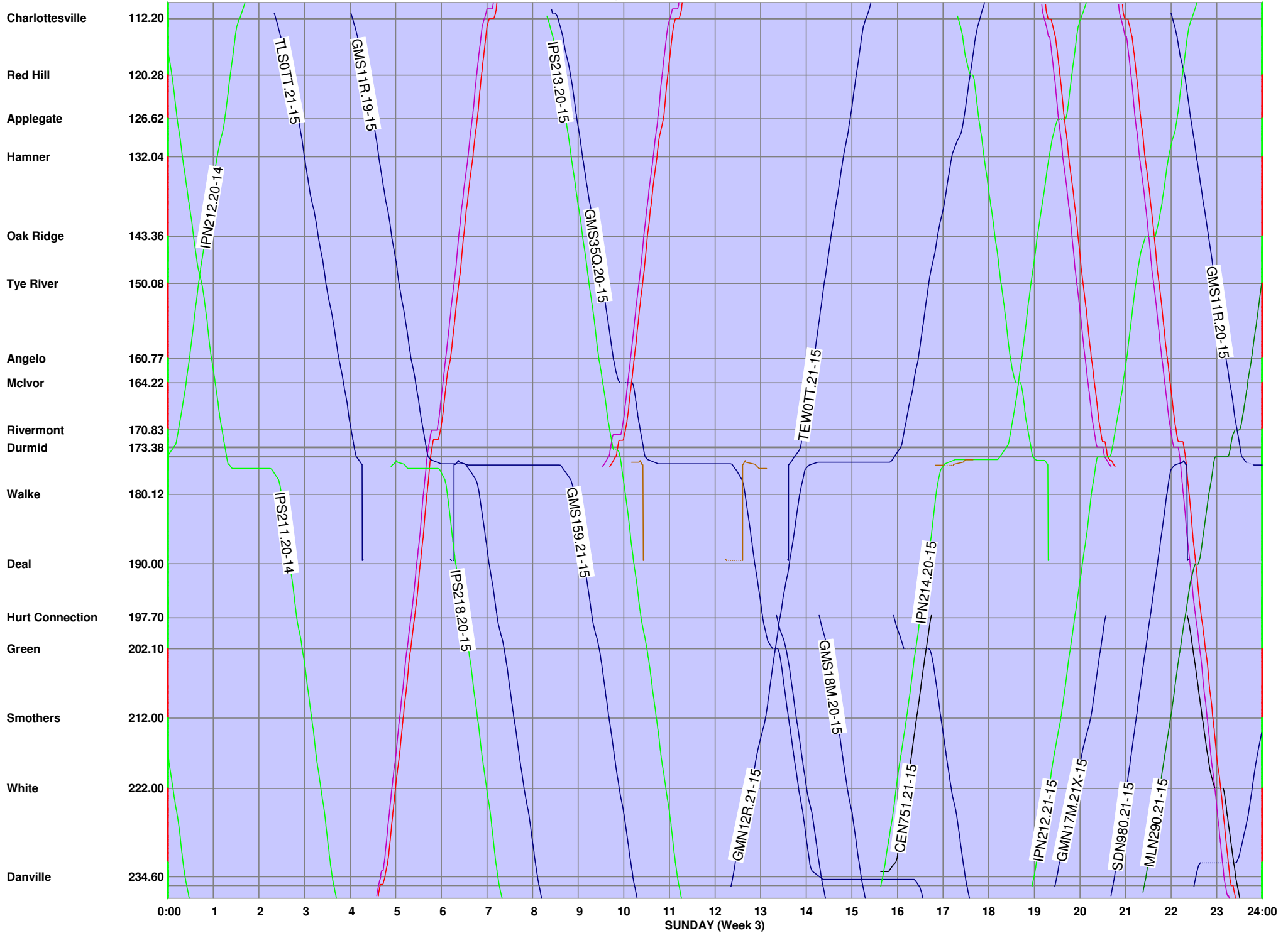
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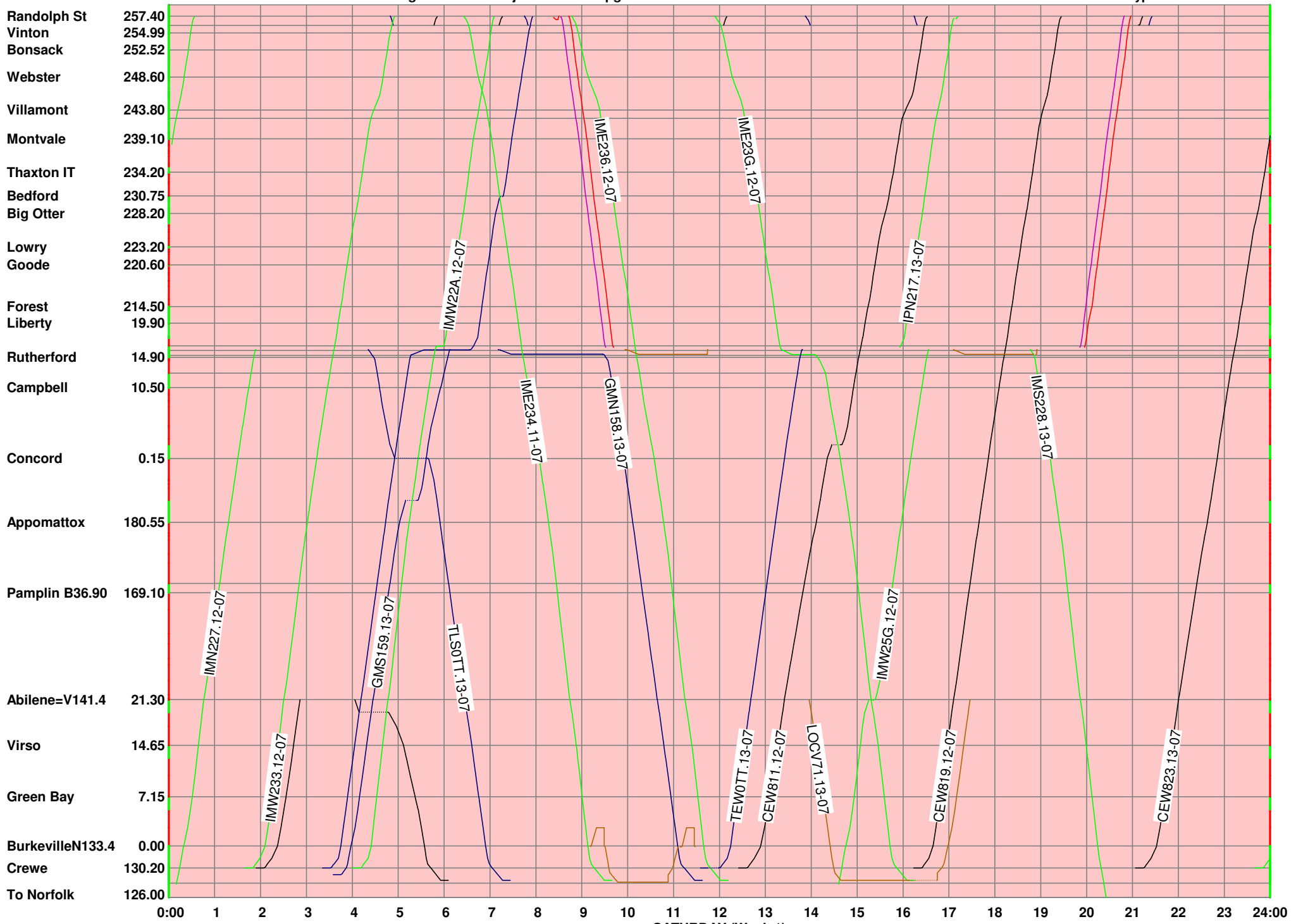


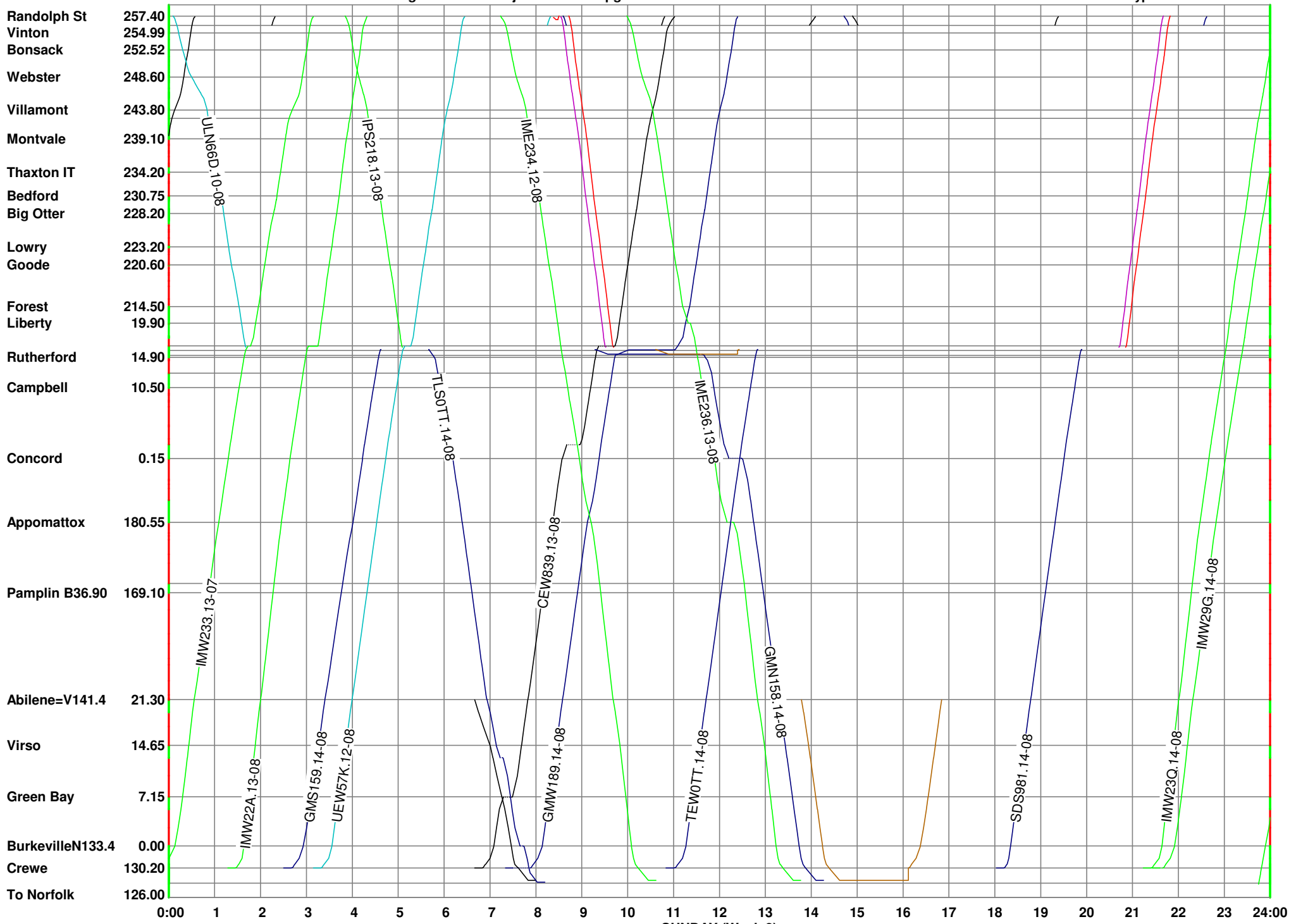


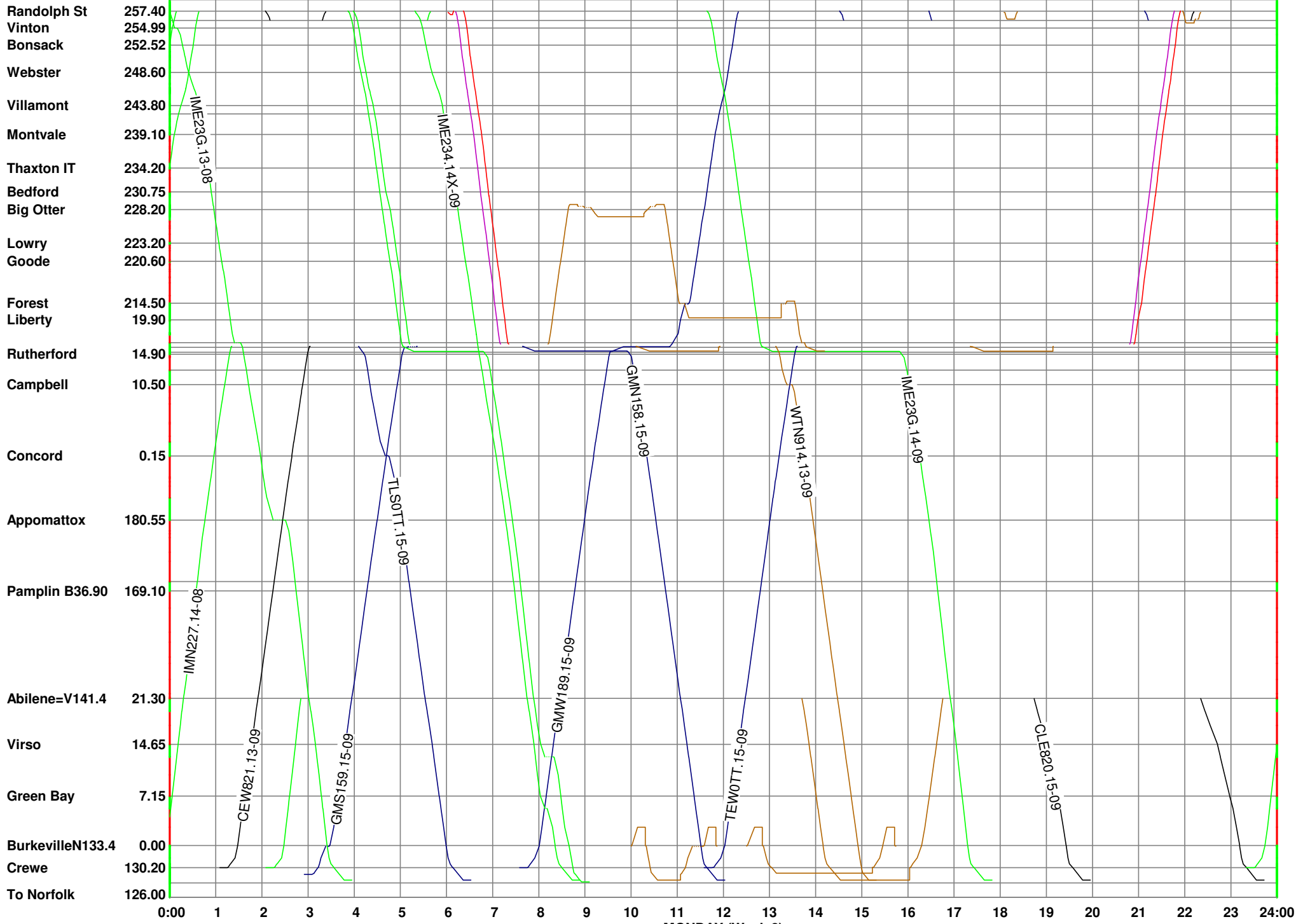


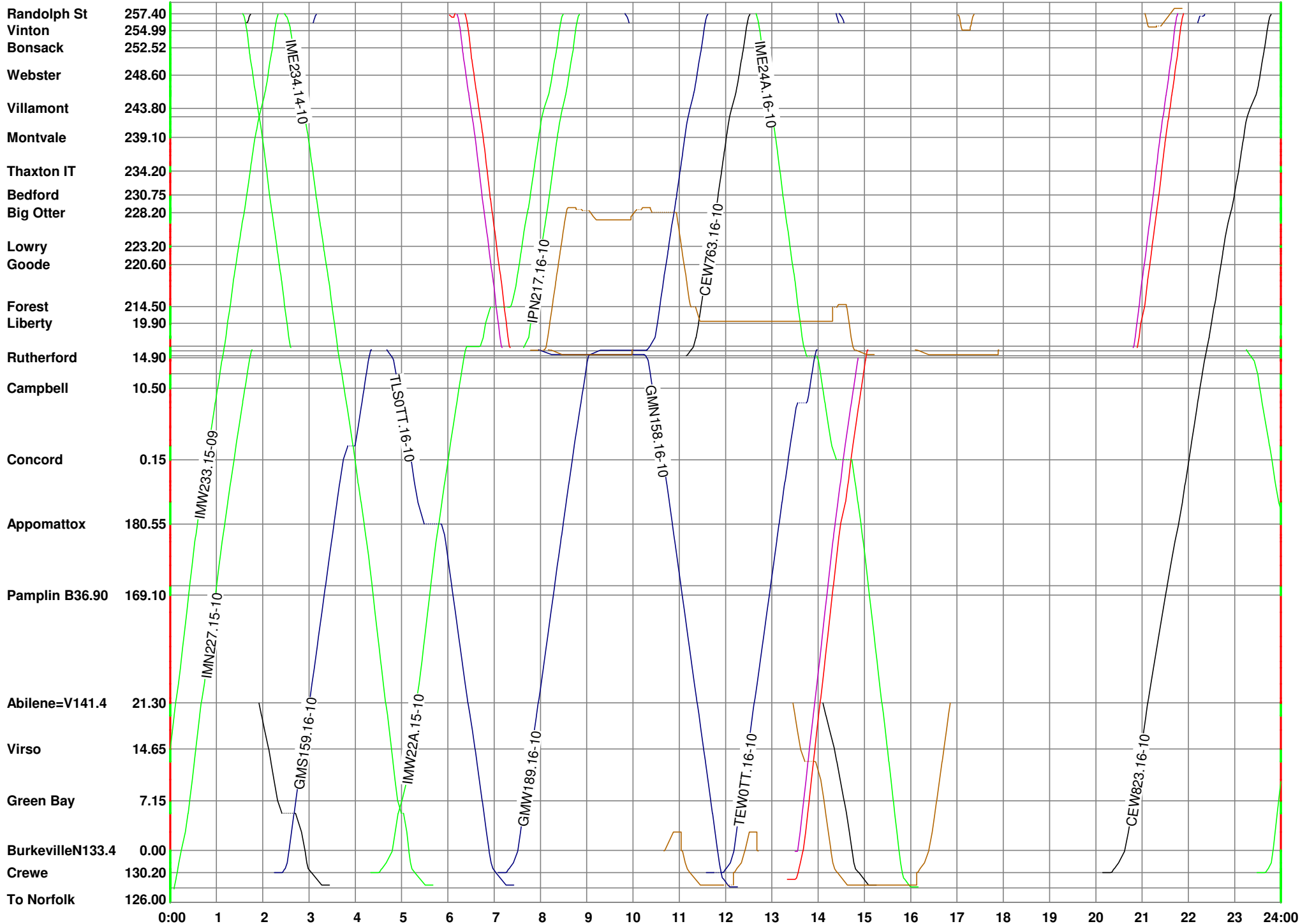


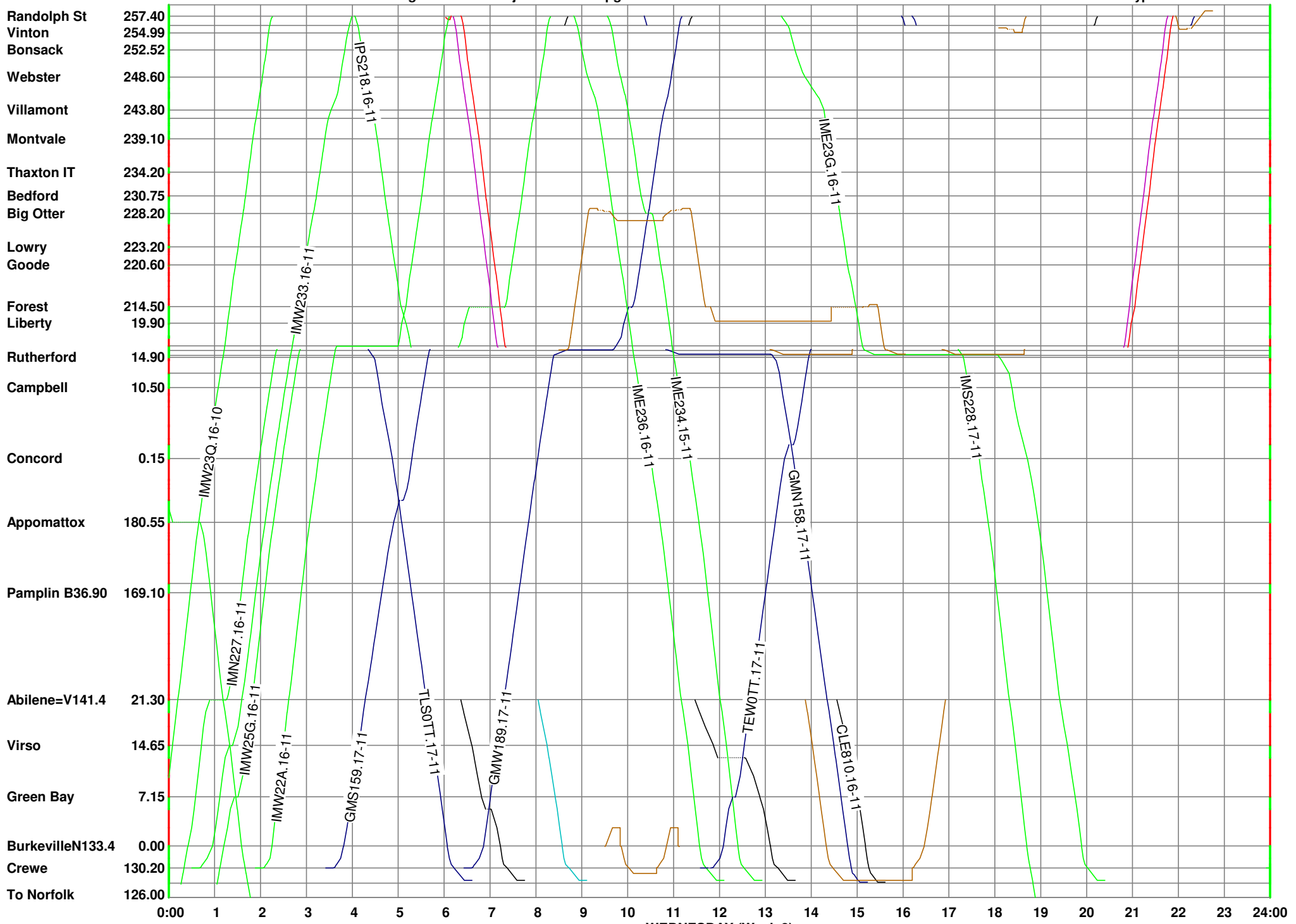




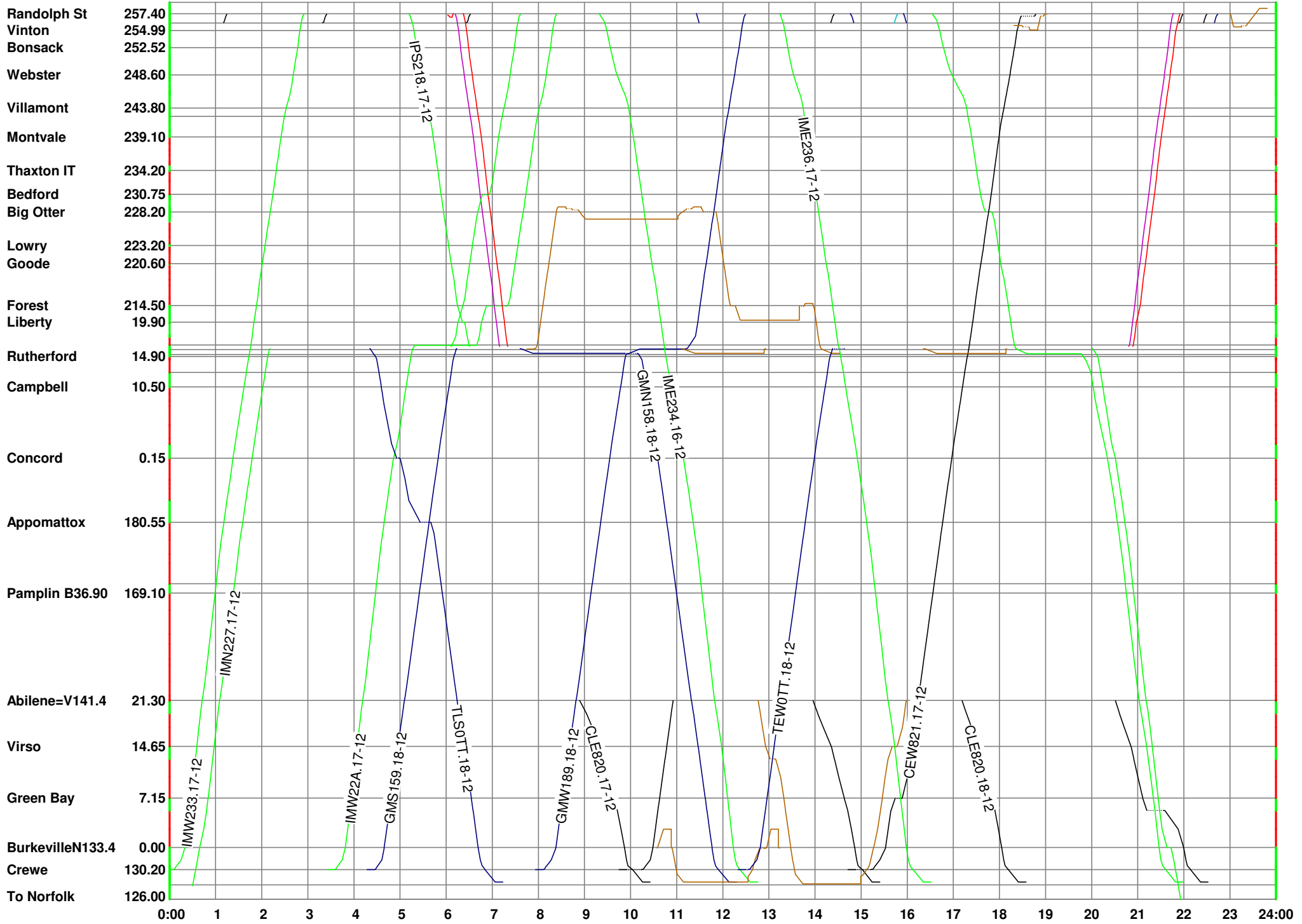


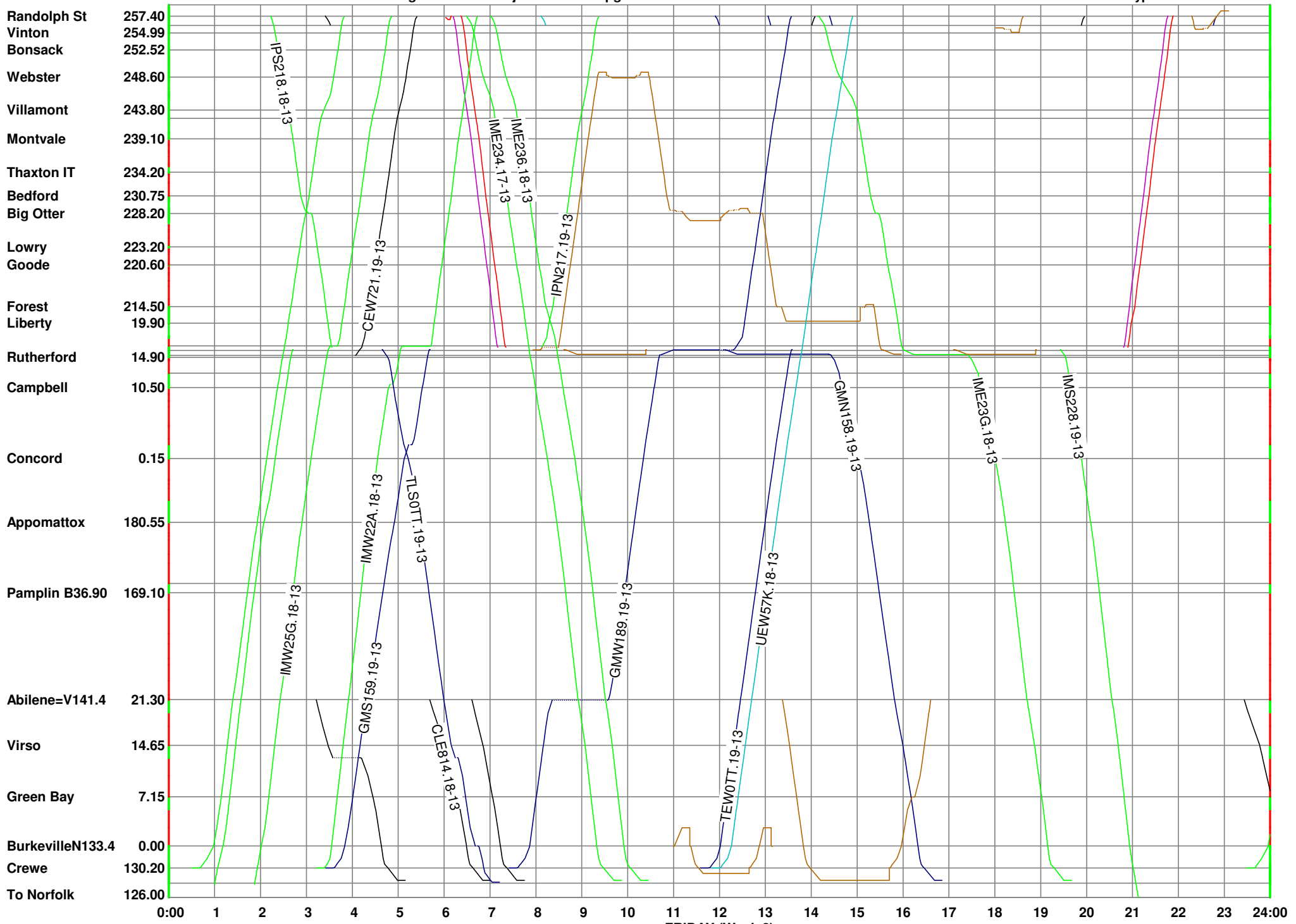


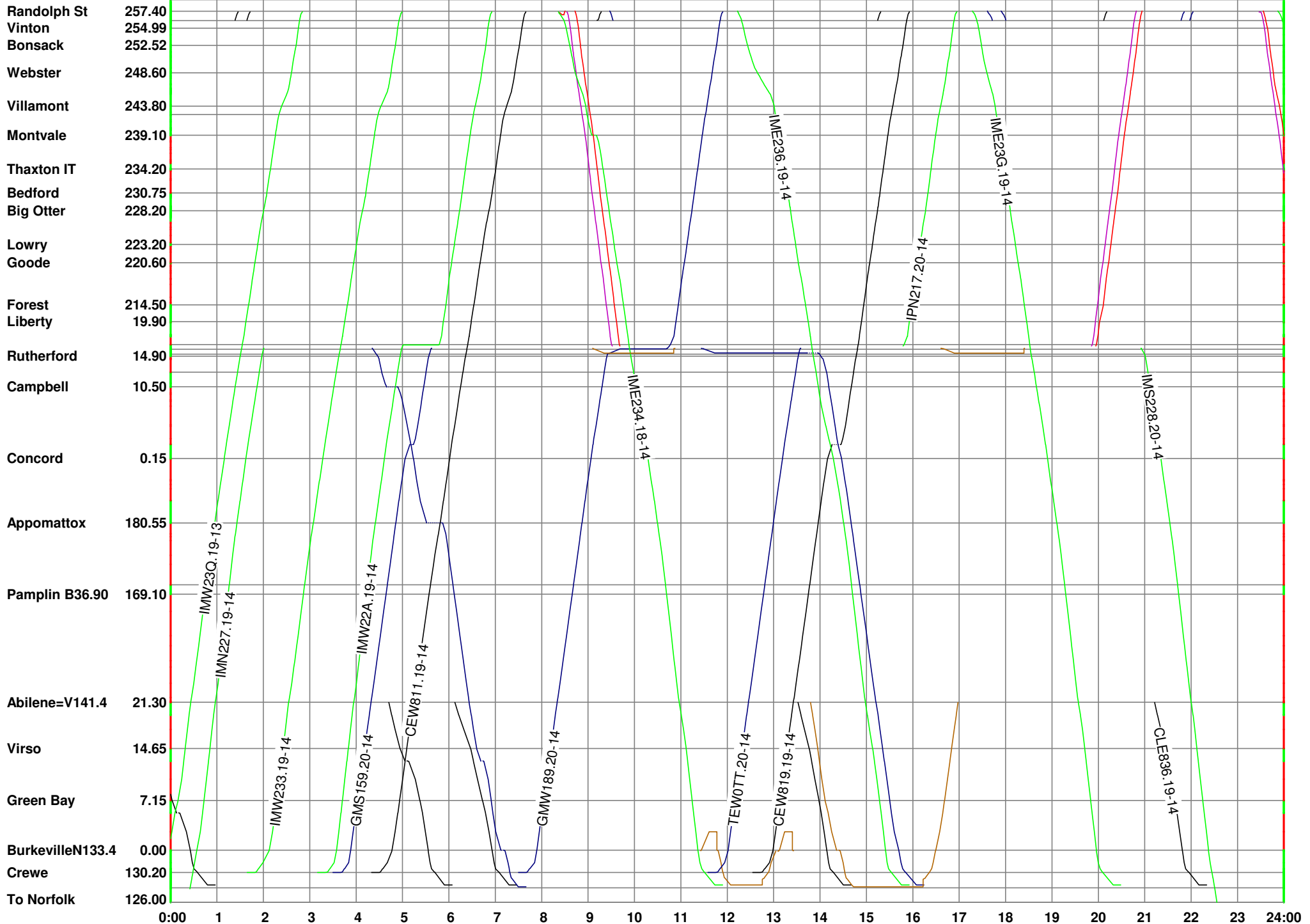




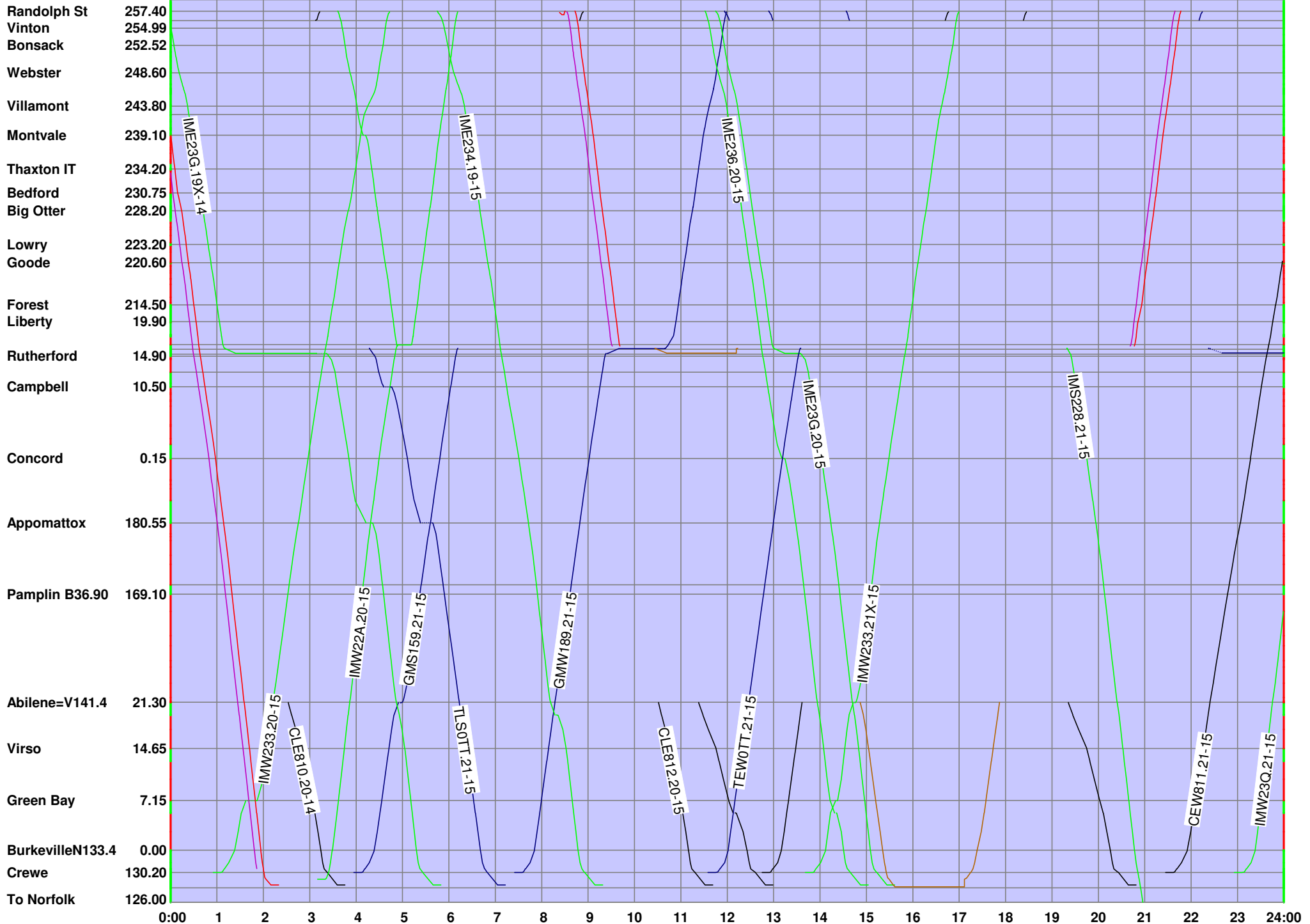
WEDNESDAY (Week 2)



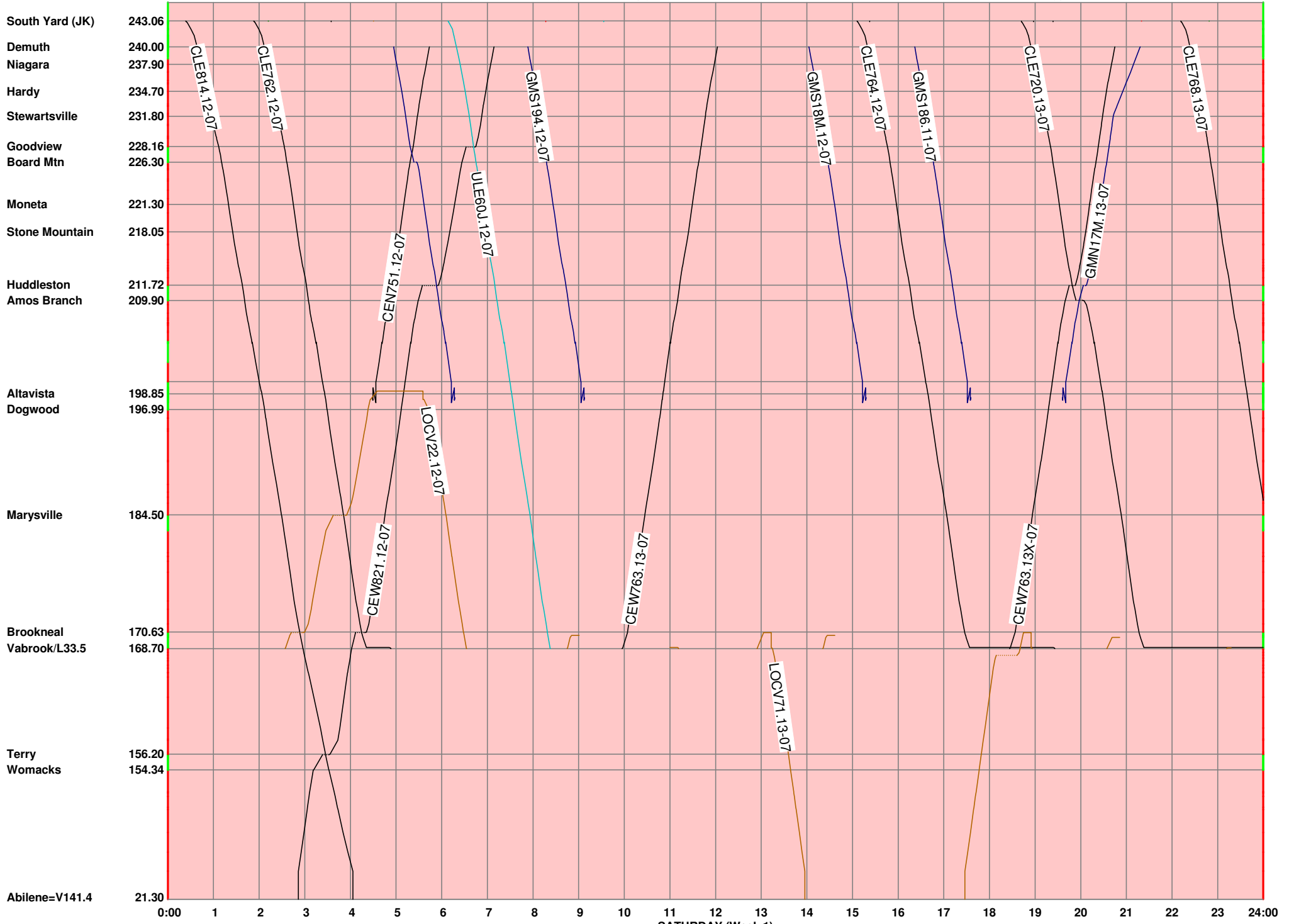


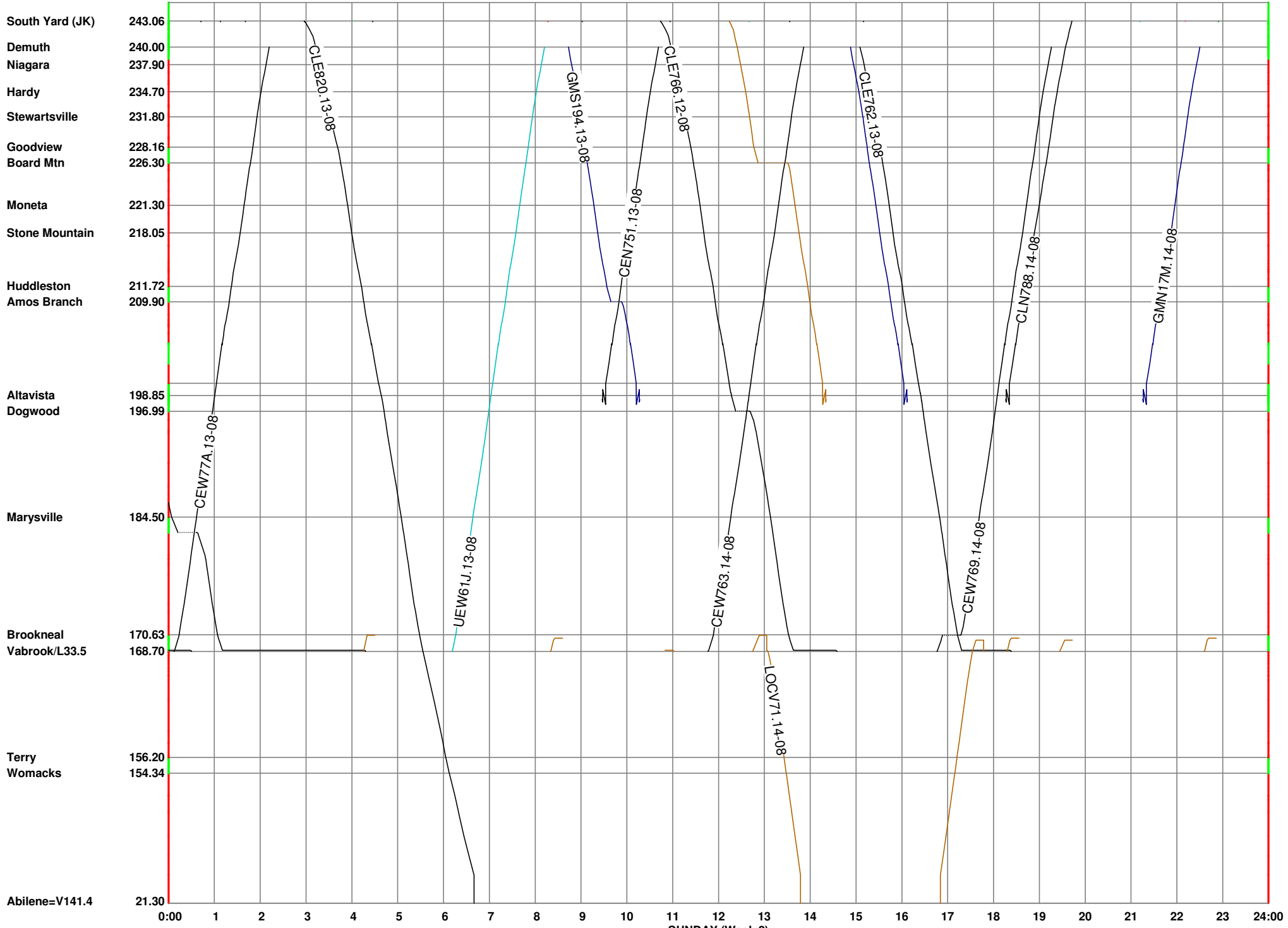


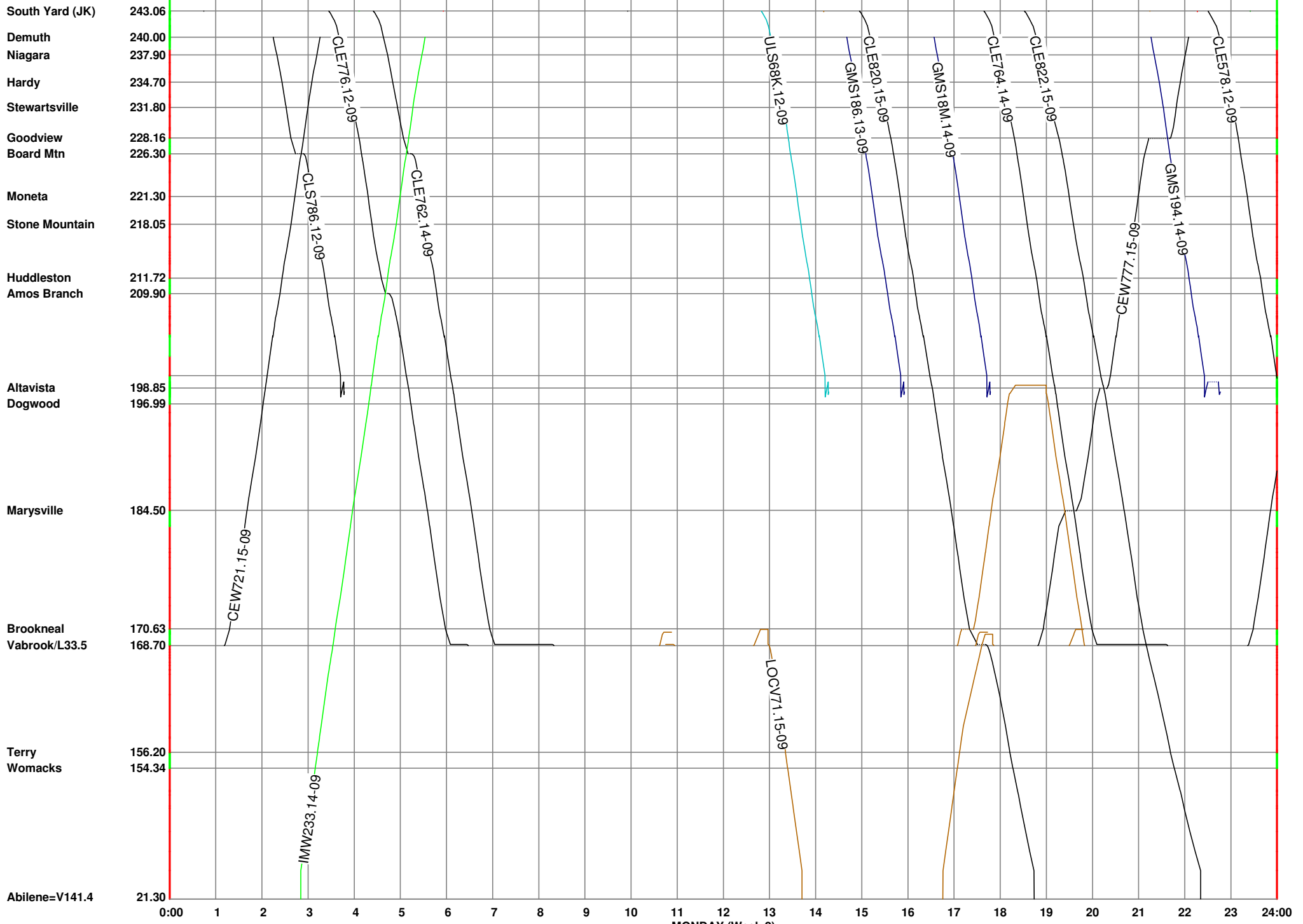
SATURDAY (Week 2)

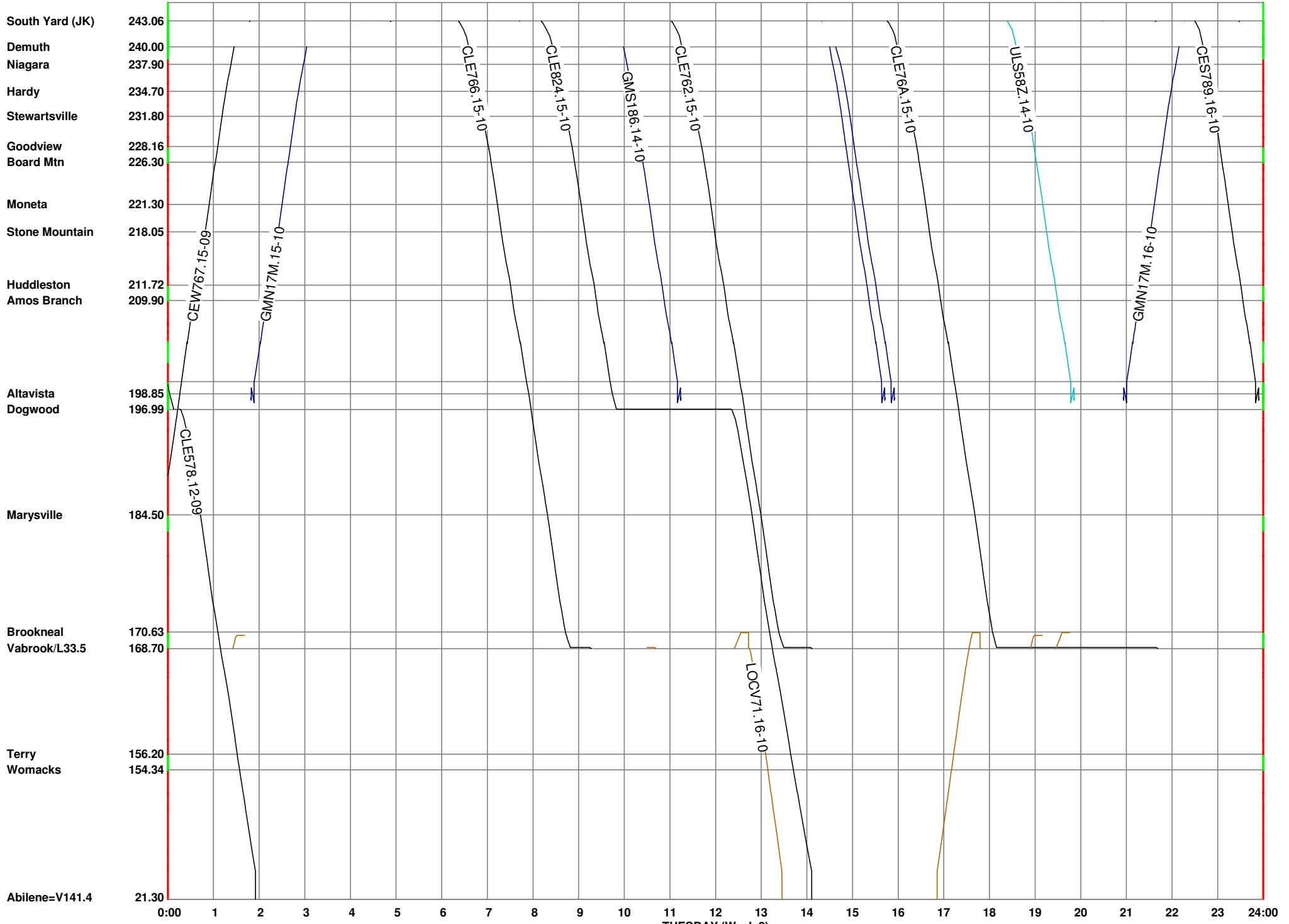


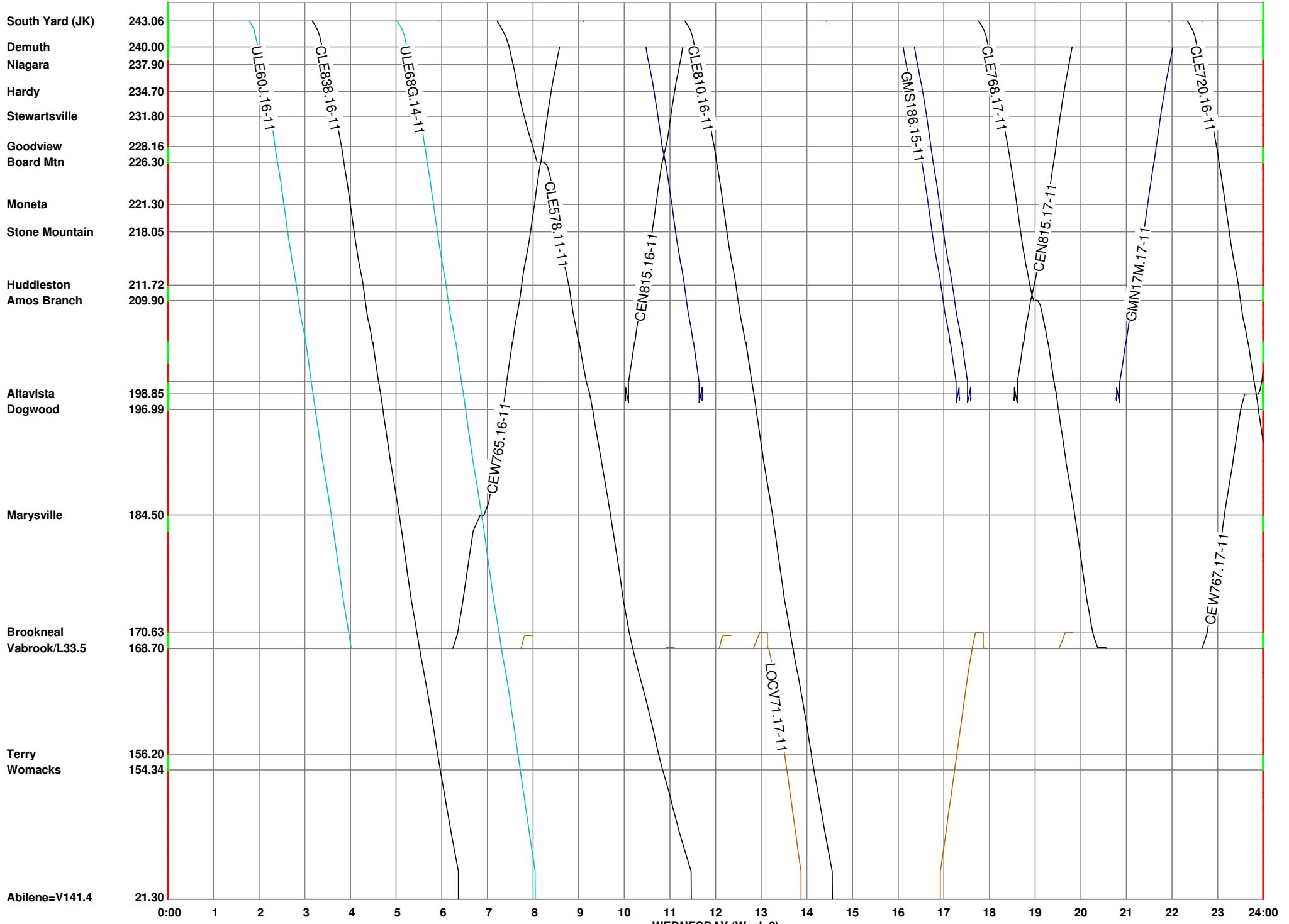
SUNDAY (Week 3)

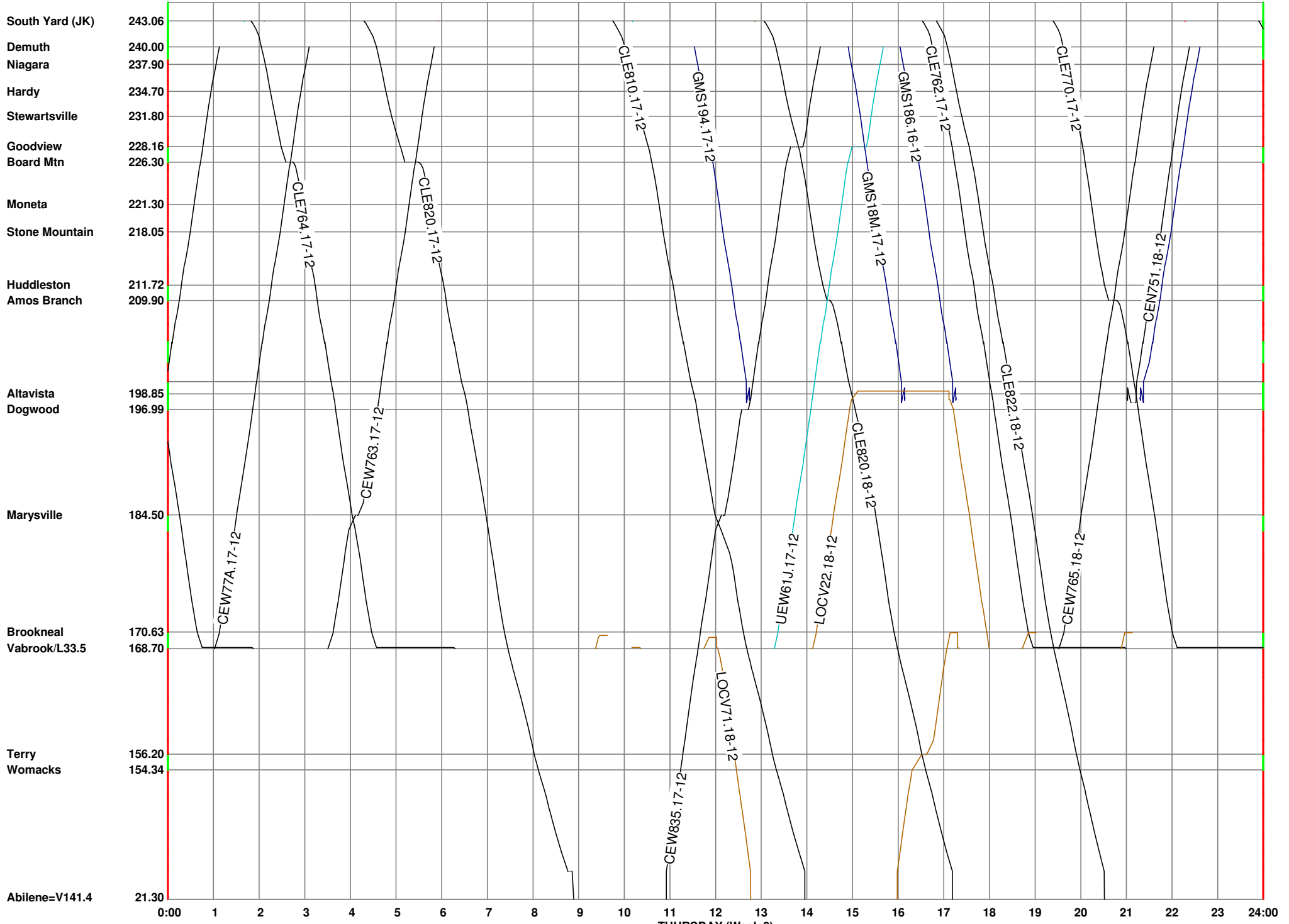


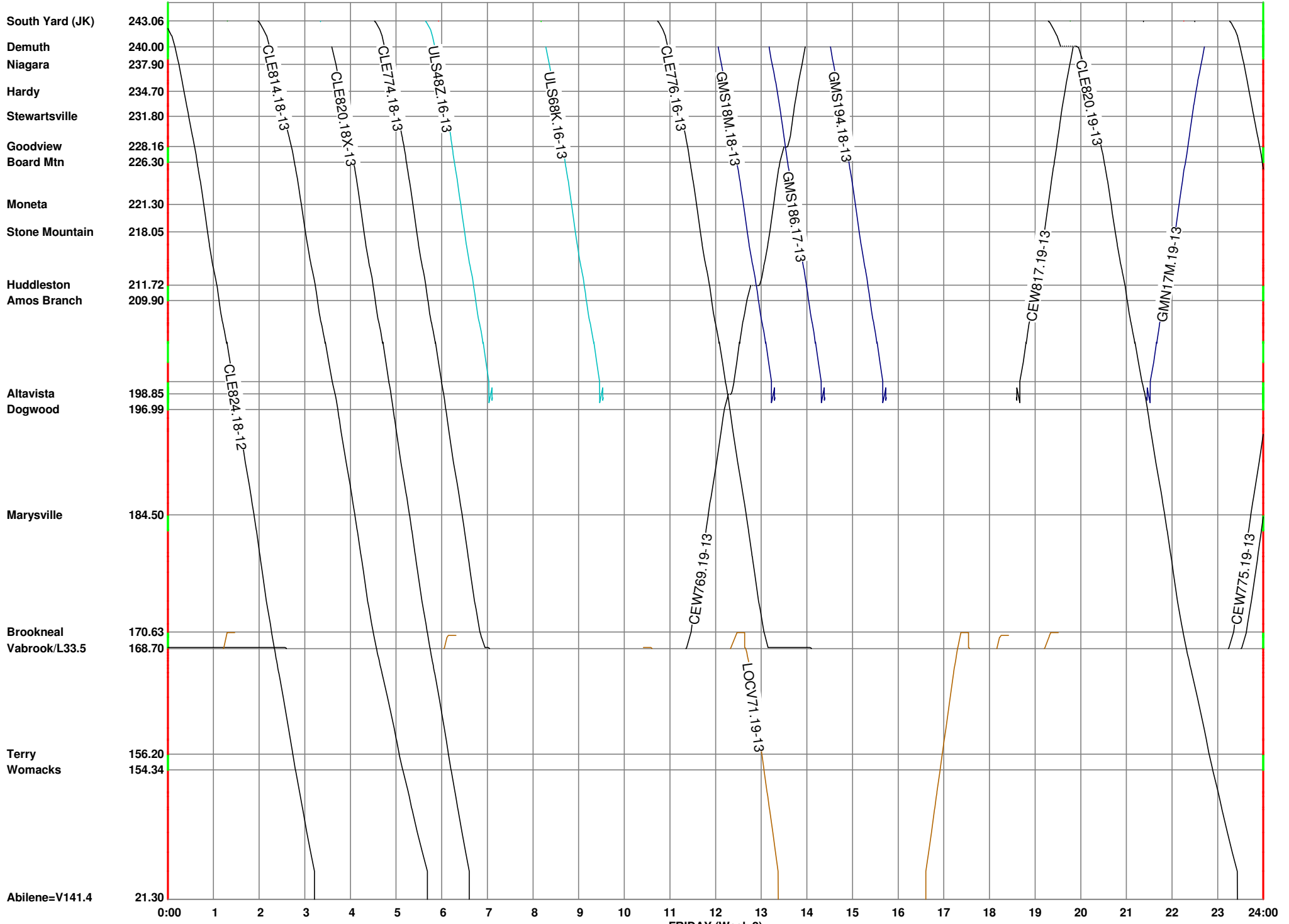


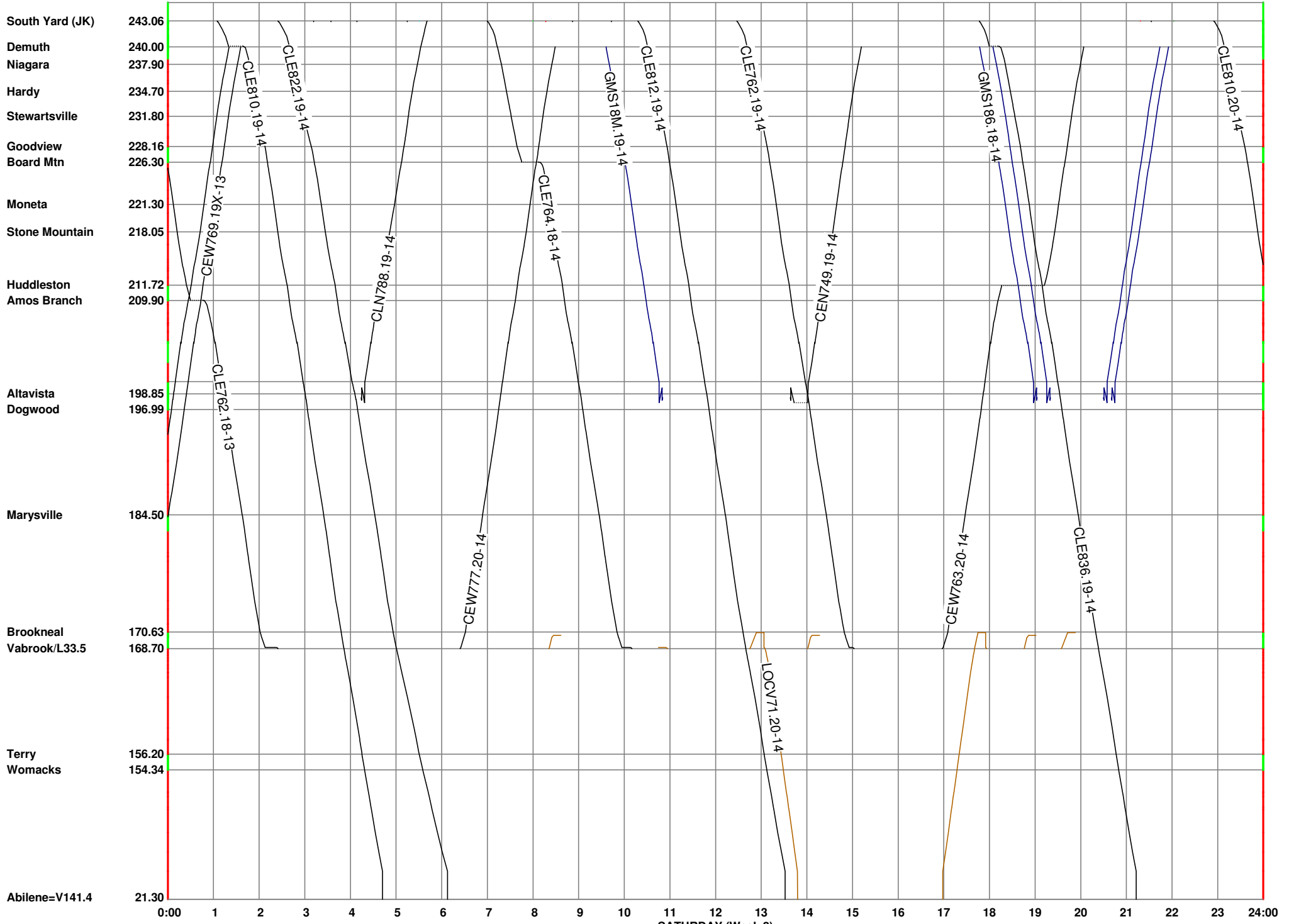






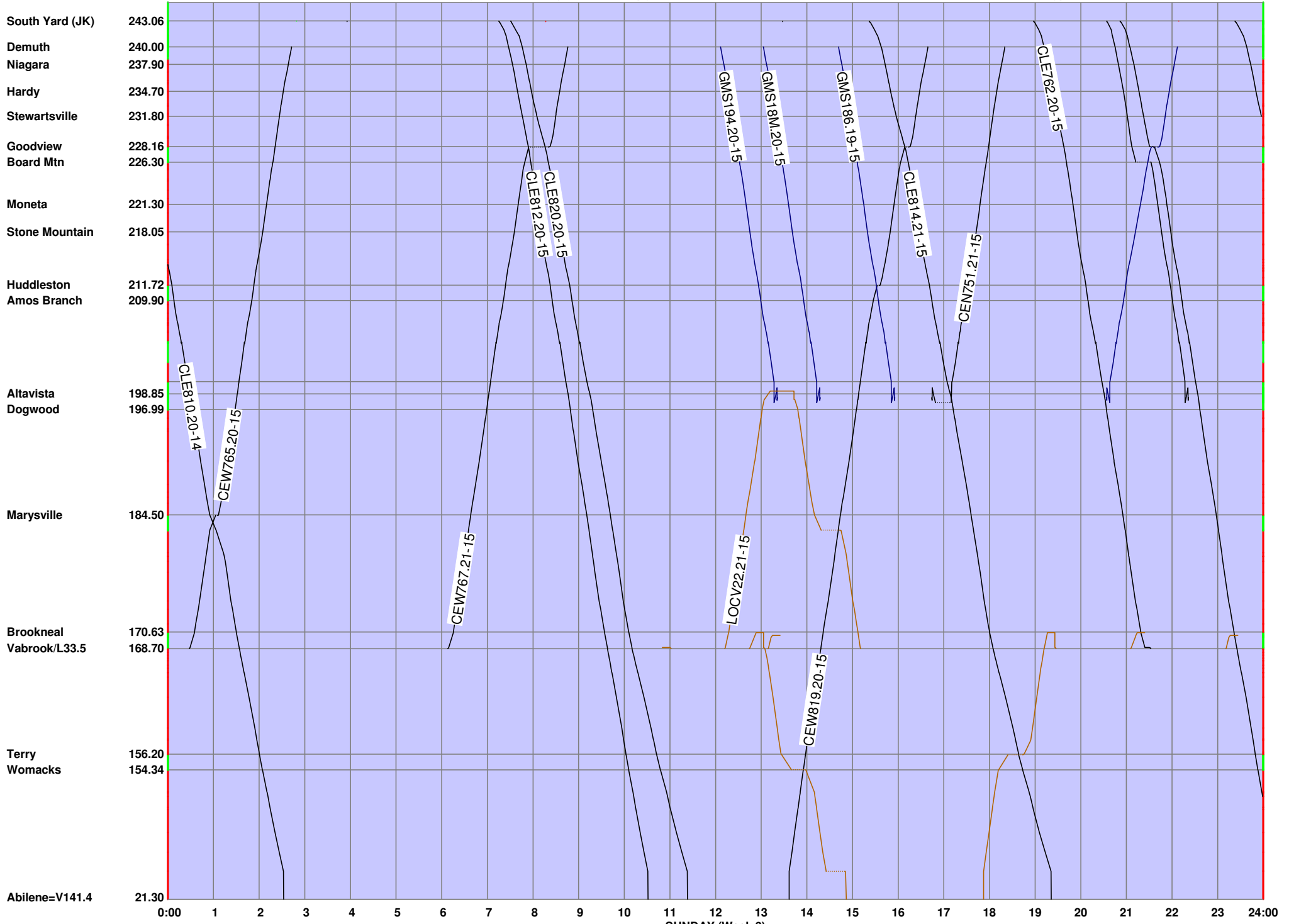






South Yard (JK) 243.06
 Demuth 240.00
 Niagara 237.90
 Hardy 234.70
 Stewartville 231.80
 Goodview 228.16
 Board Mtn 226.30
 Moneta 221.30
 Stone Mountain 218.05
 Huddleston 211.72
 Amos Branch 209.90
 Altavista 198.85
 Dogwood 196.99
 Marysville 184.50
 Brookneal 170.63
 Vabrook/L33.5 168.70
 Terry 156.20
 Womacks 154.34
 Abilene=V141.4 21.30

0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00



Case: VA12C 2012PgrInf VA 2012 New pgr trns; frt trn shifts; new infrastructure

Elapsed execution time: 0:41 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 928 (491M + 437P) Gross conflicts = 1,028 (530M + 498P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 10 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	31	42.372	2.23	0:10:02	0:01:23	0	0:01:39	3:13:46	0	3:15:26	3704.9	8706.4	-----
E Premium Intermodal	59	32.947	6.04	0:21:53	0	0	0:08:37	6:20:41	0	7:05:18	5710.3	39483.8	-----
E Intermodal	55	32.443	5.11	0:21:07	0	0:00:17	0:08:54	8:03:52	0:00:10	8:12:40	6640.3	39277.2	-----
F Multi-level	12	27.139	16.43	0:02:55	0	0	0:03:11	0:22:23	0	1:01:34	694.3	3496.3	-----
F General Merchandise	114	24.482	8.81	4:00:23	0	0:00:39	1:02:46	16:16:36	0:00:24	17:19:03	10455.2	86258.2	-----
F Coal	103	22.056	12.79	1:21:36	0	0	1:09:31	12:19:55	0:00:38	14:05:23	7529.4	77269.8	-----
F Unit	19	23.831	12.30	0:05:10	0	0	0:04:41	1:19:18	0:00:38	1:23:59	1143.9	9299.1	-----
F Local	77	12.007	9.81	5:17:45	0	0:07:45	0:11:10	10:11:45	0:00:02	10:22:55	3157.0	9945.3	-----
F Work Train	6	26.776	17.17	0:03:30	0	0:00:00	0:02:44	0:19:27	0:00:31	0:22:12	594.5	3860.0	-----
F Yard	19	2.985	6.54	1:11:30	0	0:00:30	0:01:05	2:05:10	0	2:05:09	158.7	150.5	-----
All train types	495	24.177	8.81	15:19:51	0:01:23	0:09:13	4:06:24	64:08:57	0:02:25	68:13:43	39788.5	277746.6	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	31	42.372	2.23	0:10:02	0:01:23	0	0:01:39	3:13:46	0	3:15:26	3704.9	8706.4	2.69	-----
Expedited	114	32.674	5.53	1:19:00	0	0:00:17	0:17:32	15:00:33	0:00:10	15:17:59	12350.6	78761.0	8.52	-----
Freight	350	20.108	10.80	13:14:49	0	0:08:56	3:11:12	45:18:37	0:02:14	49:04:18	23733.0	190279.2	21.04	-----
All groups	495	24.177	8.81	15:19:51	0:01:23	0:09:13	4:06:24	64:08:57	0:02:25	68:13:43	39788.5	277746.6	15.44	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late.

All others are on time.

Warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case: VA12C 2012PgrInf VA 2012 New pgr trns; frt trn shifts; new infrastructure

Elapsed execution time: 0:41 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 928 (491M + 437P) Gross conflicts = 1,028 (530M + 498P) Dispatched trains = 664 (0 failed) Dispatch difficulty = 10 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	30	44.474	0.44	0:06:26	0:01:23	0	0:00:14	2:10:52	0	2:14:31	2780.9	6533.5	-----
E	Premium Intermodal	47	34.441	3.79	0:19:53	0	0	0:04:34	5:15:44	0	6:01:15	5002.6	36285.3	-----
E	Intermodal	12	29.957	6.15	0:02:50	0	0:00:17	0:01:21	1:00:24	0	1:02:08	783.2	4427.9	-----
F	Multi-level	5	30.772	15.50	0:01:45	0	0	0:02:32	0:17:37	0	0:20:43	637.7	2913.5	-----
F	General Merchandise	77	22.916	7.08	2:20:03	0	0:00:09	0:11:32	9:00:33	0:00:24	10:02:32	5557.9	47938.7	-----
F	Coal	11	27.393	13.00	0:02:50	0	0	0:01:32	0:12:48	0	0:16:16	445.6	4026.2	-----
F	Unit	5	22.724	0.76	0:02:20	0	0	0:00:03	0:08:36	0	0:09:47	222.6	2425.9	-----
F	Local	16	25.822	4.39	0:10:22	0	0:00:13	0:01:28	1:19:26	0	1:21:21	1171.3	3154.7	-----
F	Work Train	6	26.526	8.55	0:03:30	0	0:00:00	0:01:07	0:15:53	0:00:31	0:17:47	472.1	3474.2	-----
F	Yard	19	3.651	14.74	0:16:00	0	0:00:14	0:01:36	1:05:31	0	1:04:33	104.3	131.9	-----
All train types		228	27.933	5.75	5:13:59	0:01:23	0:00:55	1:02:03	23:11:26	0:00:56	25:14:58	17178.3	111312.0	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	30	44.474	0.44	0:06:26	0:01:23	0	0:00:14	2:10:52	0	2:14:31	2780.9	6533.5	0.52	-----
Expedited	59	33.757	4.15	0:22:43	0	0:00:17	0:05:55	6:16:08	0	7:03:23	5785.8	40713.2	6.14	-----
Freight	139	22.600	7.76	4:08:50	0	0:00:38	0:19:53	14:08:26	0:00:56	15:21:02	8611.5	64065.2	13.86	-----
All groups	228	27.933	5.75	5:13:59	0:01:23	0:00:55	1:02:03	23:11:26	0:00:56	25:14:58	17178.3	111312.0	9.10	-----

* Dwell times include time spent at initial and final terminals.

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True delay includes the acceleration and deceleration associated with conflict resolutions.

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Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

Warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

Case: VA12C 2012PgrInf VA 2012 New pgr trns; frt trn shifts; new infrastructure

Elapsed execution time: 0:41 (HH:MM:SS)

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P Amtrak	16	41.403	0.00	0:03:21	0	0	0	0:18:09	0	0:21:23	885.7	2108.1	-----
E Premium Intermodal	16	4.140	0.00	0:02:40	0	0	0	0:00:47	0	0:03:29	14.4	35.1	-----
E Intermodal	55	33.929	2.00	0:18:17	0	0	0:01:45	4:02:50	0	4:11:29	3646.9	22579.5	-----
F Multi-level	7	0.120	0.00	0:01:10	0	0	0	0	0	0:01:10	0.1	0.0	-----
F General Merchandise	76	25.614	2.97	1:10:50	0	0:00:30	0:02:32	4:14:59	0	5:02:58	3149.9	24661.3	-----
F Coal	83	20.571	10.30	0:19:20	0	0	0:05:03	2:04:31	0	3:01:27	1511.2	15079.4	-----
F Unit	15	27.814	0.00	0:03:10	0	0	0	0:09:03	0	0:11:46	327.4	2234.0	-----
F Local	36	9.637	7.61	2:03:24	0	0:05:17	0:02:36	3:03:17	0	3:16:11	849.8	2775.5	-----
F Work Train	1	35.558	2.55	0:00:10	0	0	0:00:03	0:02:00	0	0:02:10	77.5	275.2	-----
F Yard	13	1.952	0.00	0:23:50	0	0:00:15	0	0:23:39	0	1:03:51	54.4	18.6	-----
All train types	318	22.866	4.14	6:14:12	0	0:06:02	0:11:59	16:07:19	0	19:03:58	10517.5	69766.6	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	41.403	0.00	0:03:21	0	0	0	0:18:09	0	0:21:23	885.7	2108.1	0.00	-----
Expedited	71	32.993	1.98	0:20:57	0	0	0:01:45	4:03:38	0	4:14:58	3661.4	22614.6	2.87	-----
Freight	231	18.225	5.58	5:13:54	0	0:06:02	0:10:14	11:09:32	0	13:15:35	5970.4	45043.9	10.30	-----
All groups	318	22.866	4.14	6:14:12	0	0:06:02	0:11:59	16:07:19	0	19:03:58	10517.5	69766.6	6.84	-----

* Dwell times include time spent at initial and final terminals.

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Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

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P	Amtrak	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	-----
E	Premium Intermodal	11	29.690	0.49	0:01:50	0	0	0:00:04	0:13:29	0	0:15:38	464.4	1416.4	-----
E	Intermodal	55	28.987	1.15	0:13:45	0	0	0:00:38	2:05:39	0	2:23:05	2060.8	11528.2	-----
F	Multi-level	7	0.340	0.00	0:01:10	0	0	0	0:00:02	0	0:01:14	0.4	3.2	-----
F	General Merchandise	64	24.712	1.70	0:11:50	0	0	0:00:36	1:10:43	0	1:23:52	1183.0	7452.2	-----
F	Coal	101	22.311	5.60	1:21:16	0	0	0:09:34	7:19:07	0	9:10:04	5043.9	47087.9	-----
F	Unit	18	23.015	12.79	0:04:00	0	0	0:01:59	0:14:55	0	0:21:37	497.8	3051.0	-----
F	Local	31	16.915	7.32	0:14:40	0	0	0:01:22	1:04:10	0	1:10:45	588.0	2155.3	-----
F	Work Train	2	19.036	25.53	0:00:30	0	0	0:00:22	0:01:23	0	0:02:22	45.3	111.3	-----
All train types		305	23.325	4.68	4:00:01	0	0	0:14:39	13:21:34	0	17:15:47	9884.7	72806.4	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	0.00	-----
Expedited	66	29.114	1.02	0:15:35	0	0	0:00:42	2:19:08	0	3:14:44	2525.3	12944.6	1.70	-----
Freight	223	22.034	5.74	3:05:26	0	0	0:13:56	11:02:22	0	13:21:57	7358.5	59860.8	11.36	-----
All groups	305	23.325	4.68	4:00:01	0	0	0:14:39	13:21:34	0	17:15:47	9884.7	72806.4	8.89	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

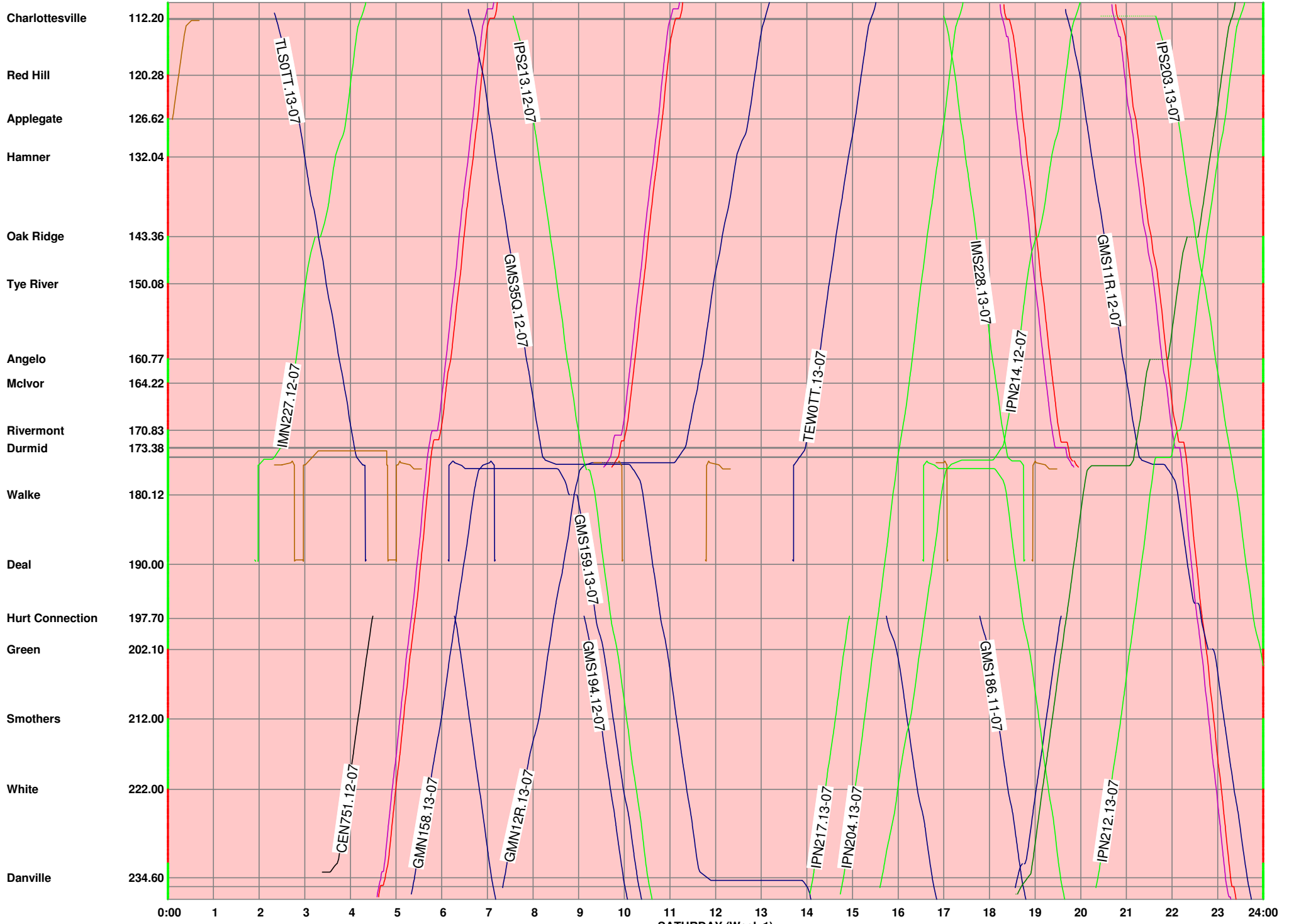
True delay includes the acceleration and deceleration associated with conflict resolutions.

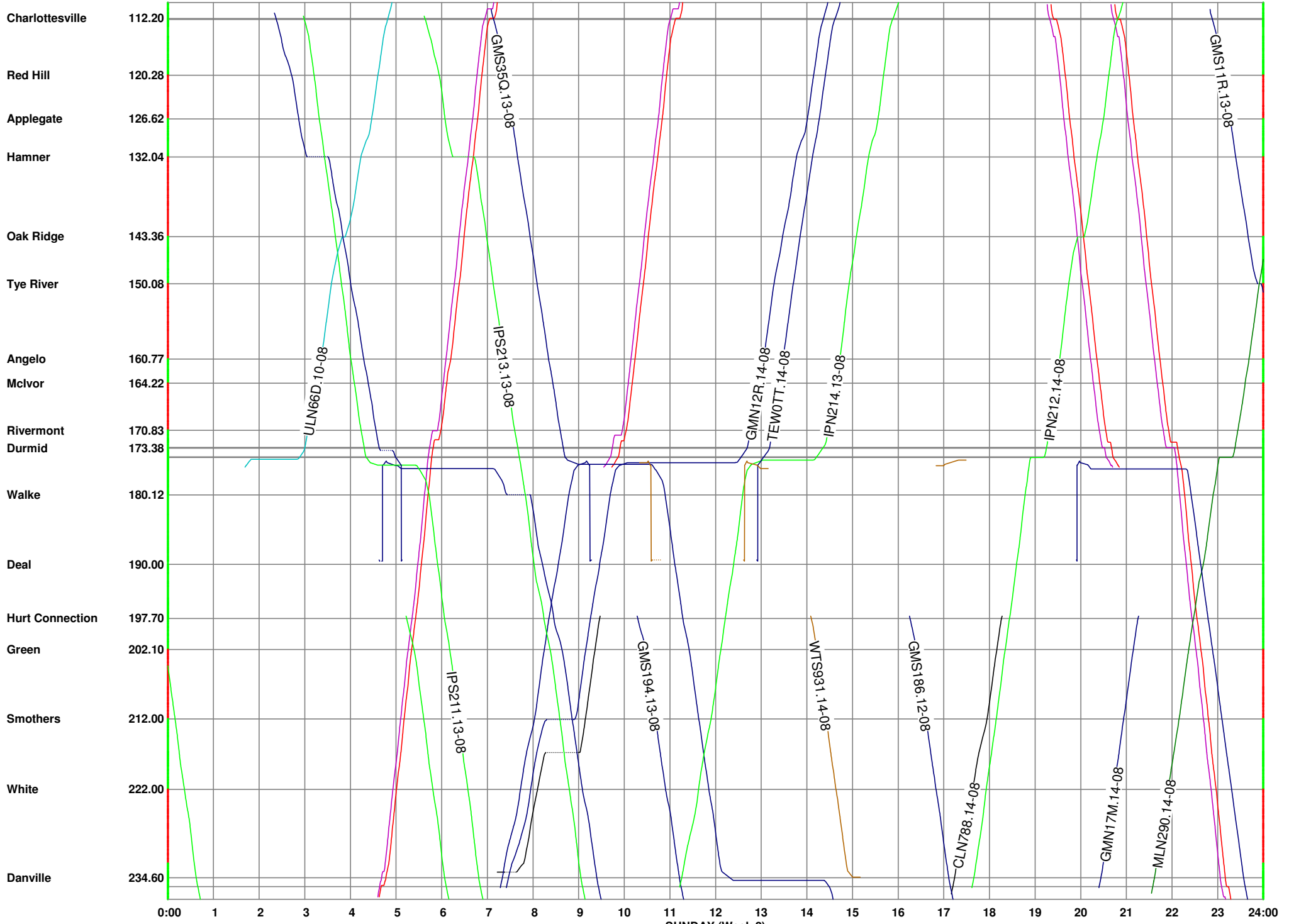
Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

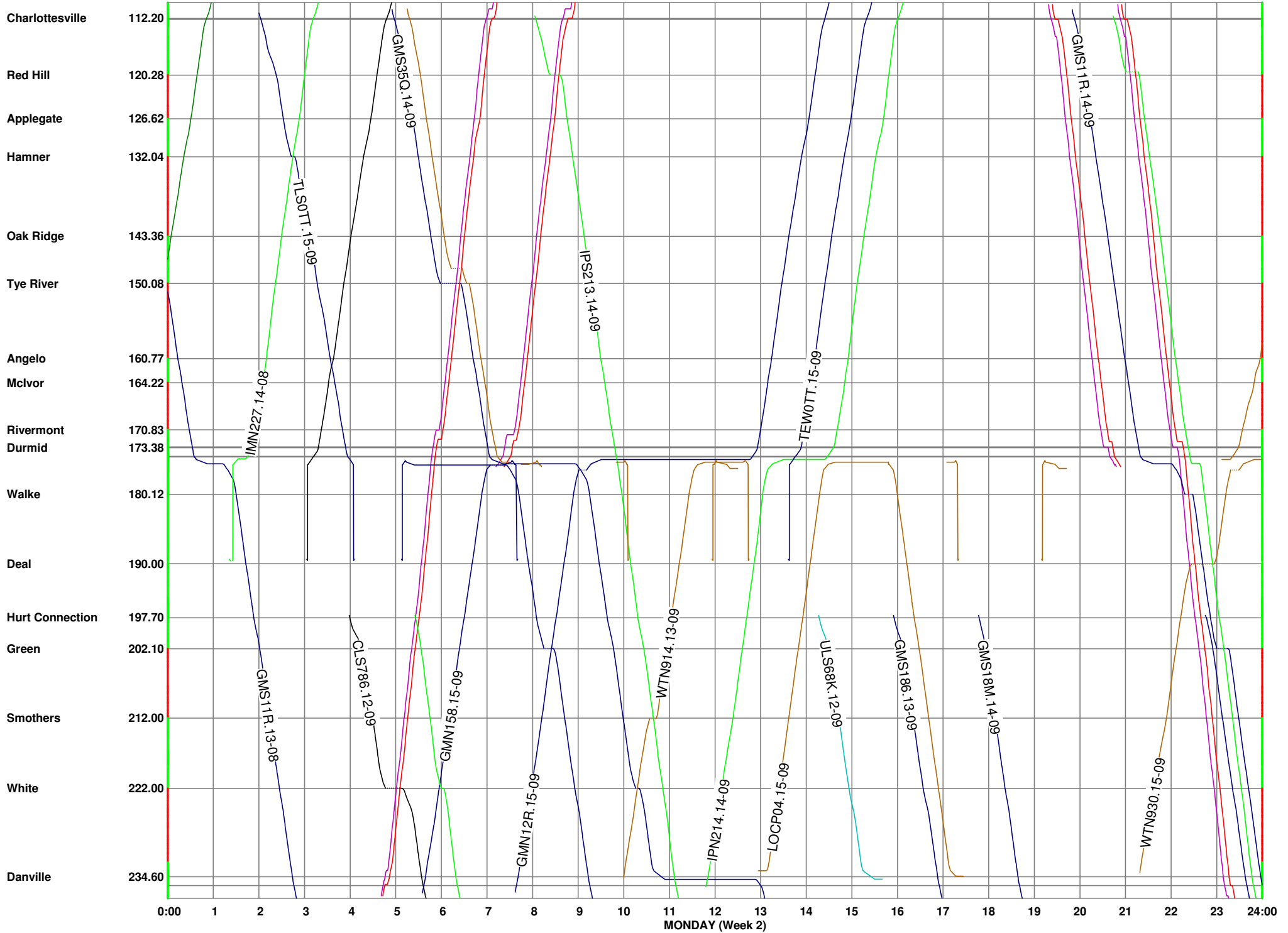
Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

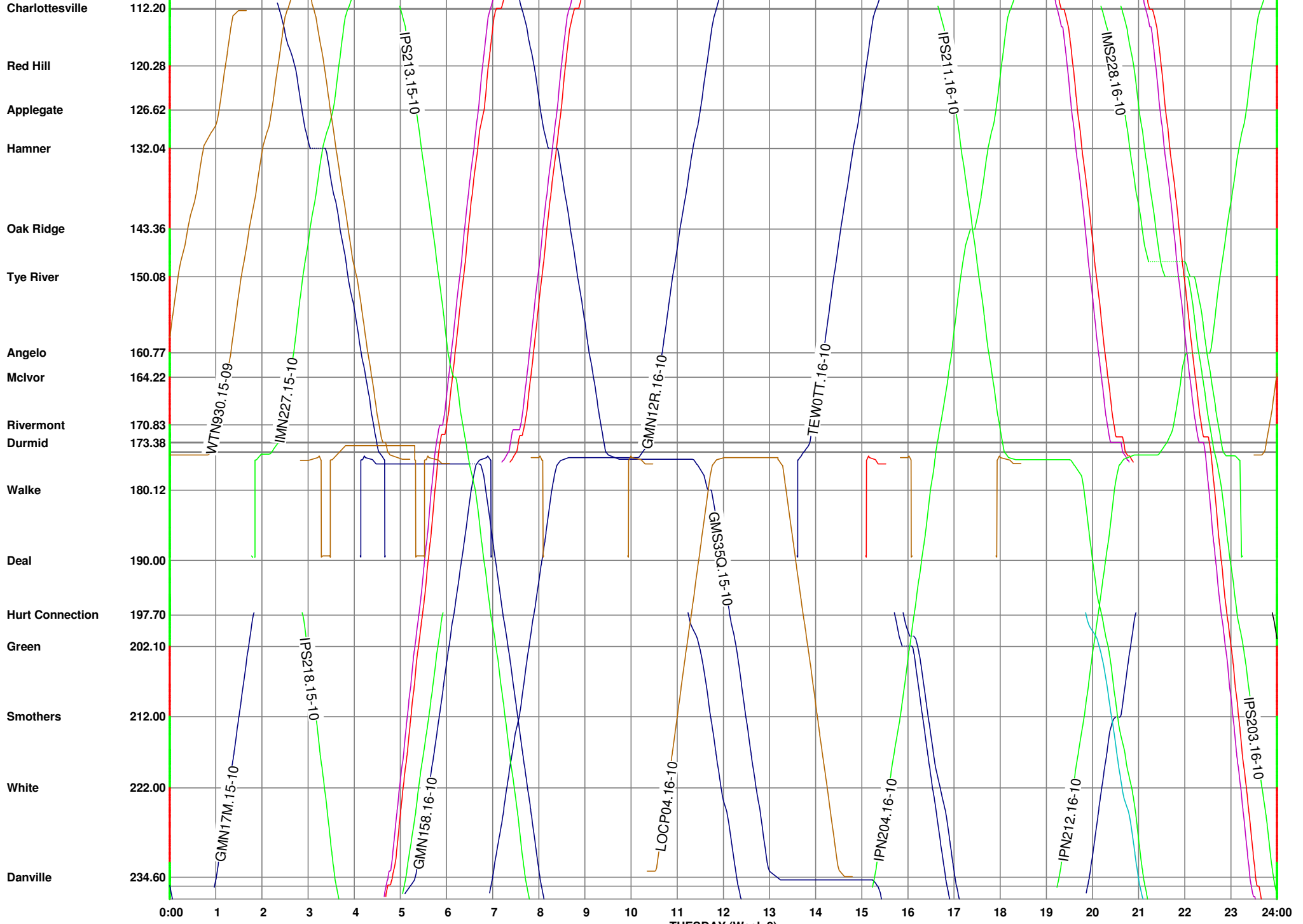
OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

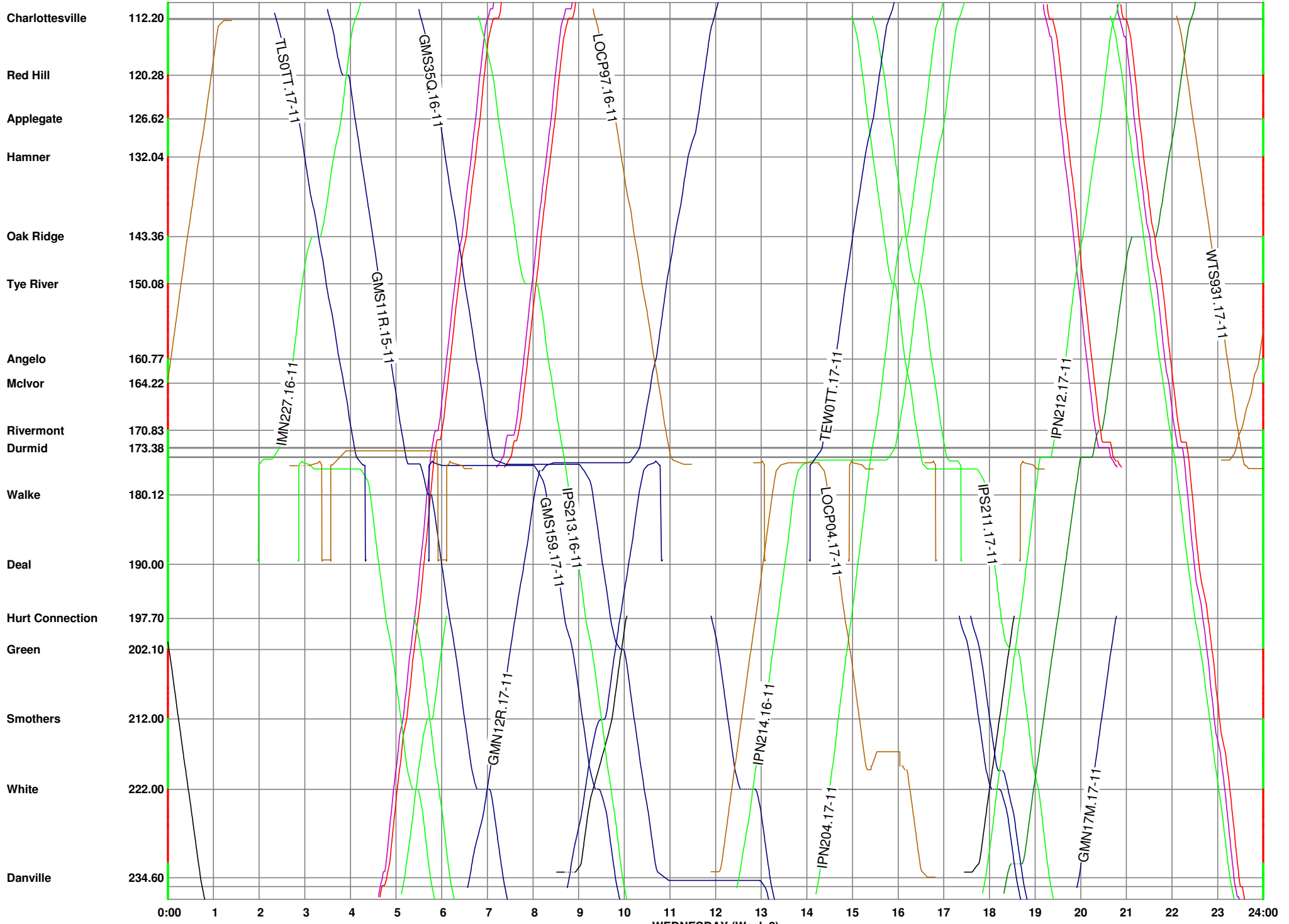
warm-up train count = 72 Cool-down train count = 58 Total number of candidate run-time trains excluded from statistics = 130

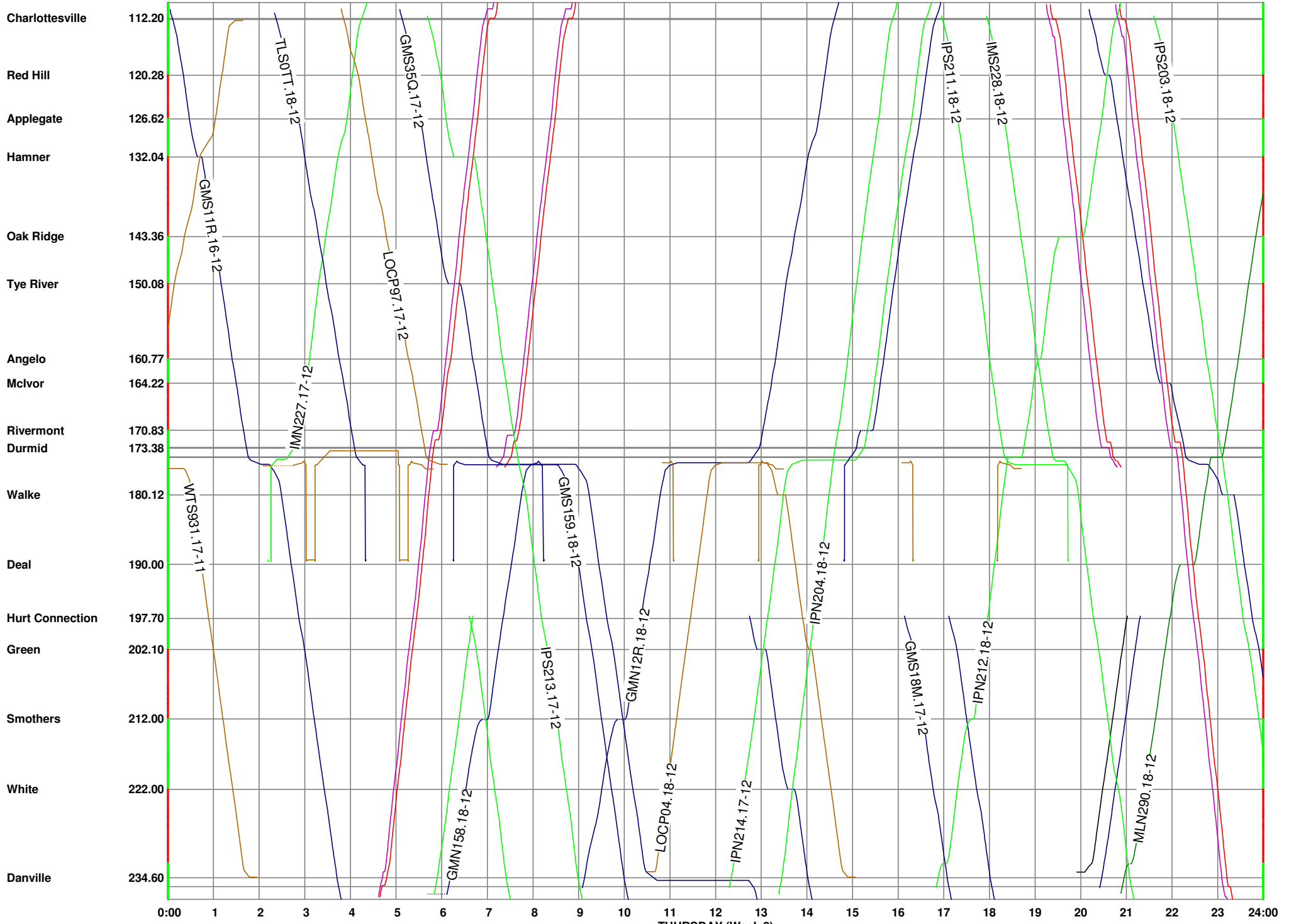








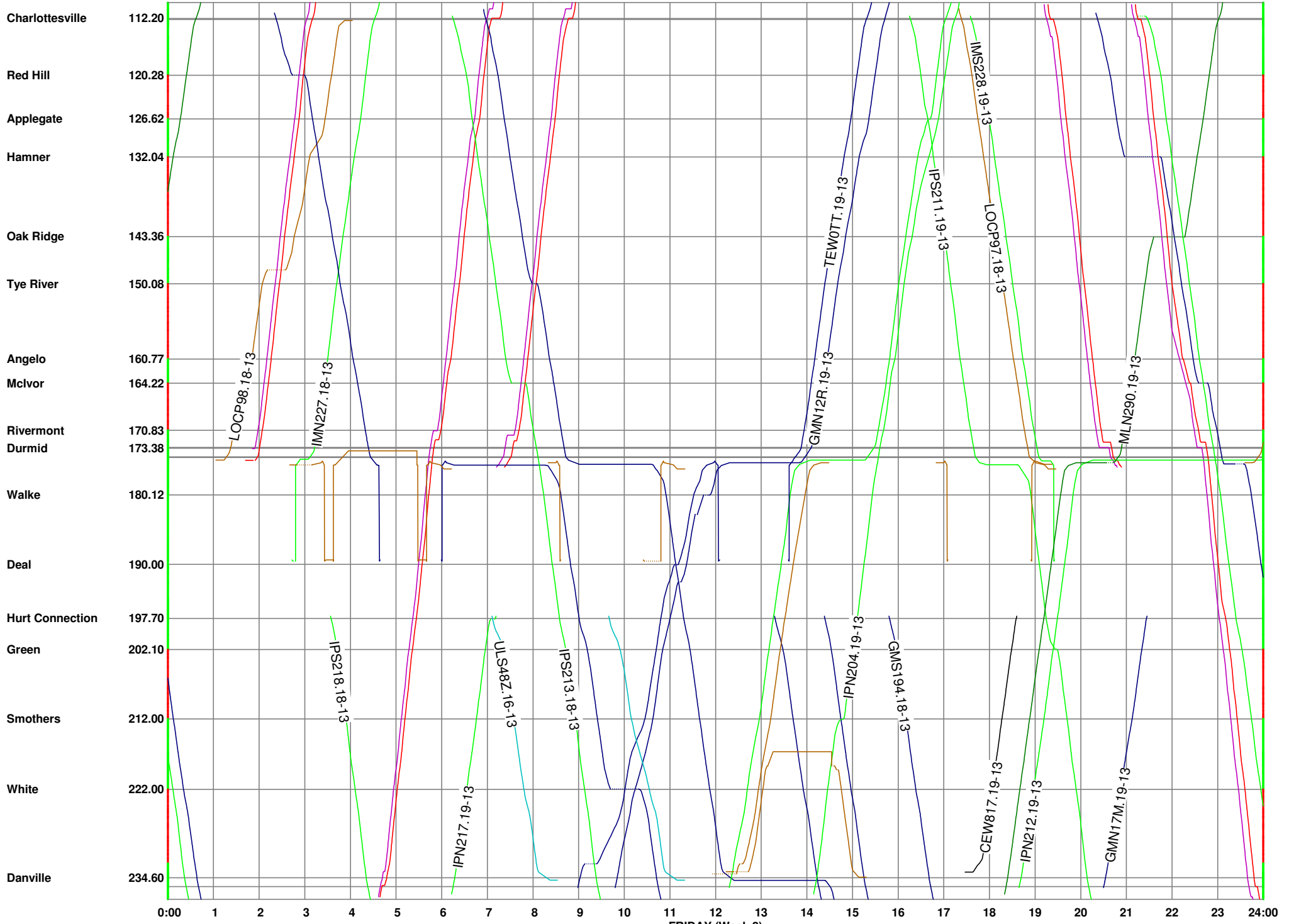


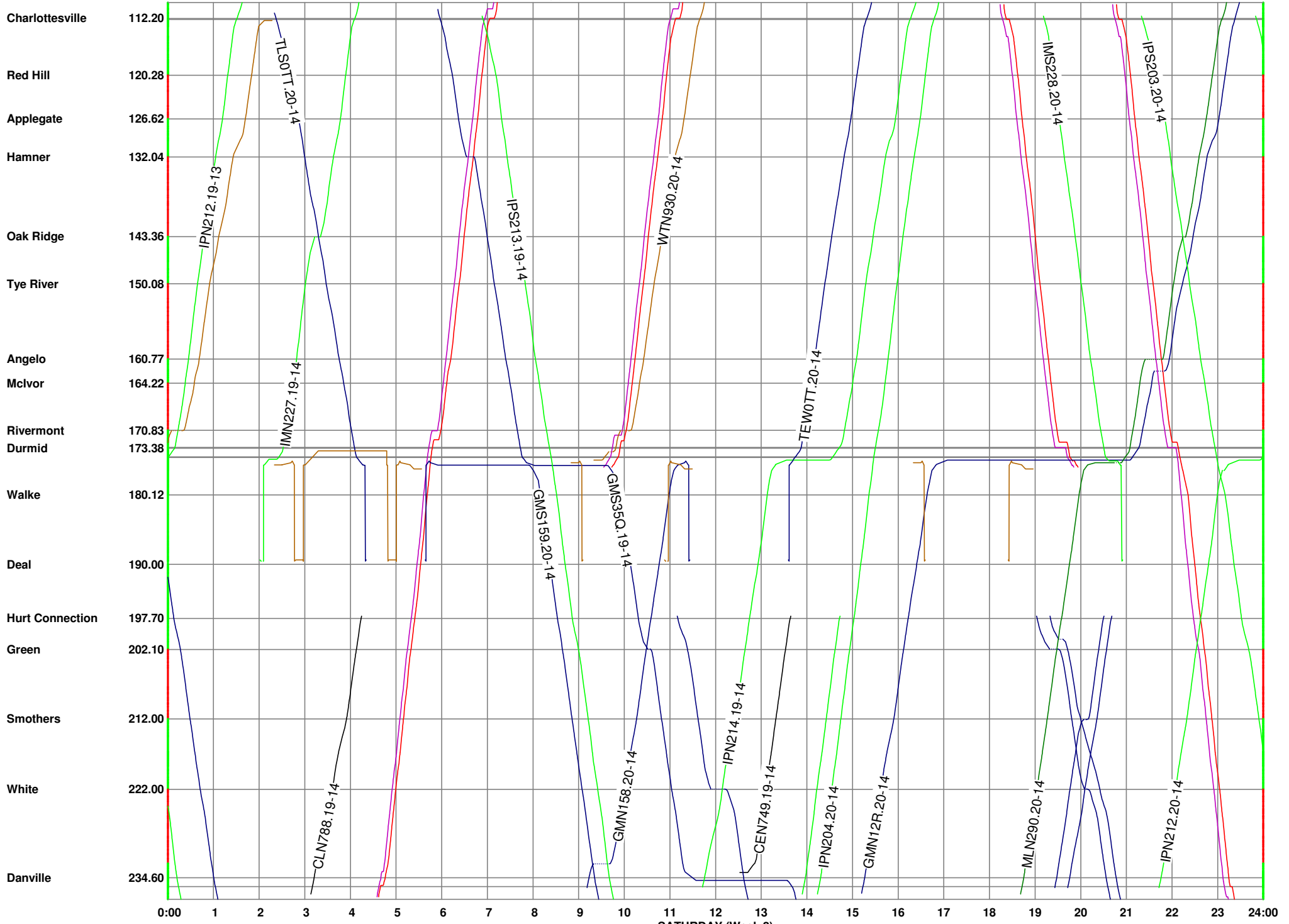


Charlottesville
Red Hill
Applegate
Hamner
Oak Ridge
Tye River
Angelo
Mclvor
Rivermont
Durmid
Walke
Deal
Hurt Connection
Green
Smothers
White
Danville

112.20
120.28
126.62
132.04
143.36
150.08
160.77
164.22
170.83
173.38
180.12
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0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00



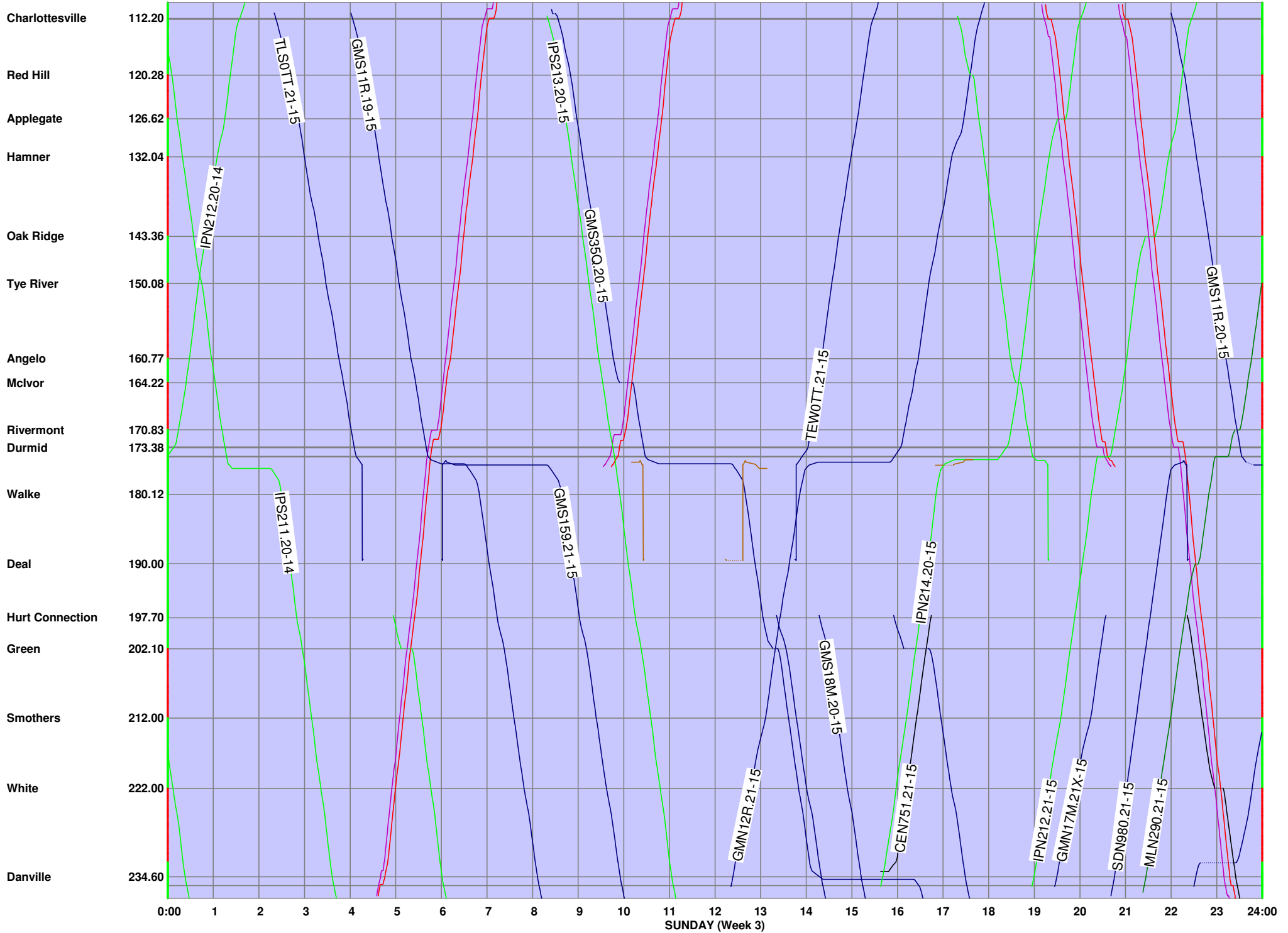


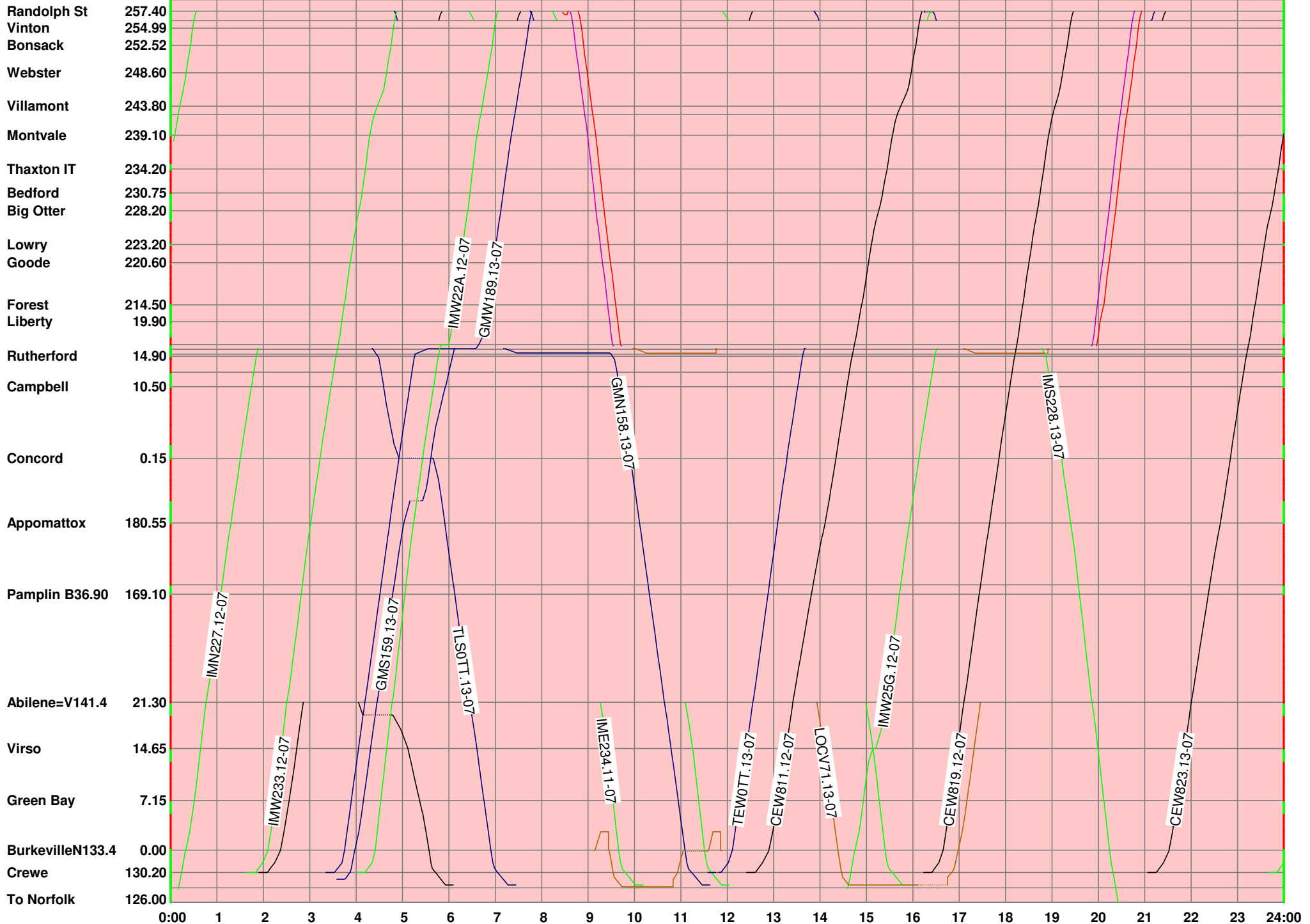
SATURDAY (Week 2)

All times displayed in Eastern time

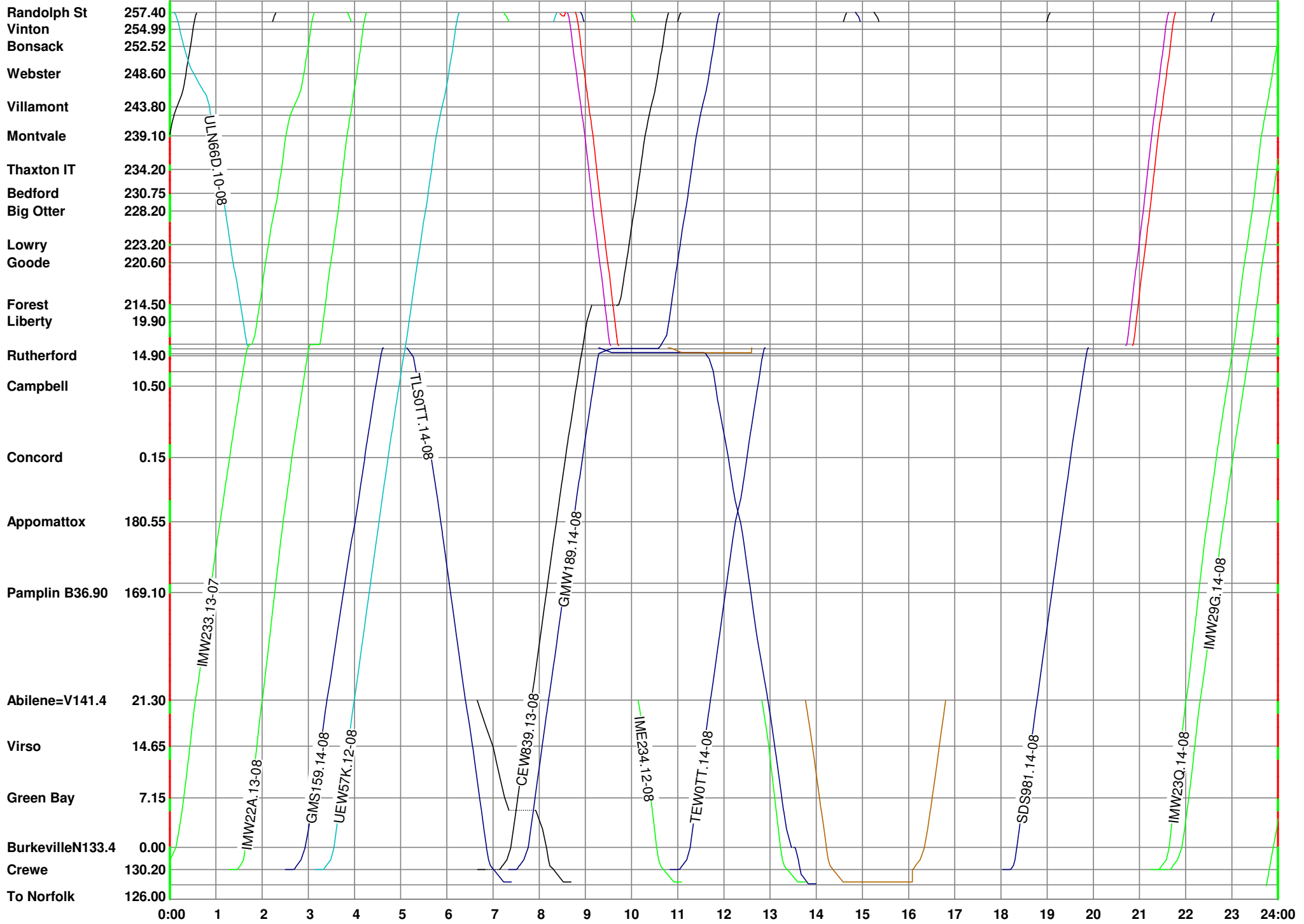
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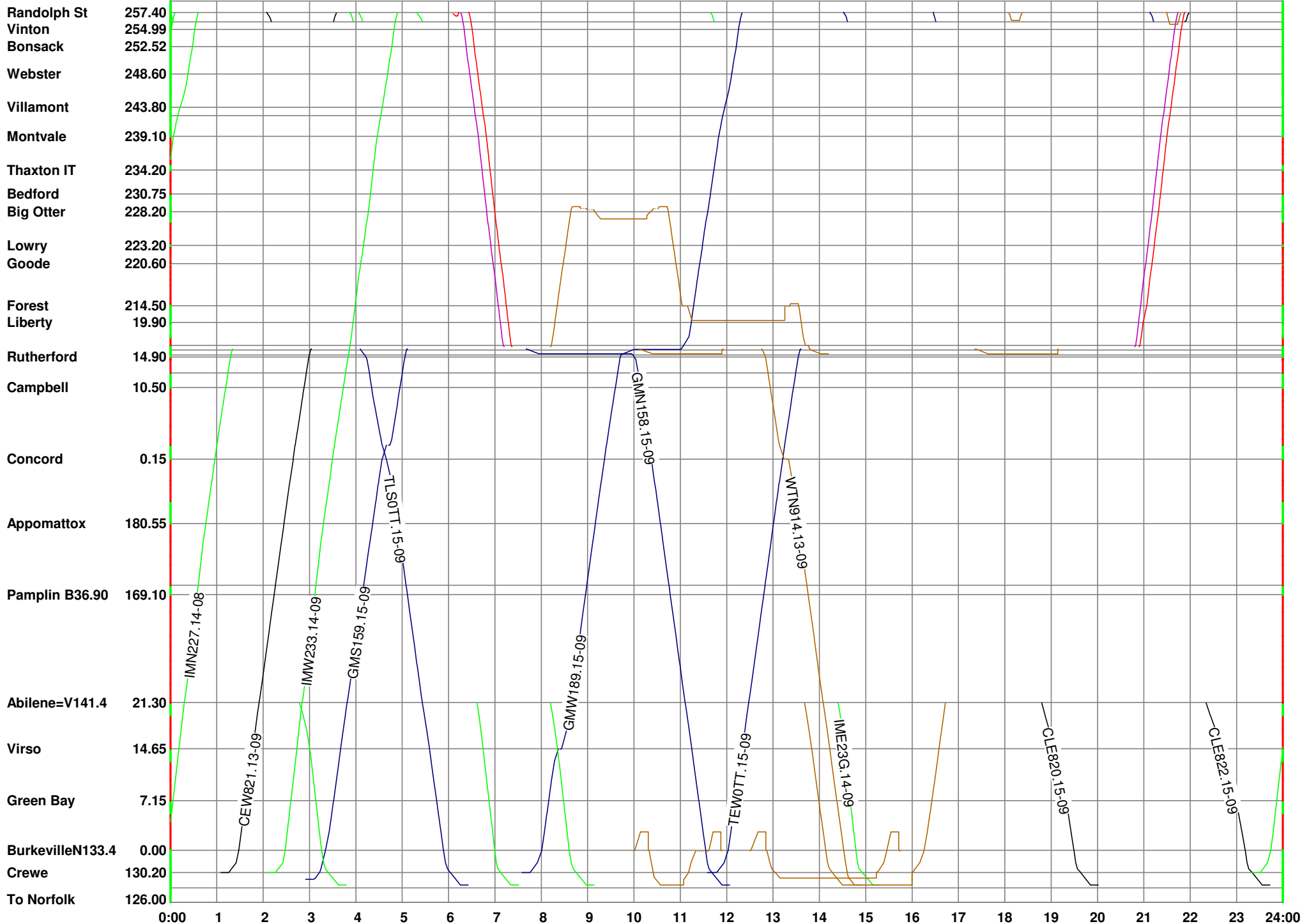
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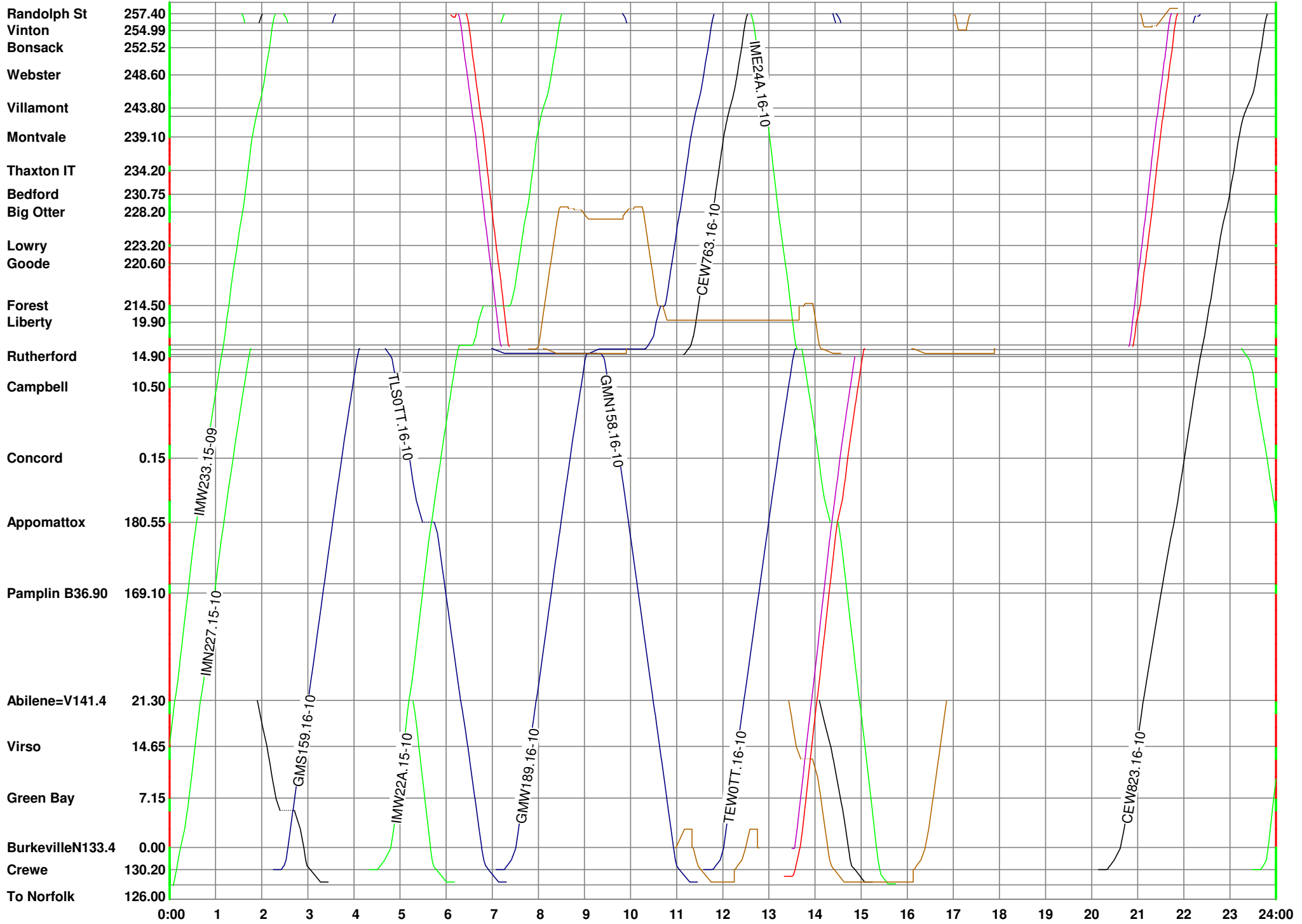


SATURDAY (Week 1)

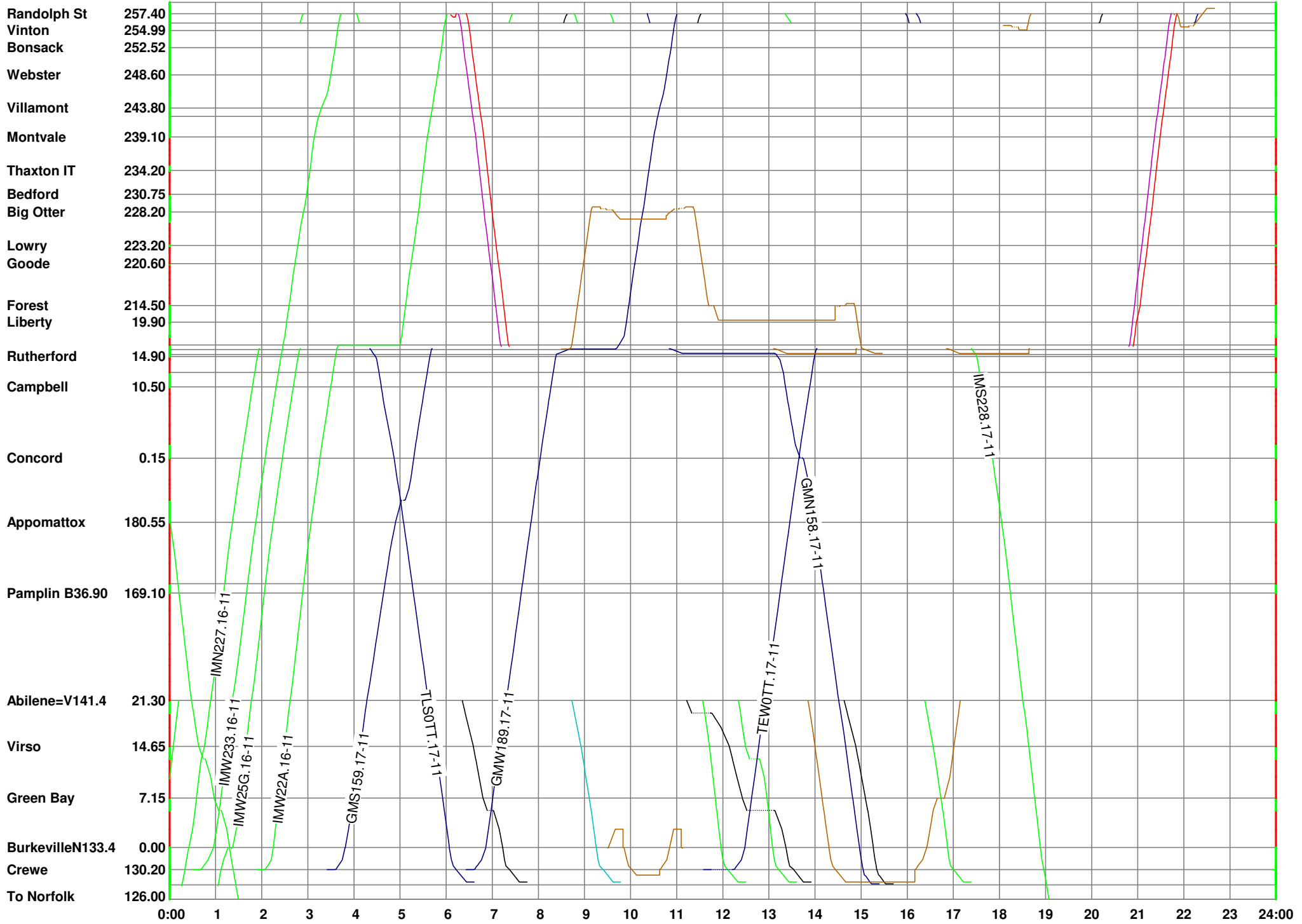


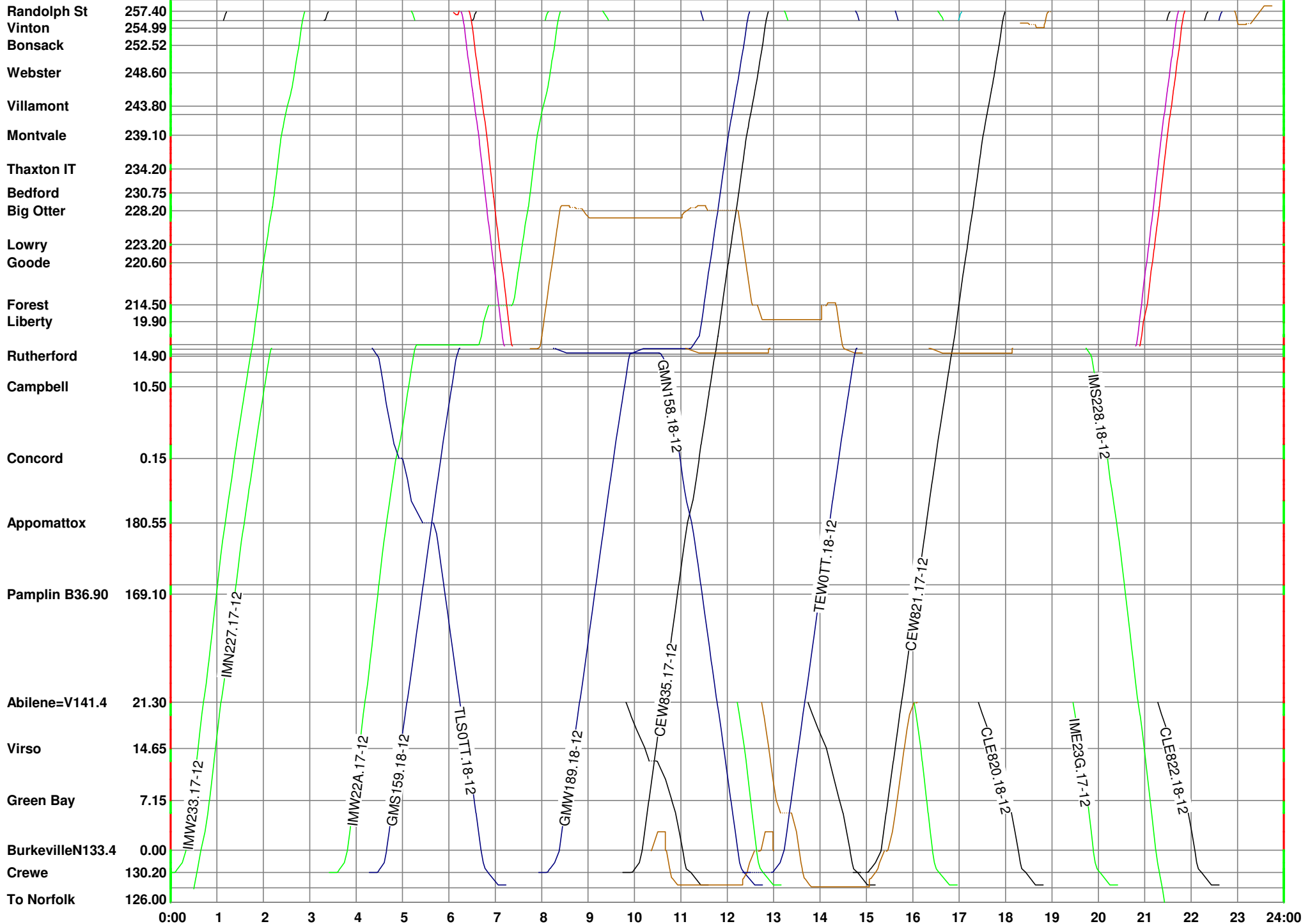


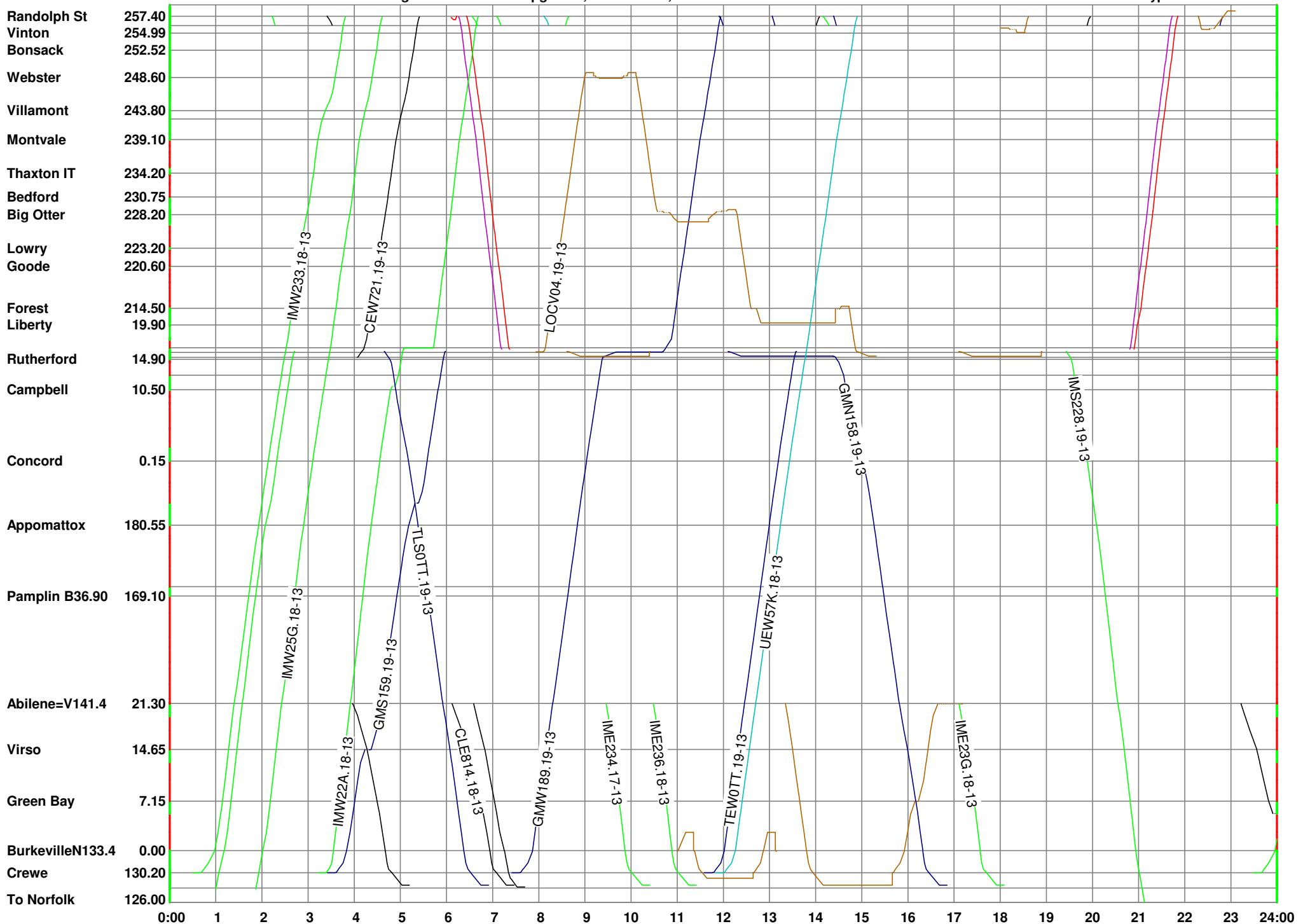
MONDAY (Week 2)

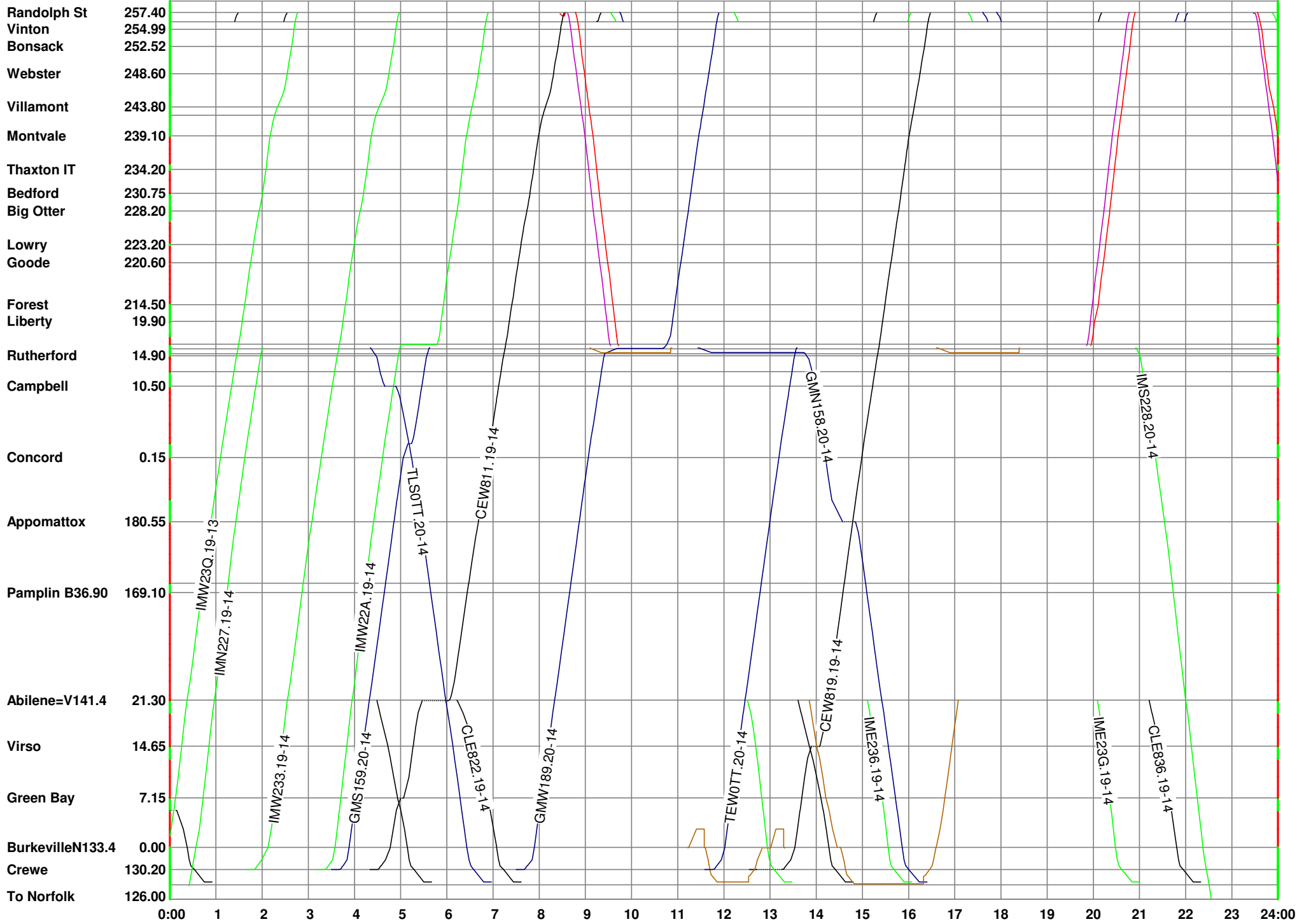


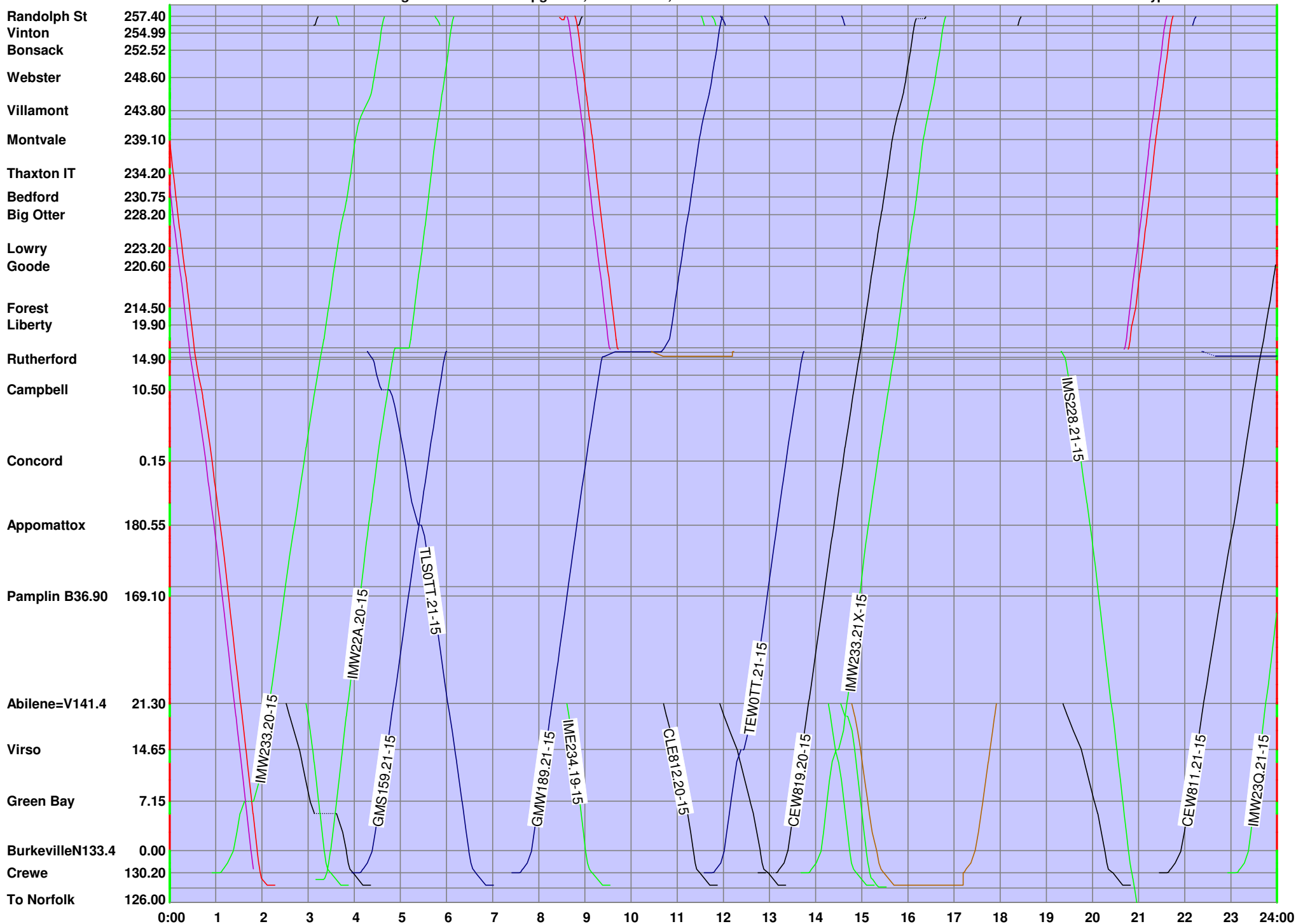
TUESDAY (Week 2)



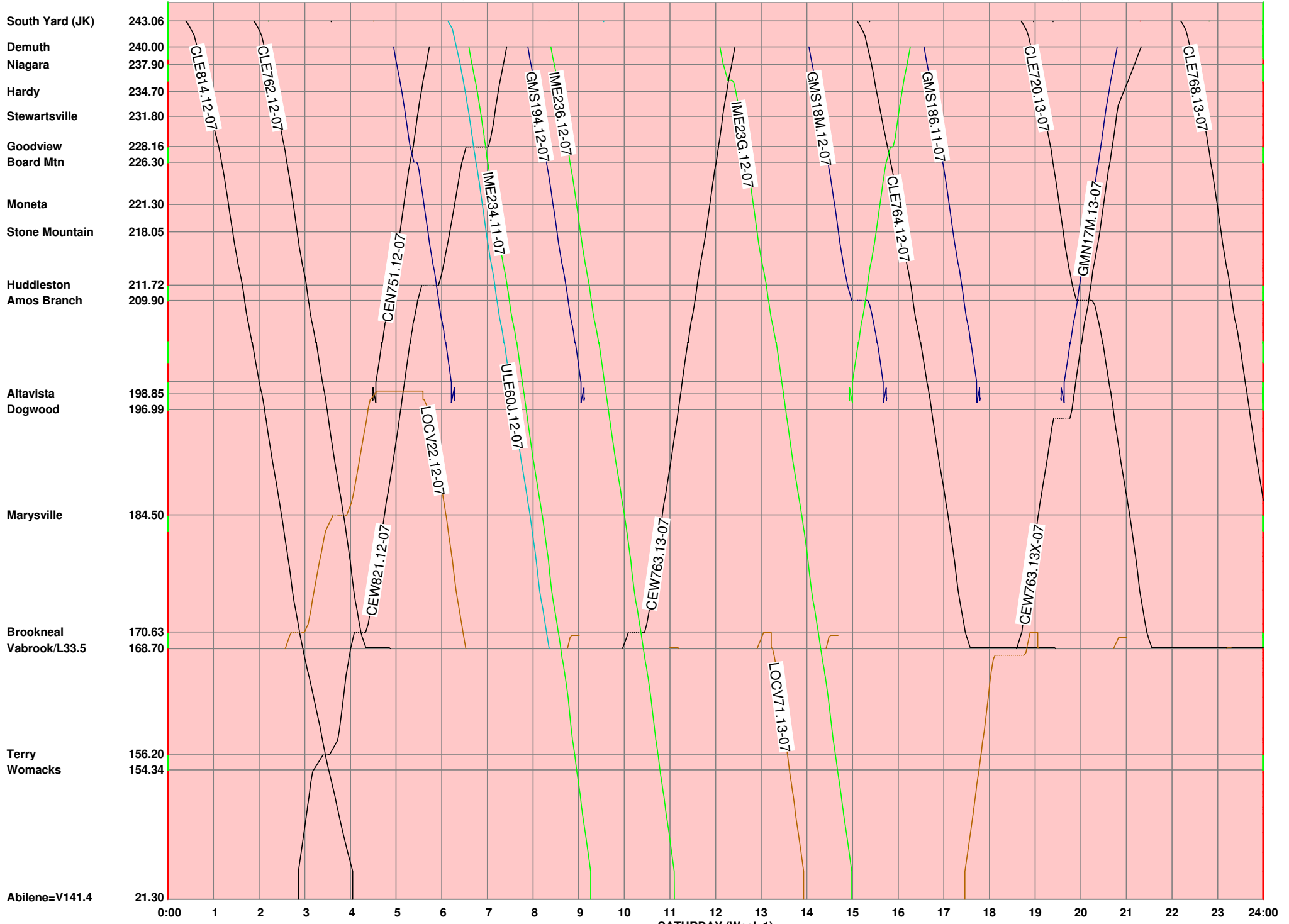


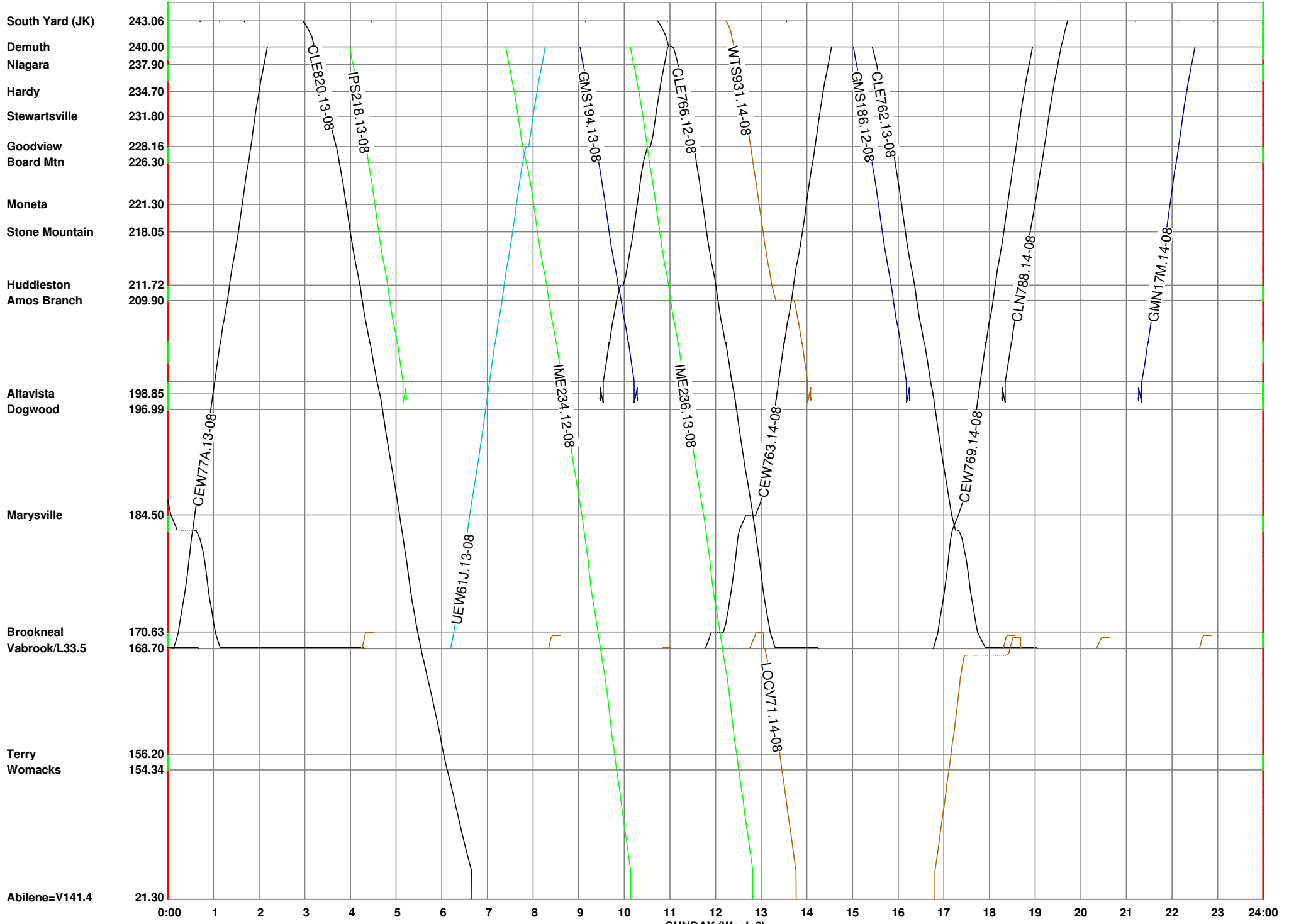


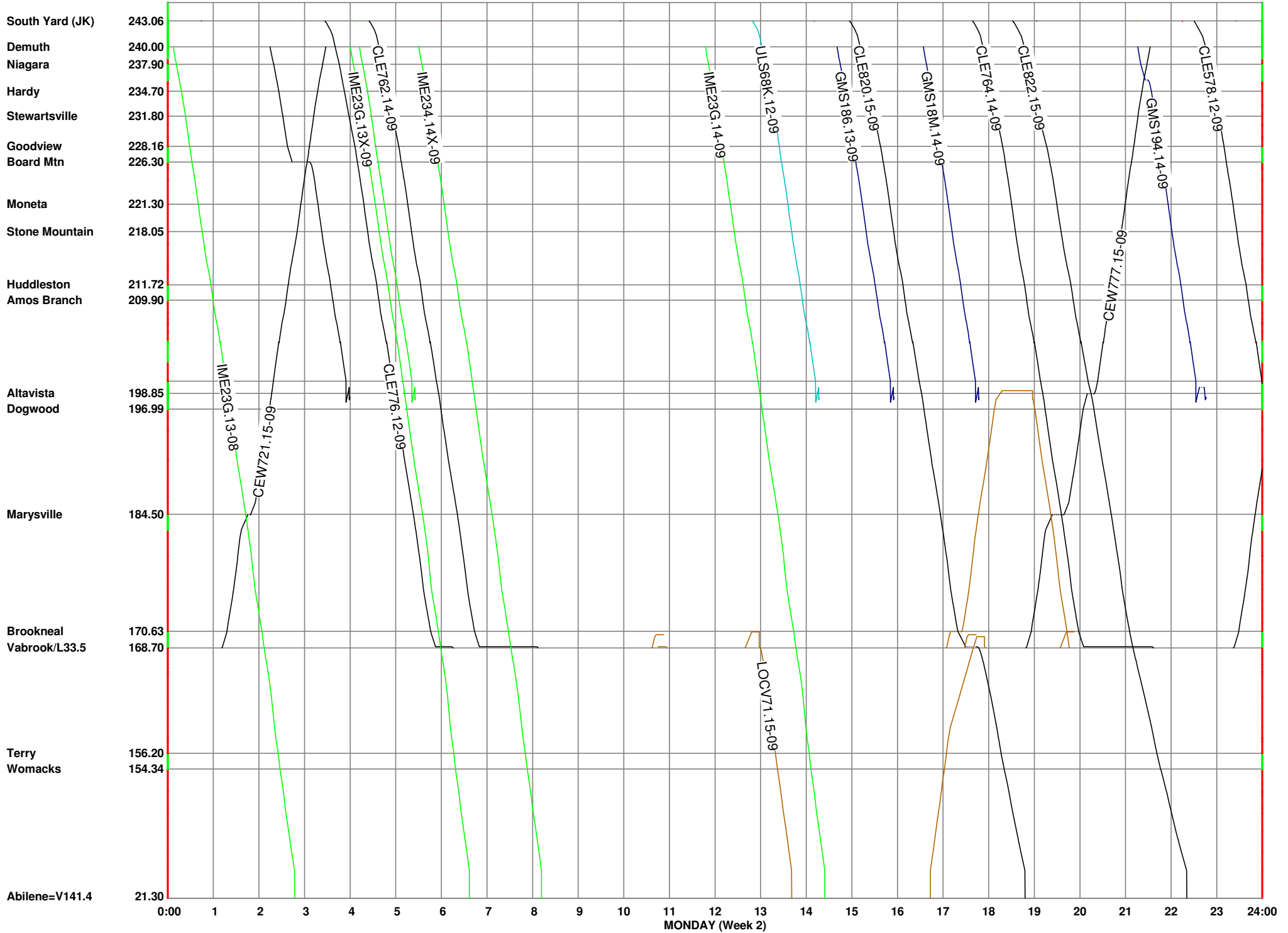


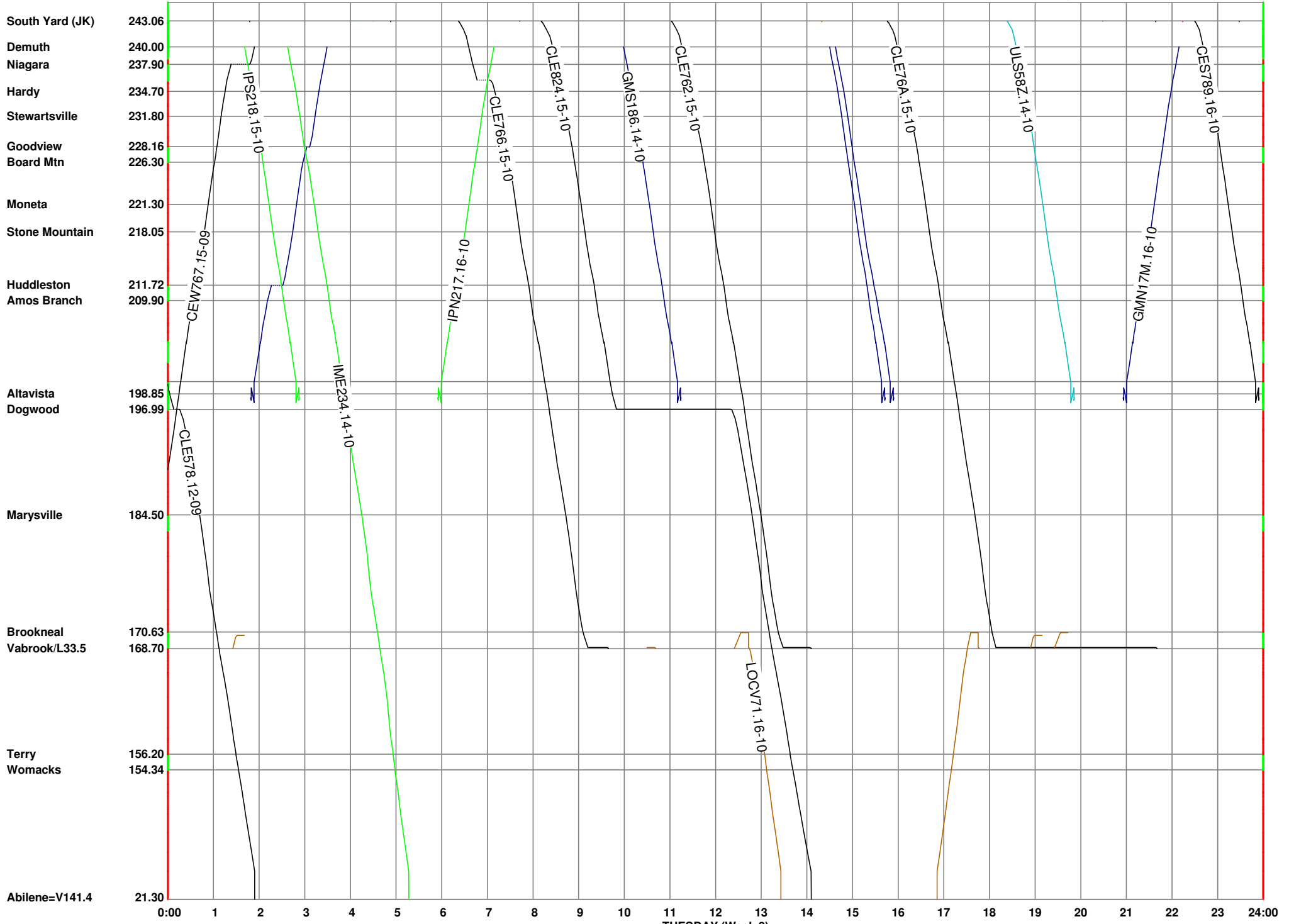


SUNDAY (Week 3)









South Yard (JK) 243.06
 Demuth 240.00
 Niagara 237.90
 Hardy 234.70
 Stewartville 231.80
 Goodview 228.16
 Board Mtn 226.30
 Moneta 221.30
 Stone Mountain 218.05
 Huddleston 211.72
 Amos Branch 209.90
 Altavista 198.85
 Dogwood 196.99
 Marysville 184.50
 Brookneal 170.63
 Vabrook/L33.5 168.70
 Terry 156.20
 Womacks 154.34
 Abilene=V141.4 21.30

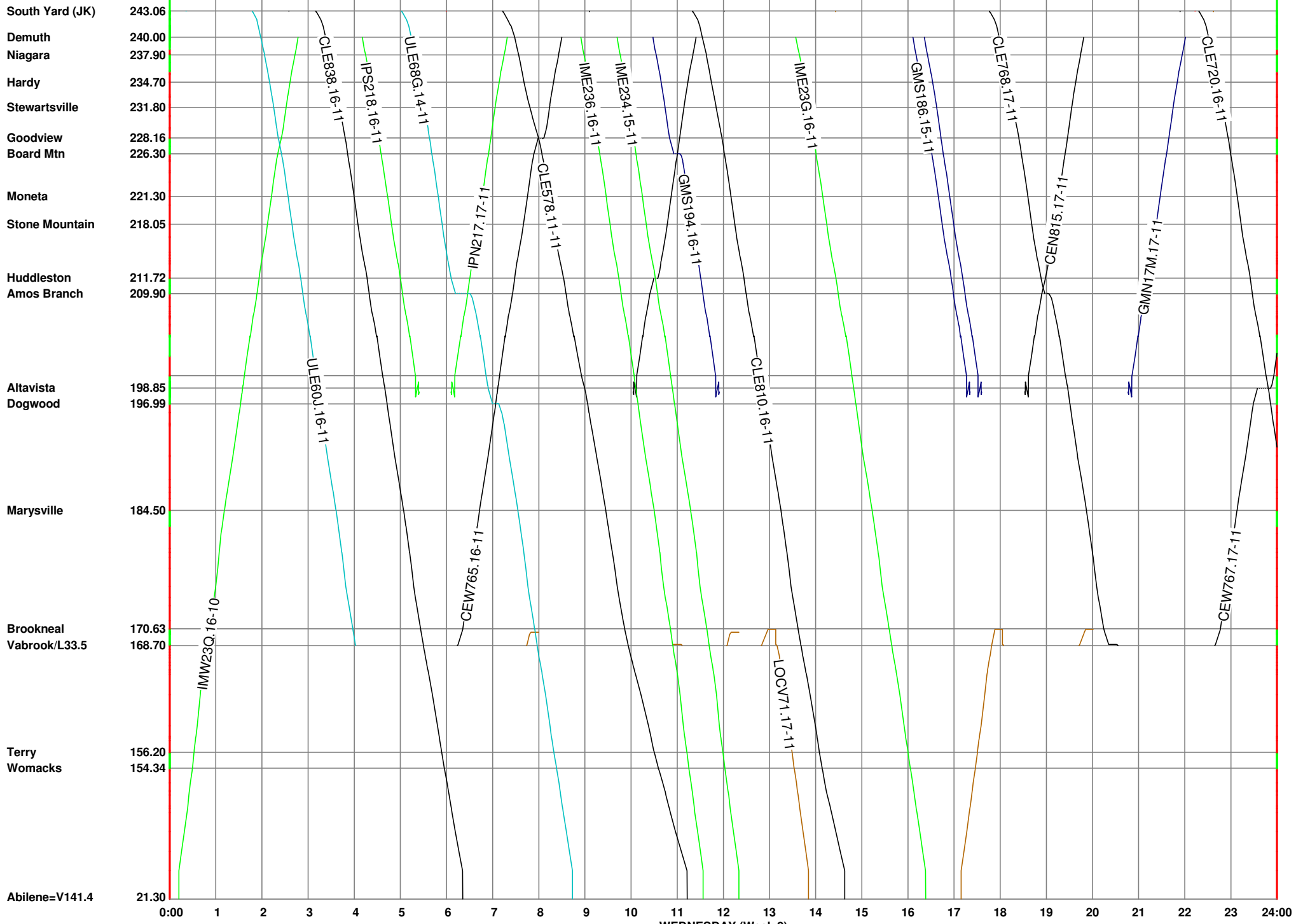
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TUESDAY (Week 2)

All times displayed in Eastern time

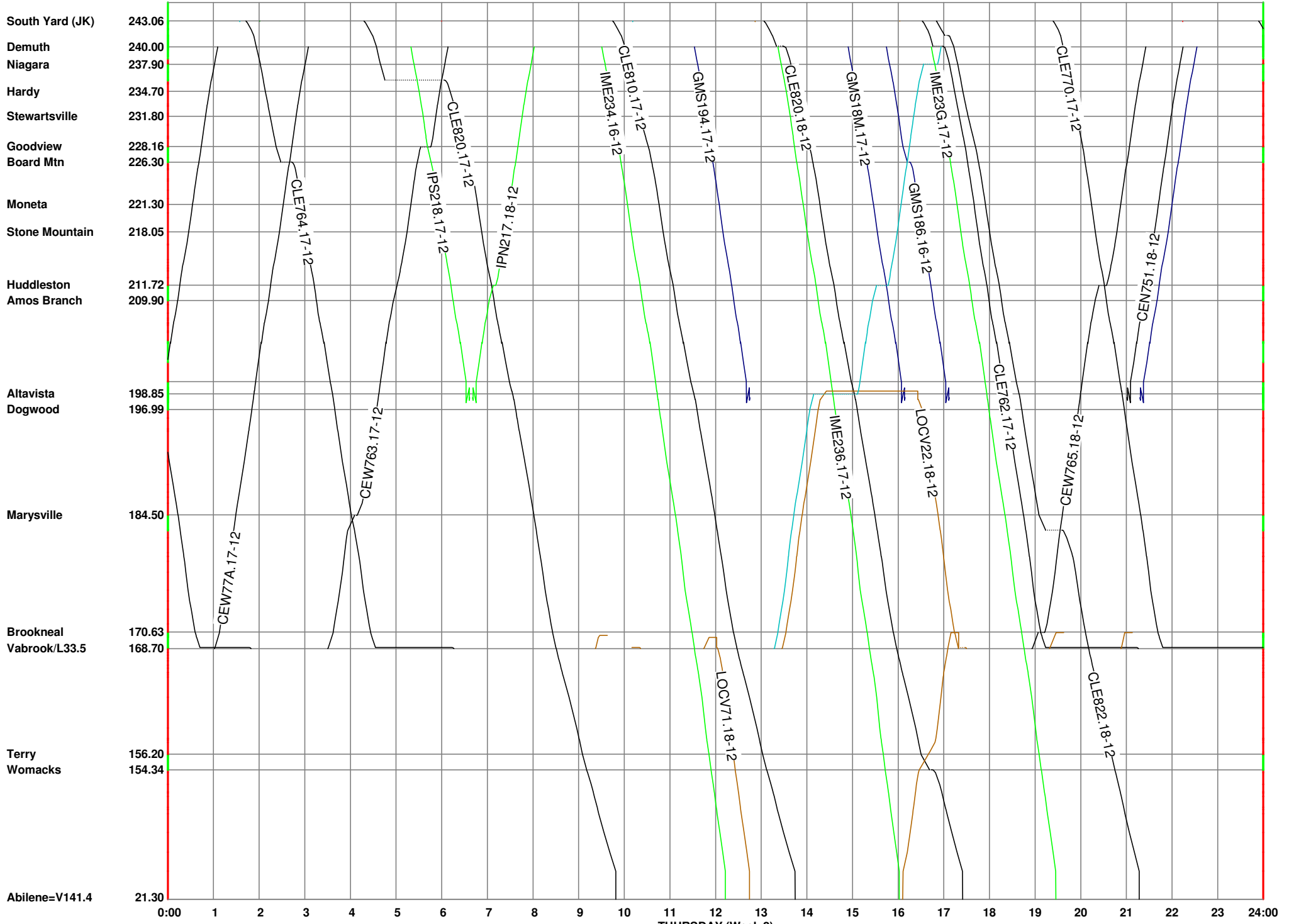
RTC version: 67T L67T

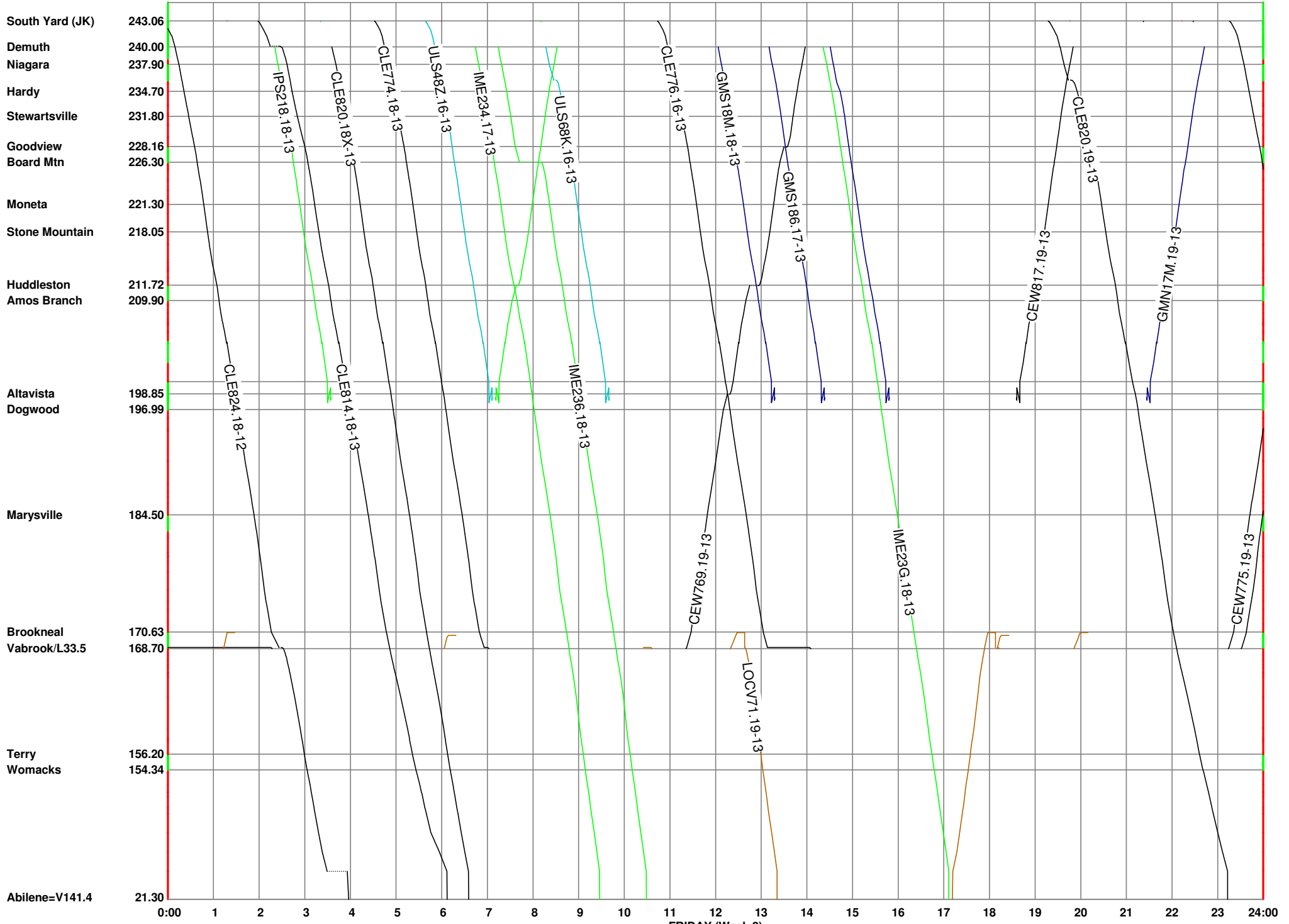
Run time: 02 August 2013 15:36:53

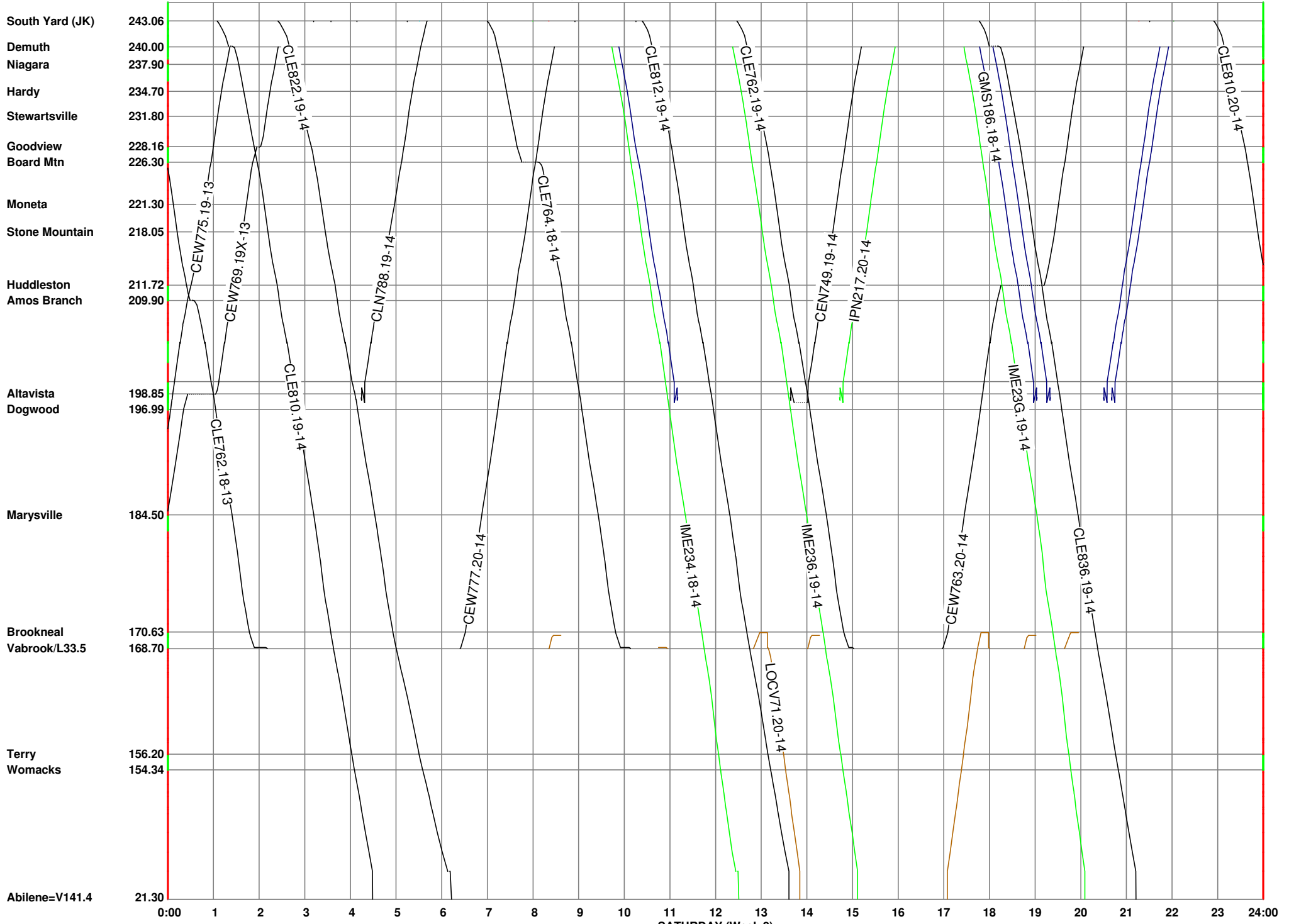


South Yard (JK) 243.06
 Demuth 240.00
 Niagara 237.90
 Hardy 234.70
 Stewartville 231.80
 Goodview 228.16
 Board Mtn 226.30
 Moneta 221.30
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 Marysville 184.50
 Brookneal 170.63
 Vabrook/L33.5 168.70
 Terry 156.20
 Womacks 154.34
 Abilene=V141.4 21.30

0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00
 WEDNESDAY (Week 2)



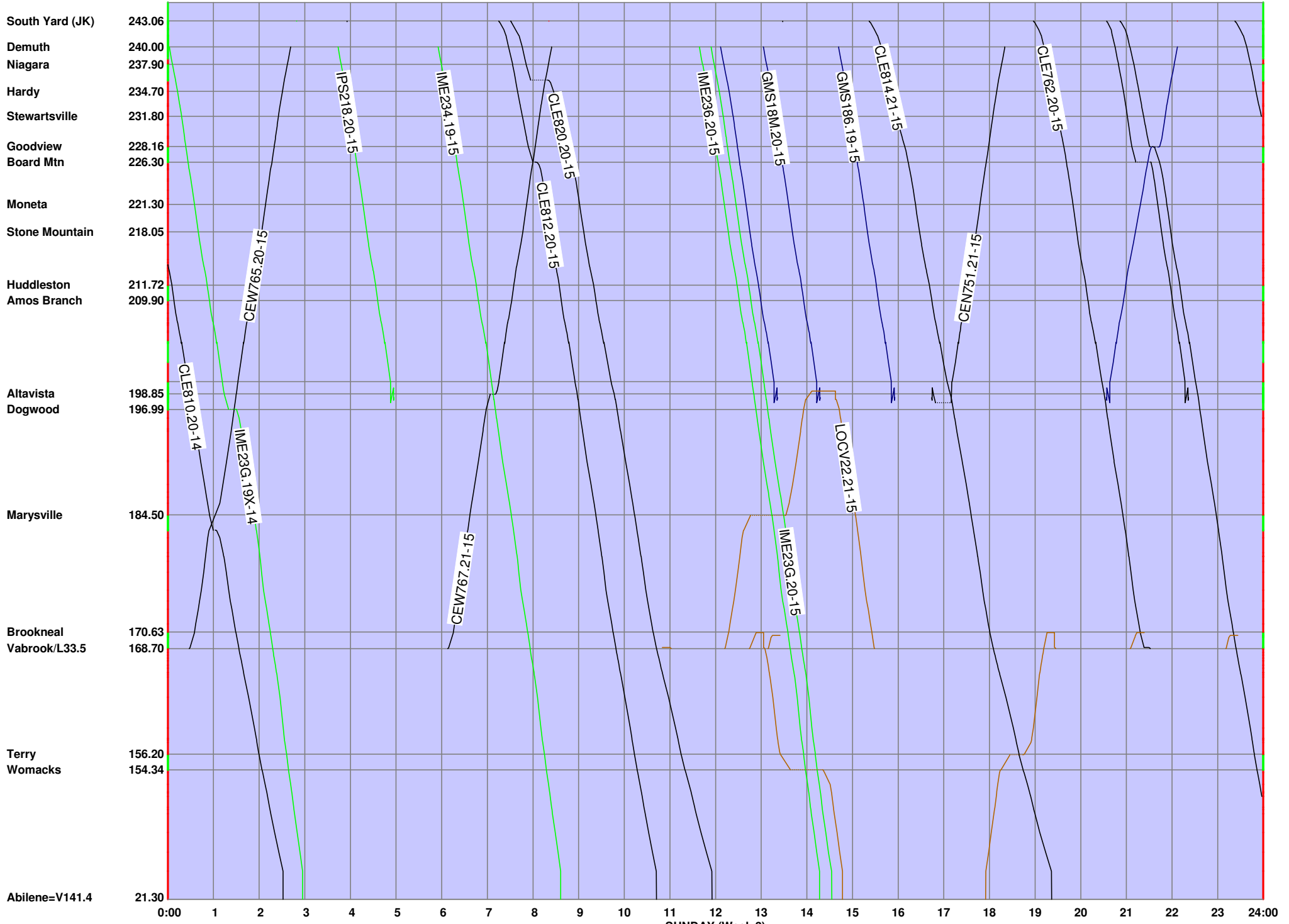




South Yard (JK) 243.06
 Demuth 240.00
 Niagara 237.90
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 Stewartville 231.80
 Goodview 228.16
 Board Mtn 226.30
 Moneta 221.30
 Stone Mountain 218.05
 Huddleston 211.72
 Amos Branch 209.90
 Altavista 198.85
 Dogwood 196.99
 Marysville 184.50
 Brookneal 170.63
 Vabrook/L33.5 168.70
 Terry 156.20
 Womacks 154.34
 Abilene=V141.4 21.30

0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00

SATURDAY (Week 2)



South Yard (JK) 243.06
 Demuth 240.00
 Niagara 237.90
 Hardy 234.70
 Stewartville 231.80
 Goodview 228.16
 Board Mtn 226.30
 Moneta 221.30
 Stone Mountain 218.05
 Huddleston 211.72
 Amos Branch 209.90
 Altavista 198.85
 Dogwood 196.99
 Marysville 184.50
 Brookneal 170.63
 Vabrook/L33.5 168.70
 Terry 156.20
 Womacks 154.34
 Abilene=V141.4 21.30

0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00

Case: VA17A Base2017 VA Project 2017 No new psgr trains

Elapsed execution time: 0:49 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,120 (649M + 471P) Gross conflicts = 1,229 (708M + 521P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 9 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	31	42.728	1.79	0:09:34	0:00:57	0	0:01:03	2:21:59	0	2:23:02	3035.7	7658.3	-----
E	Premium Intermodal	95	31.690	6.91	1:14:24	0	0:00:06	0:16:06	11:07:33	0	11:23:39	9116.1	63537.4	-----
E	Intermodal	77	33.091	5.31	1:12:37	0	0:00:08	0:12:59	11:17:46	0:00:12	12:06:06	9732.2	58939.0	-----
F	Multi-level	17	29.671	14.27	0:04:40	0	0	0:05:01	1:15:53	0	1:20:54	1332.6	6421.0	-----
F	General Merchandise	114	23.826	12.67	4:00:23	0	0:01:20	1:14:30	16:16:30	0:00:11	18:06:53	10456.8	86368.0	-----
F	Coal	103	22.586	9.38	1:21:36	0	0	1:00:40	12:20:29	0:01:17	13:21:07	7524.1	76525.3	-----
F	Unit	19	23.991	11.09	0:05:10	0	0:00:00	0:04:15	1:19:30	0:00:38	1:23:45	1145.7	9221.2	-----
F	Local	77	11.979	9.95	5:17:45	0	0:07:46	0:11:24	10:12:19	0:00:02	10:23:41	3158.8	9674.4	-----
F	Work Train	6	26.249	19.96	0:03:30	0	0:00:00	0:03:11	0:19:27	0:00:31	0:22:39	594.5	3860.3	-----
F	Yard	19	2.948	10.03	1:11:30	0	0:00:45	0:01:40	2:05:10	0	2:05:50	158.7	154.2	-----
All train types		558	24.900	8.98	17:05:09	0:00:57	0:10:09	4:22:53	72:12:40	0:02:53	77:09:40	46255.4	322359.1	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	31	42.728	1.79	0:09:34	0:00:57	0	0:01:03	2:21:59	0	2:23:02	3035.7	7658.3	2.10	-----
Expedited	172	32.398	6.09	3:03:01	0	0:00:14	1:05:06	23:01:19	0:00:12	24:05:45	18848.3	122476.4	9.27	-----
Freight	355	20.227	11.26	13:16:34	0	0:09:54	3:16:43	46:13:21	0:02:40	50:04:51	24371.3	192224.4	21.84	-----
All groups	558	24.900	8.98	17:05:09	0:00:57	0:10:09	4:22:53	72:12:40	0:02:53	77:09:40	46255.4	322359.1	15.42	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017A Future Base Case

Case: VA17A Base2017 VA Project 2017 No new psgr trains

Elapsed execution time: 0:49 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,120 (649M + 471P) Gross conflicts = 1,229 (708M + 521P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 9 (scale 0-100)

G R P	Train Type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	30	42.639	0.09	0:09:14	0:00:57	0	0:00:03	2:17:24	0	2:18:25	2832.4	6652.2	-----
E	Premium Intermodal	71	32.380	4.26	1:10:24	0	0:00:06	0:08:12	9:01:22	0	9:19:20	7620.1	55070.7	-----
E	Intermodal	30	31.765	4.38	0:05:50	0	0:00:03	0:02:20	2:11:39	0:00:12	2:13:38	1957.9	11079.6	-----
F	Multi-level	10	31.806	12.05	0:03:30	0	0	0:03:56	1:11:07	0	1:16:07	1276.0	5838.2	-----
F	General Merchandise	77	22.177	9.94	2:20:03	0	0:00:49	0:16:30	9:00:29	0:00:11	10:10:39	5558.7	48032.5	-----
F	Coal	11	27.447	15.67	0:02:50	0	0	0:01:48	0:12:48	0	0:16:14	445.6	4034.3	-----
F	Unit	5	20.365	6.69	0:02:20	0	0:00:00	0:00:32	0:08:36	0	0:10:55	222.6	2421.0	-----
F	Local	16	25.386	8.13	0:10:22	0	0:00:13	0:02:41	1:19:26	0	1:22:08	1171.3	3154.2	-----
F	Work Train	6	26.243	10.09	0:03:30	0	0:00:00	0:01:19	0:15:53	0:00:31	0:17:59	472.1	3473.5	-----
F	Yard	19	3.524	17.60	0:16:00	0	0:00:28	0:02:02	1:05:30	0	1:05:35	104.3	135.8	-----
All train types		275	27.948	6.82	6:12:03	0:00:57	0:01:42	1:15:27	29:08:18	0:00:55	32:07:03	21661.0	139892.2	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	30	42.639	0.09	0:09:14	0:00:57	0	0:00:03	2:17:24	0	2:18:25	2832.4	6652.2	0.11	-----
Expedited	101	32.252	4.29	1:16:14	0	0:00:09	0:10:33	11:13:02	0:00:12	12:08:58	9578.1	66150.4	6.61	-----
Freight	144	22.471	10.45	4:10:35	0	0:01:32	1:04:51	15:01:52	0:00:42	17:03:39	9250.6	67089.6	18.72	-----
All groups	275	27.948	6.82	6:12:03	0:00:57	0:01:42	1:15:27	29:08:18	0:00:55	32:07:03	21661.0	139892.2	10.93	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017A Future Base Case

Case: VA17A Base2017 VA Project 2017 No new psgr trains

Elapsed execution time: 0:49 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,120 (649M + 471P) Gross conflicts = 1,229 (708M + 521P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 9 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	2	41.820	0.00	0:00:40	0	0	0	0:04:20	0	0:04:50	202.8	1001.0	-----
E Premium Intermodal	33	33.222	0.47	0:05:30	0	0	0:00:07	1:01:29	0	1:07:59	1062.6	5074.8	-----
E Intermodal	77	34.691	2.30	1:06:47	0	0:00:05	0:04:12	8:10:15	0	9:01:29	7545.1	46928.0	-----
F Multi-level	7	0.120	0.00	0:01:10	0	0	0	0	0	0:01:10	0.1	0.0	-----
F General Merchandise	77	24.522	6.97	1:11:00	0	0:00:31	0:06:05	4:14:50	0	5:08:24	3148.8	24704.7	-----
F Coal	83	21.114	6.10	0:19:20	0	0	0:03:00	2:04:29	0	2:23:34	1511.1	14993.9	-----
F Unit	15	26.749	3.10	0:03:10	0	0	0:00:16	0:09:09	0	0:12:14	327.4	2240.2	-----
F Local	37	9.577	9.58	2:03:44	0	0:05:18	0:03:14	3:03:22	0	3:16:44	849.9	2784.1	-----
F Work Train	1	35.558	2.55	0:00:10	0	0	0:00:03	0:02:00	0	0:02:10	77.5	275.2	-----
F Yard	13	1.952	0.00	0:23:50	0	0:00:17	0	0:23:39	0	1:03:53	54.4	18.4	-----
All train types	345	25.199	4.26	7:03:21	0	0:06:11	0:16:58	21:01:36	0	24:10:30	14779.6	98020.3	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	2	41.820	0.00	0:00:40	0	0	0	0:04:20	0	0:04:50	202.8	1001.0	0.00	-----
Expedited	110	34.502	2.07	1:12:17	0	0:00:05	0:04:19	9:11:44	0	10:09:28	8607.6	52002.8	3.01	-----
Freight	233	17.970	6.83	5:14:24	0	0:06:06	0:12:39	11:09:31	0	13:20:11	5969.2	45016.5	12.72	-----
All groups	345	25.199	4.26	7:03:21	0	0:06:11	0:16:58	21:01:36	0	24:10:30	14779.6	98020.3	6.89	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017A Future Base Case

Case: VA17A Base2017 VA Project 2017 No new psgr trains

Elapsed execution time: 0:49 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,120 (649M + 471P) Gross conflicts = 1,229 (708M + 521P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 9 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	2	0.090	0.00	0:00:40	0	0	0	0	0	0:00:40	0.1	0.0	-----
E	Intermodal	77	5.574	0.00	0:15:15	0	0	0	0:00:01	0	0:18:02	100.6	343.2	-----
F	Multi-level	7	0.340	0.00	0:01:10	0	0	0	0:00:02	0	0:01:14	0.4	3.2	-----
F	General Merchandise	64	24.911	1.44	0:11:50	0	0	0:00:30	1:10:43	0	1:23:29	1183.0	7408.5	-----
F	Coal	101	22.617	4.44	1:21:16	0	0	0:07:33	7:19:39	0	9:07:00	5043.9	46488.7	-----
F	Unit	18	25.553	2.05	0:04:00	0	0	0:00:18	0:14:58	0	0:19:28	497.8	2961.7	-----
F	Local	31	17.375	1.33	0:14:40	0	0	0:00:15	1:04:41	0	1:09:50	588.0	1868.0	-----
F	Work Train	2	17.204	41.88	0:00:30	0	0	0:00:37	0:01:23	0	0:02:38	45.3	112.4	-----
All train types		302	21.533	3.79	3:21:21	0	0	0:09:15	11:03:31	0	14:10:24	7459.2	59185.7	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	2	0.090	0.00	0:00:40	0	0	0	0	0	0:00:40	0.1	0.0	0.00	-----
Expedited	77	5.574	0.00	0:15:15	0	0	0	0:00:01	0	0:18:02	100.6	343.2	0.00	-----
Freight	223	22.455	3.84	3:05:26	0	0	0:09:15	11:03:30	0	13:15:41	7358.5	58842.5	7.54	-----
All groups	302	21.533	3.79	3:21:21	0	0	0:09:15	11:03:31	0	14:10:24	7459.2	59185.7	7.44	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

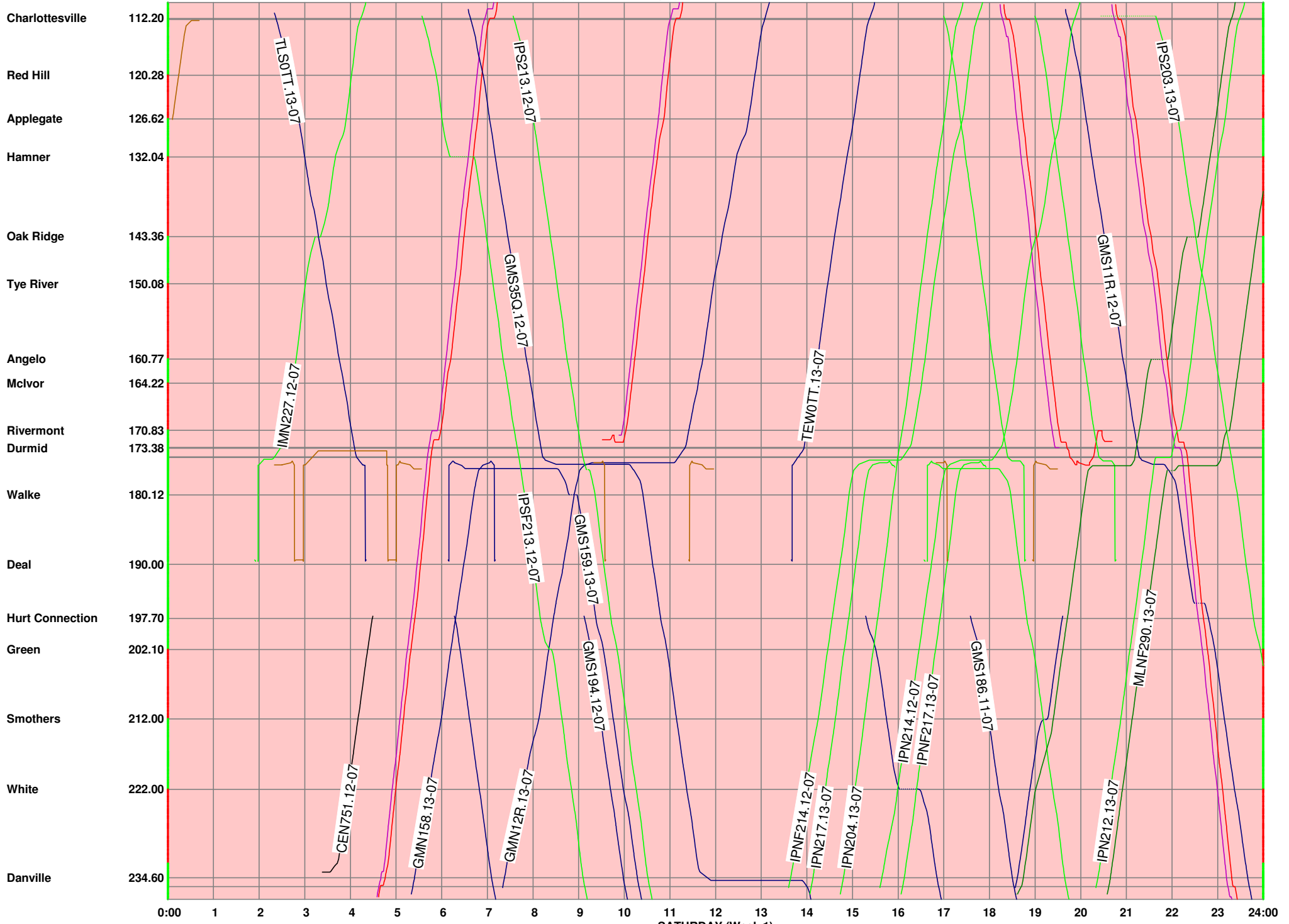
Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

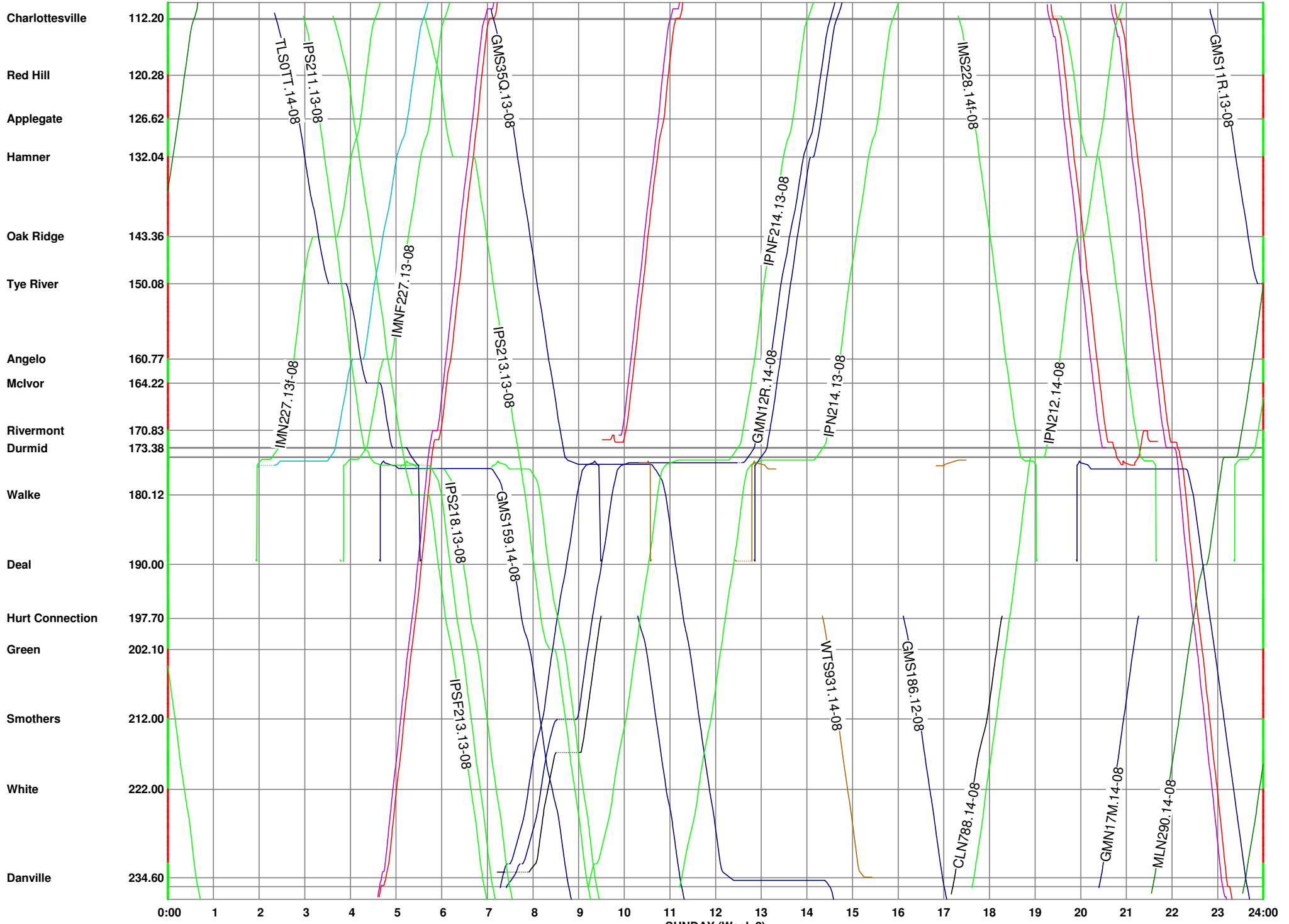
Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

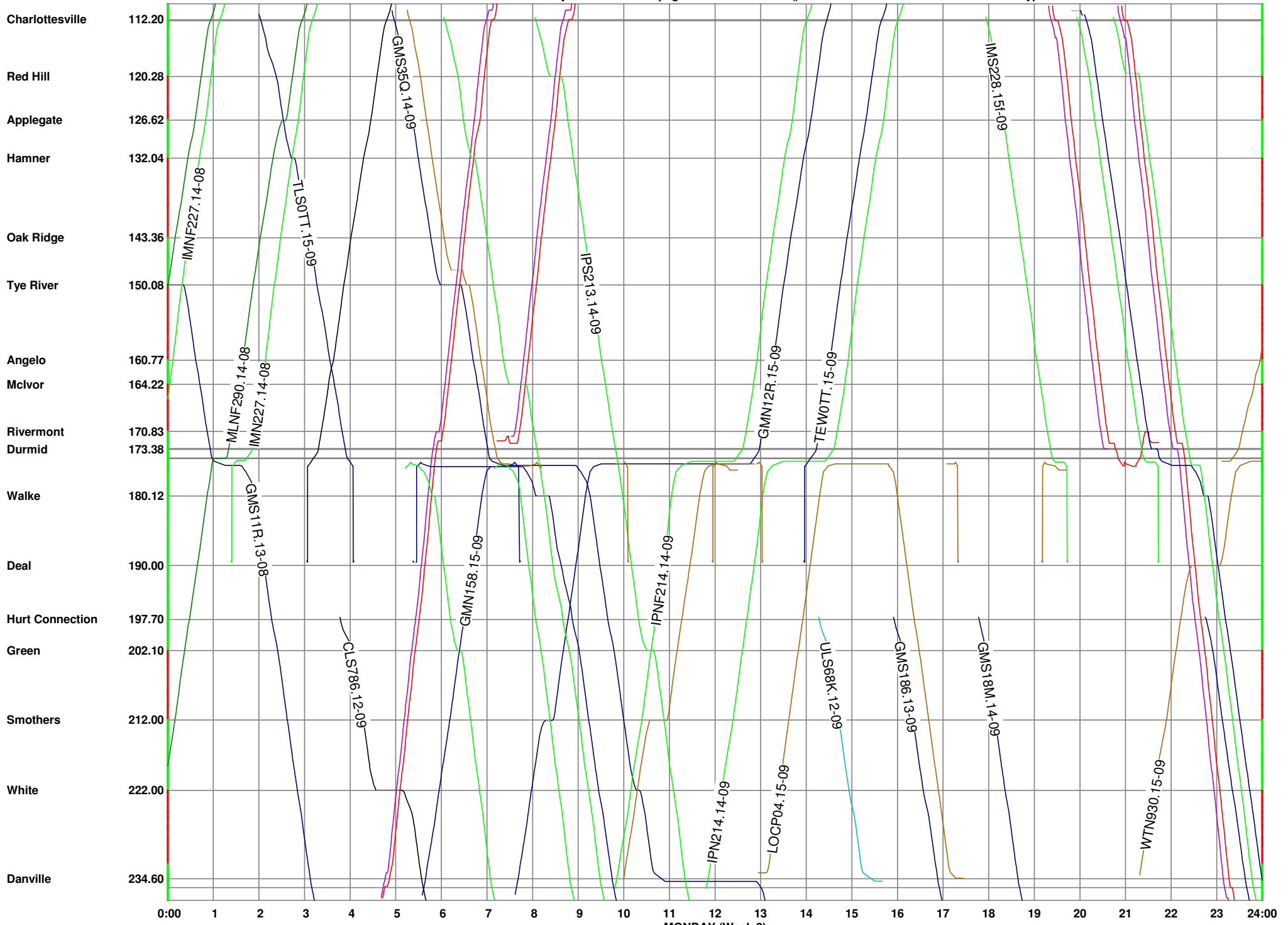
OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

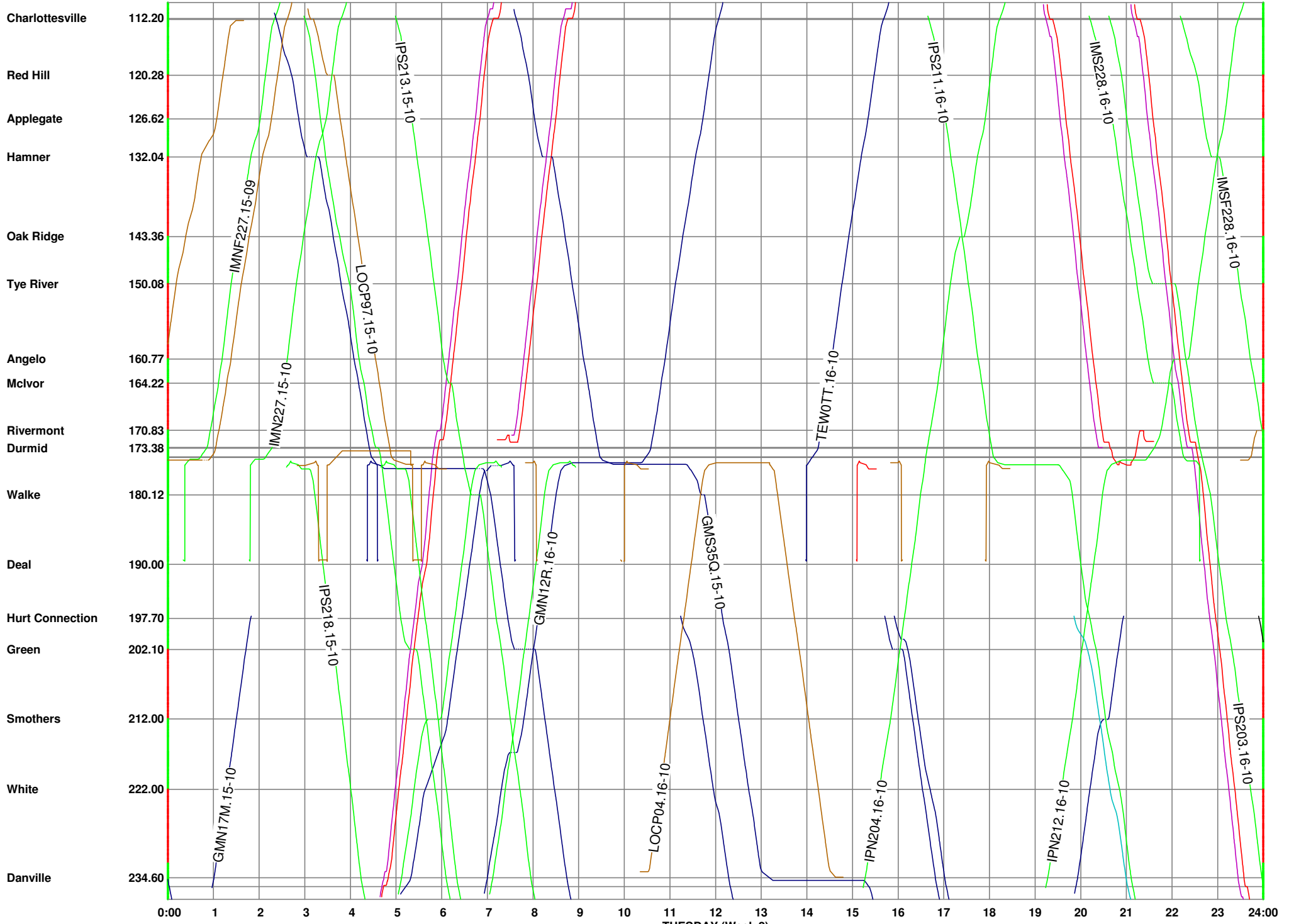
Case 2017A Future Base Case







MONDAY (Week 2)

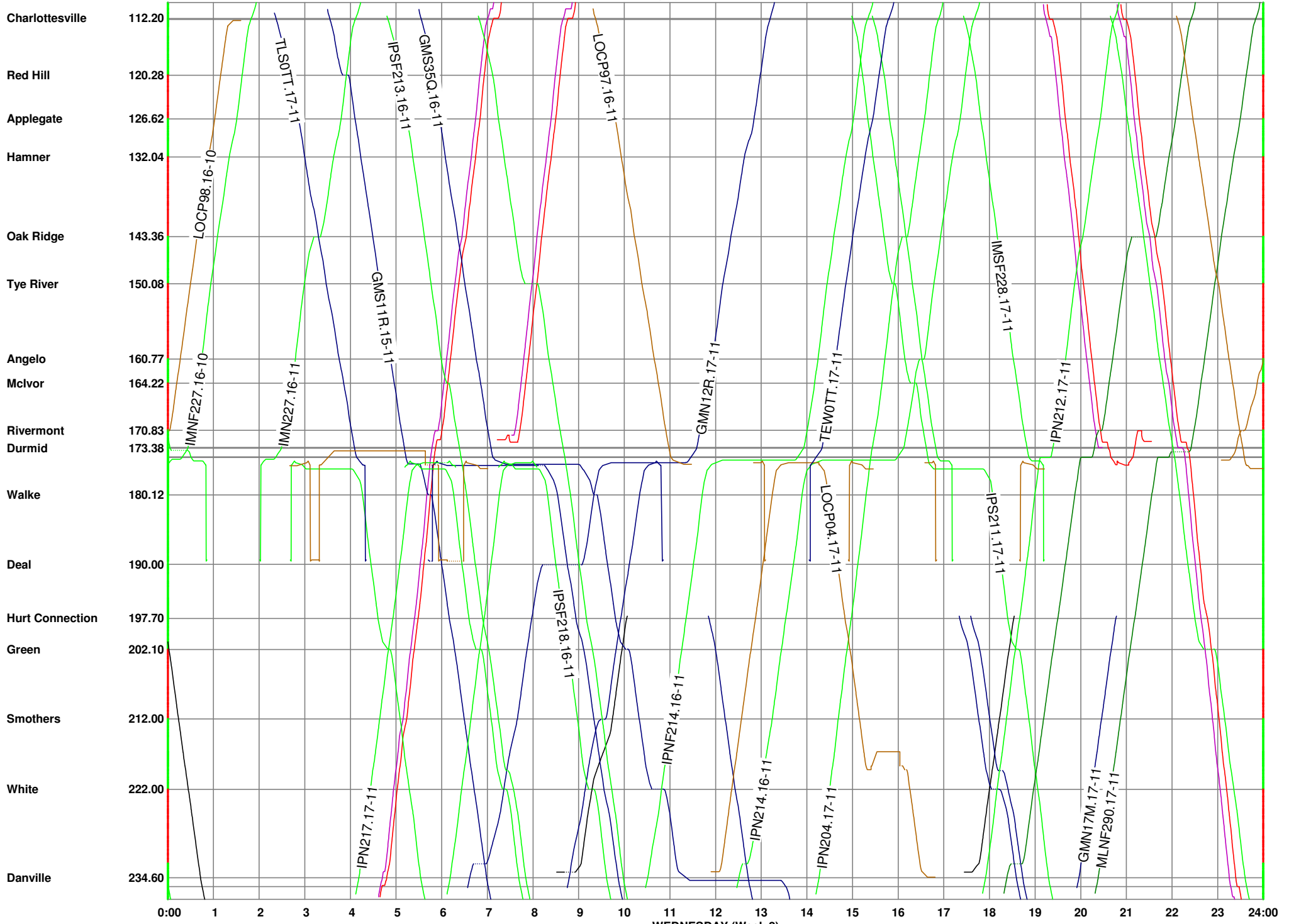


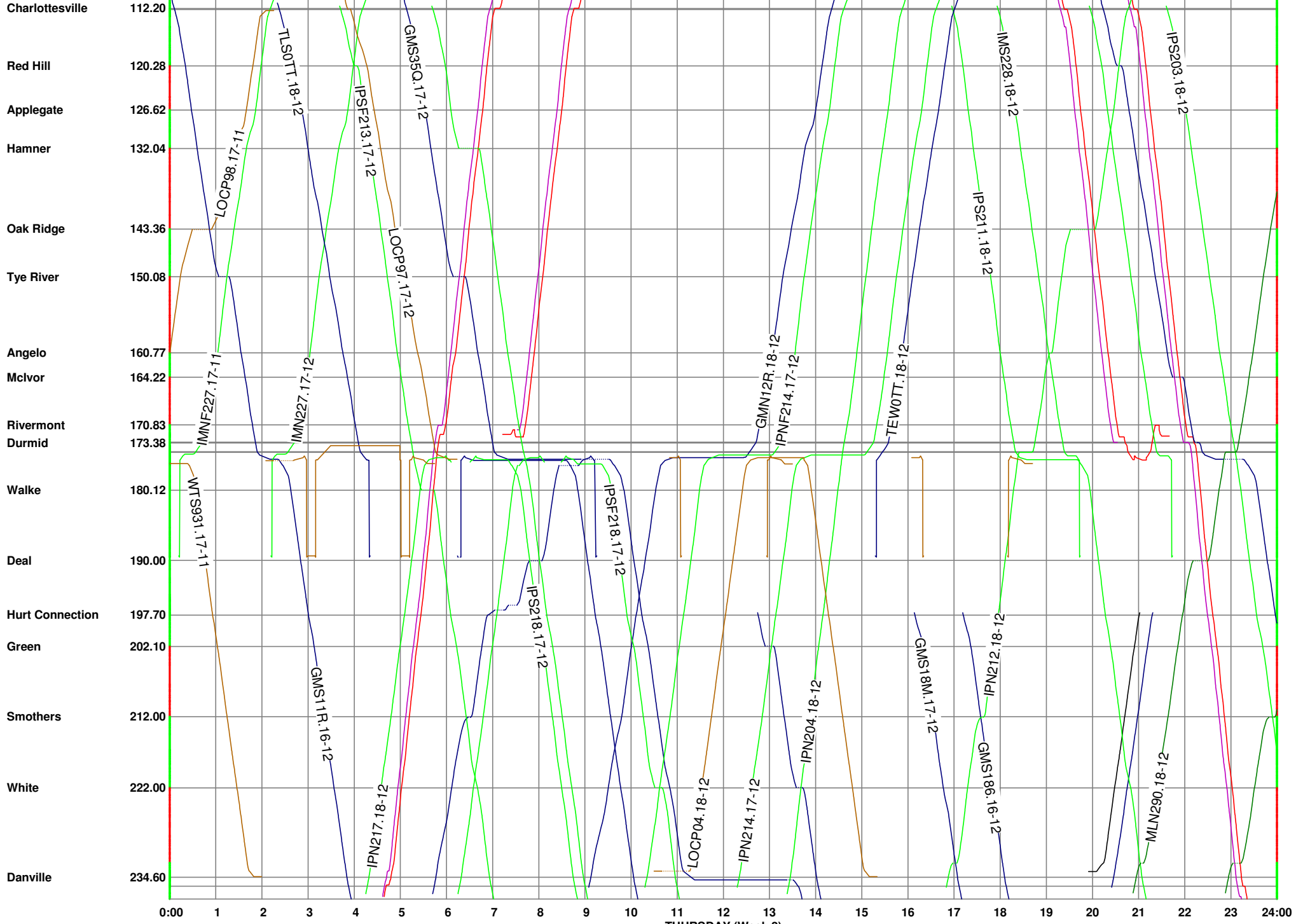
TUESDAY (Week 2)

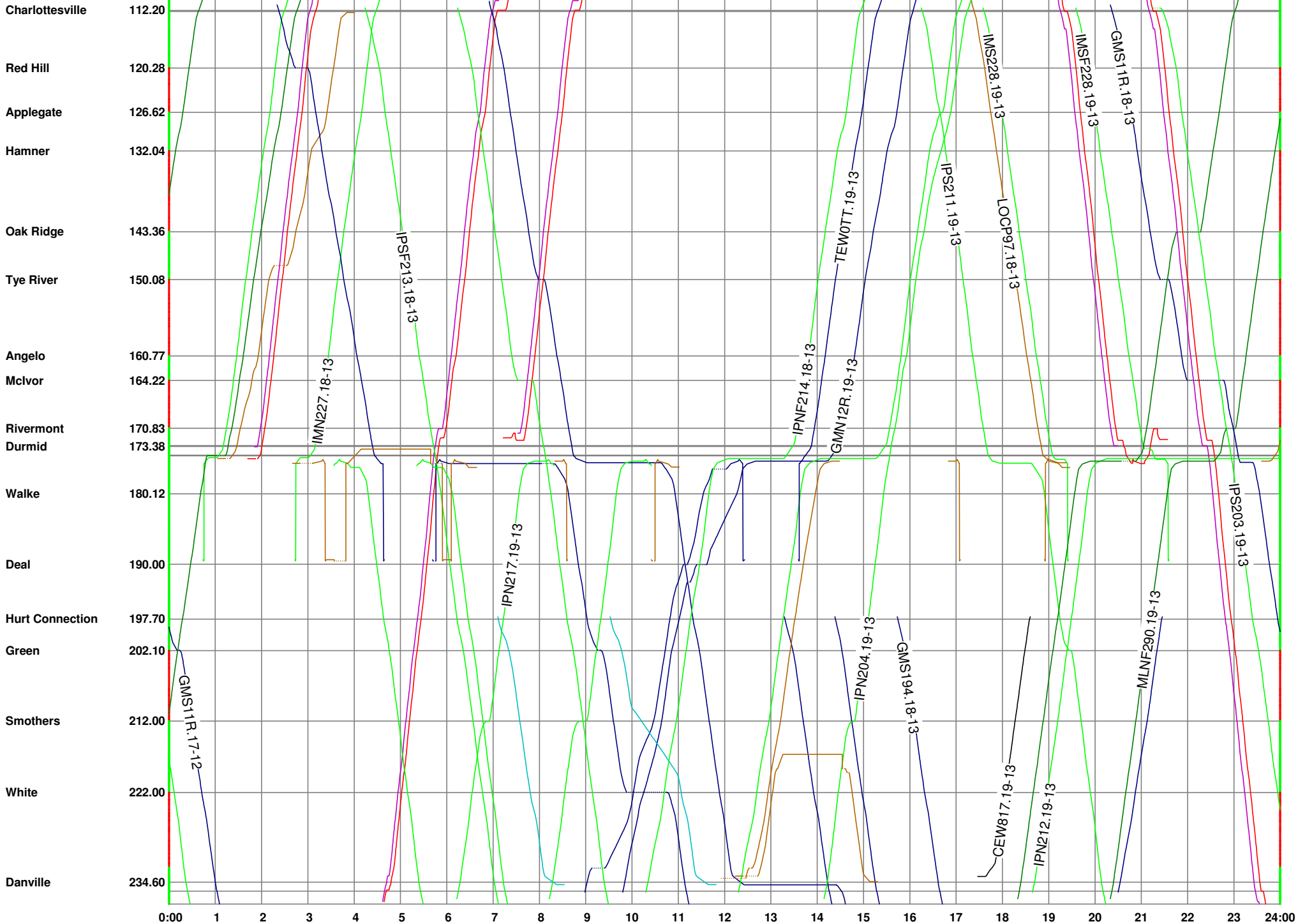
All times displayed in Eastern time

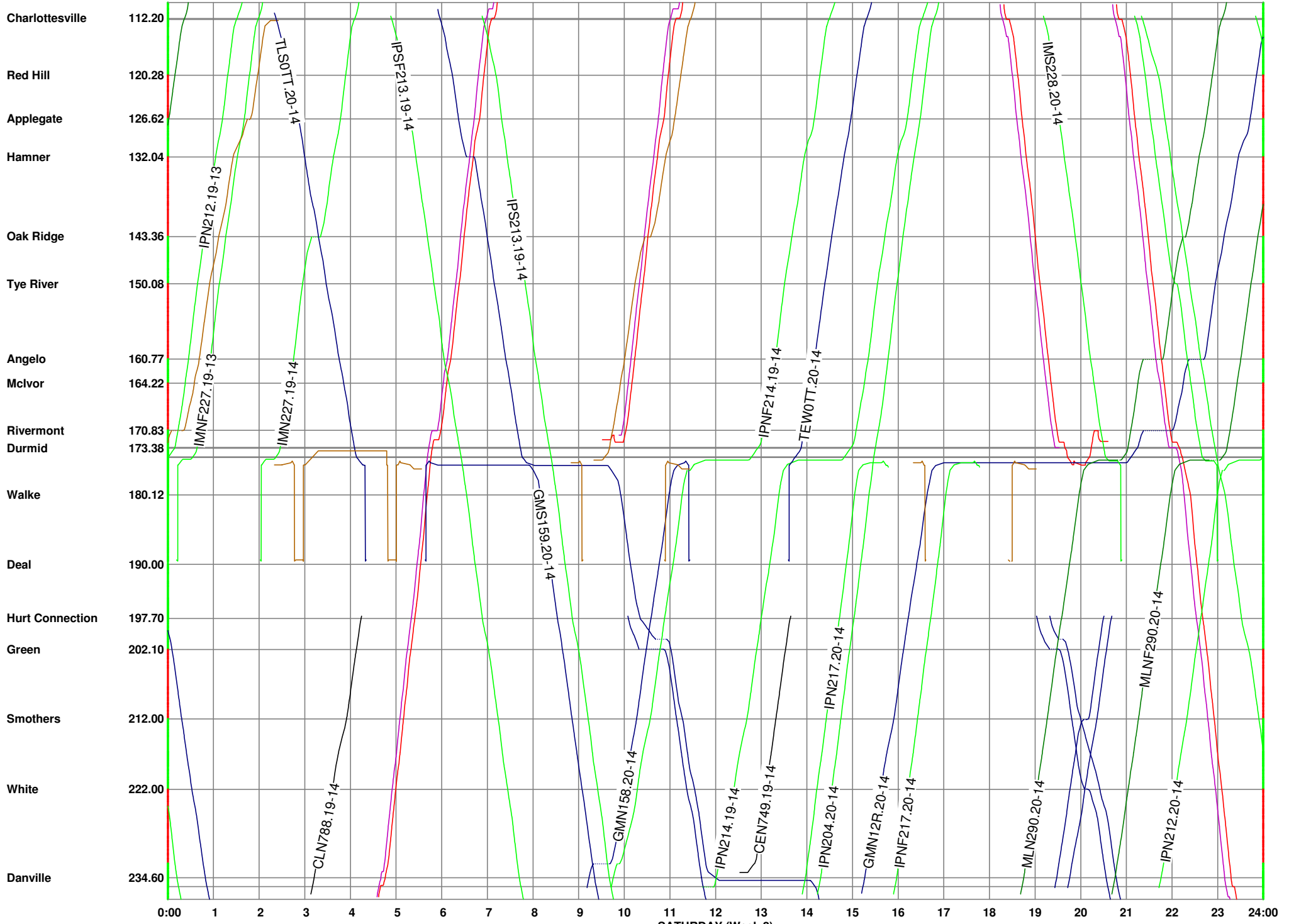
RTC version: 67T L67T

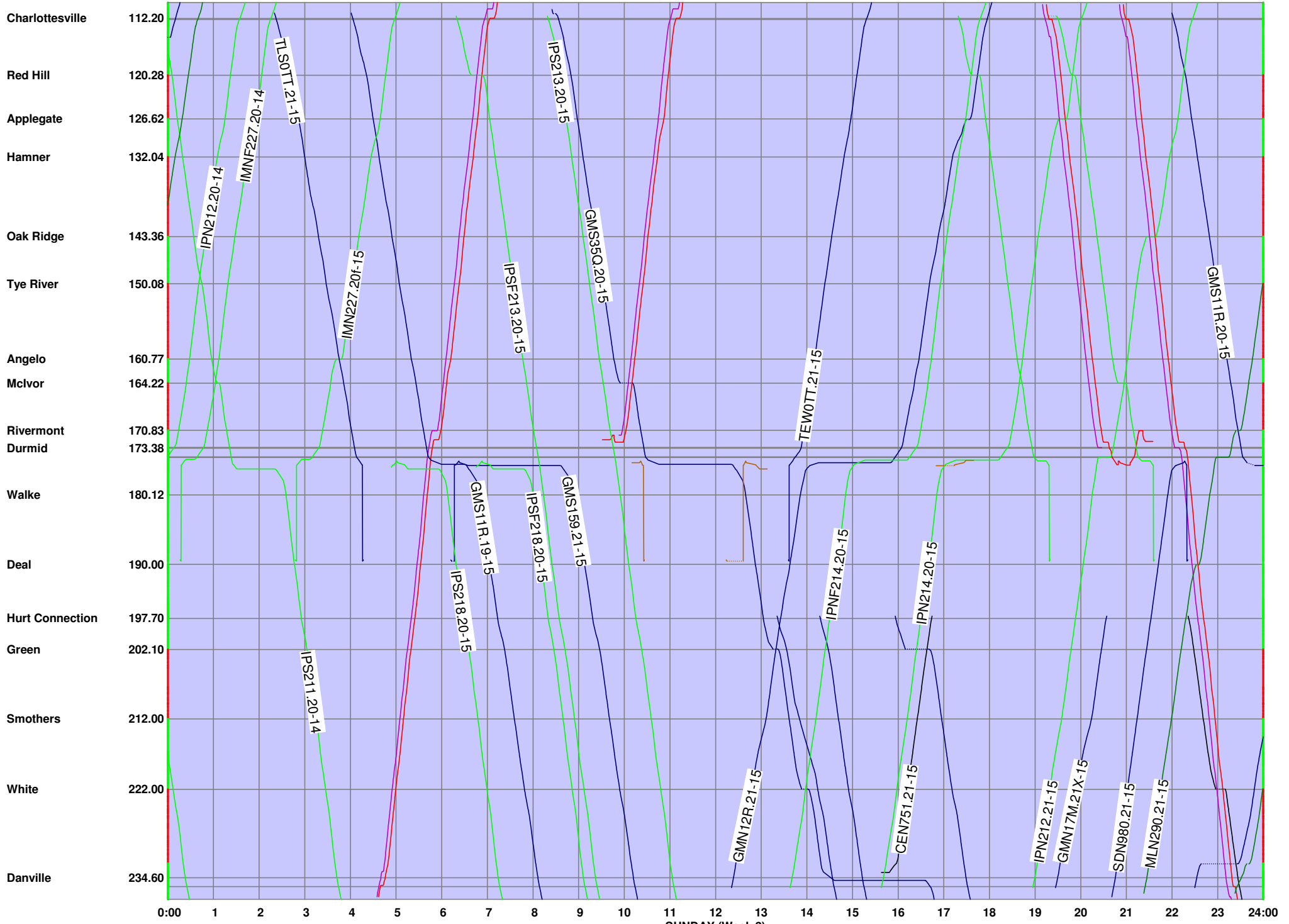
Run time: 02 August 2013 11:04:33



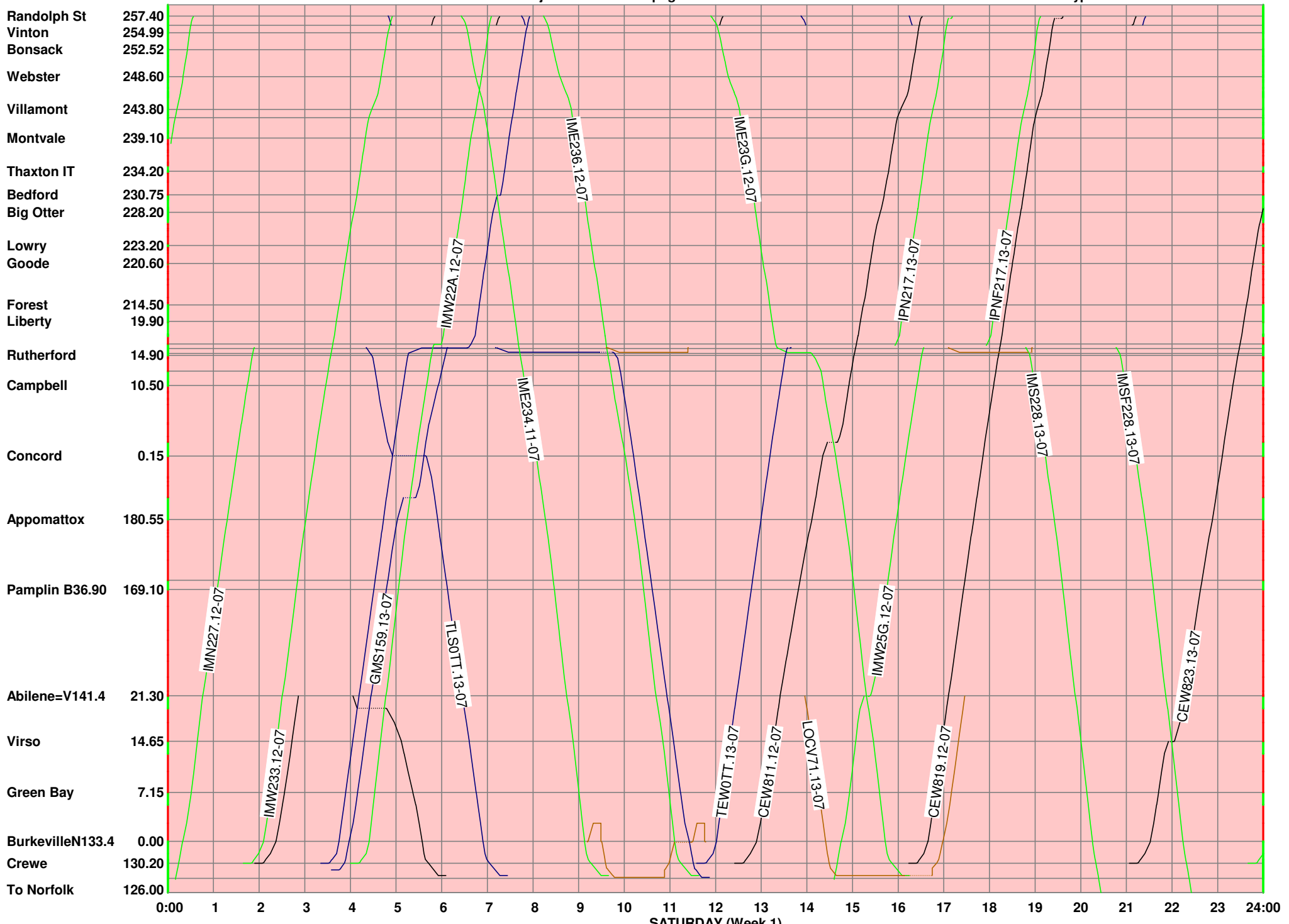


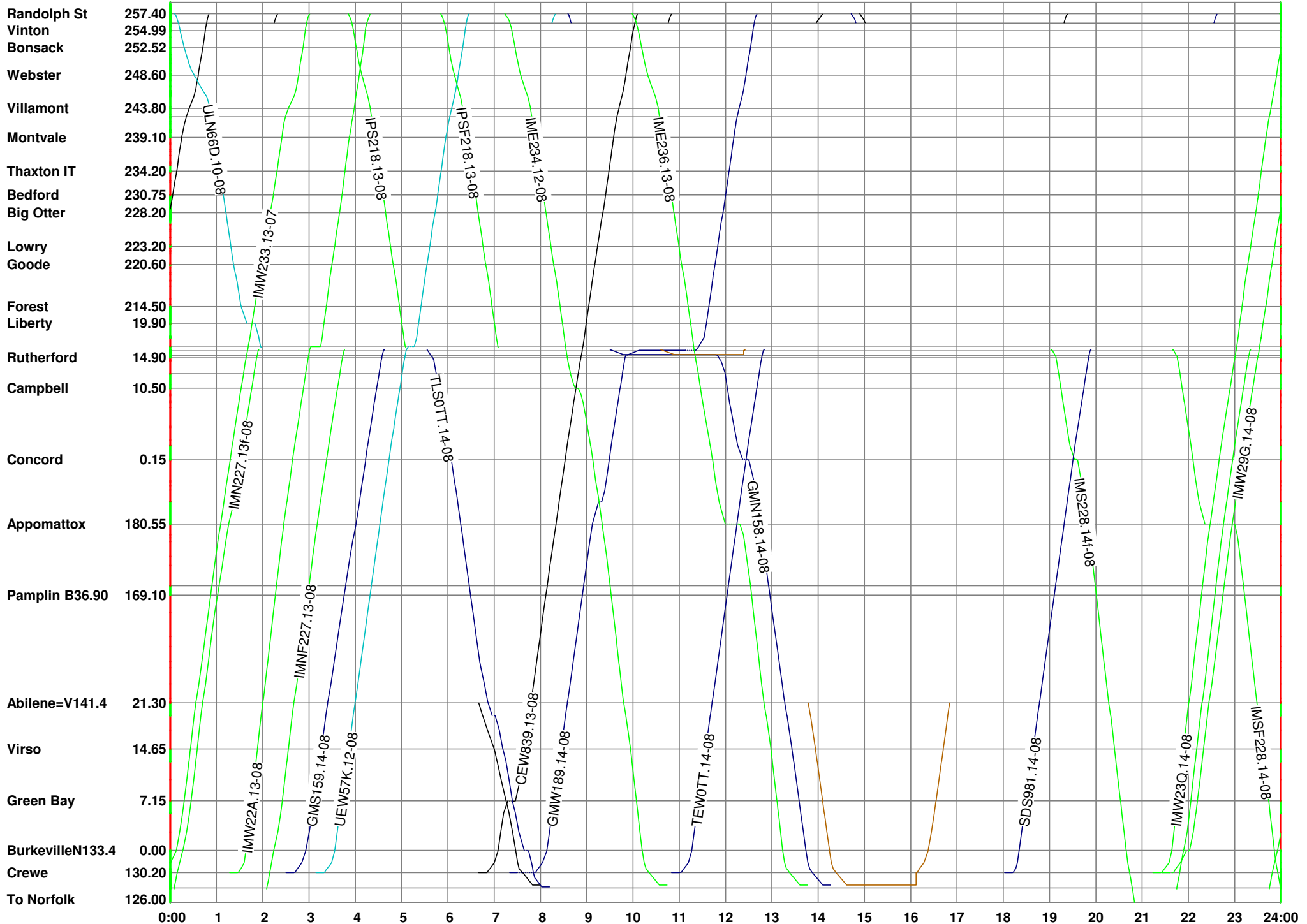




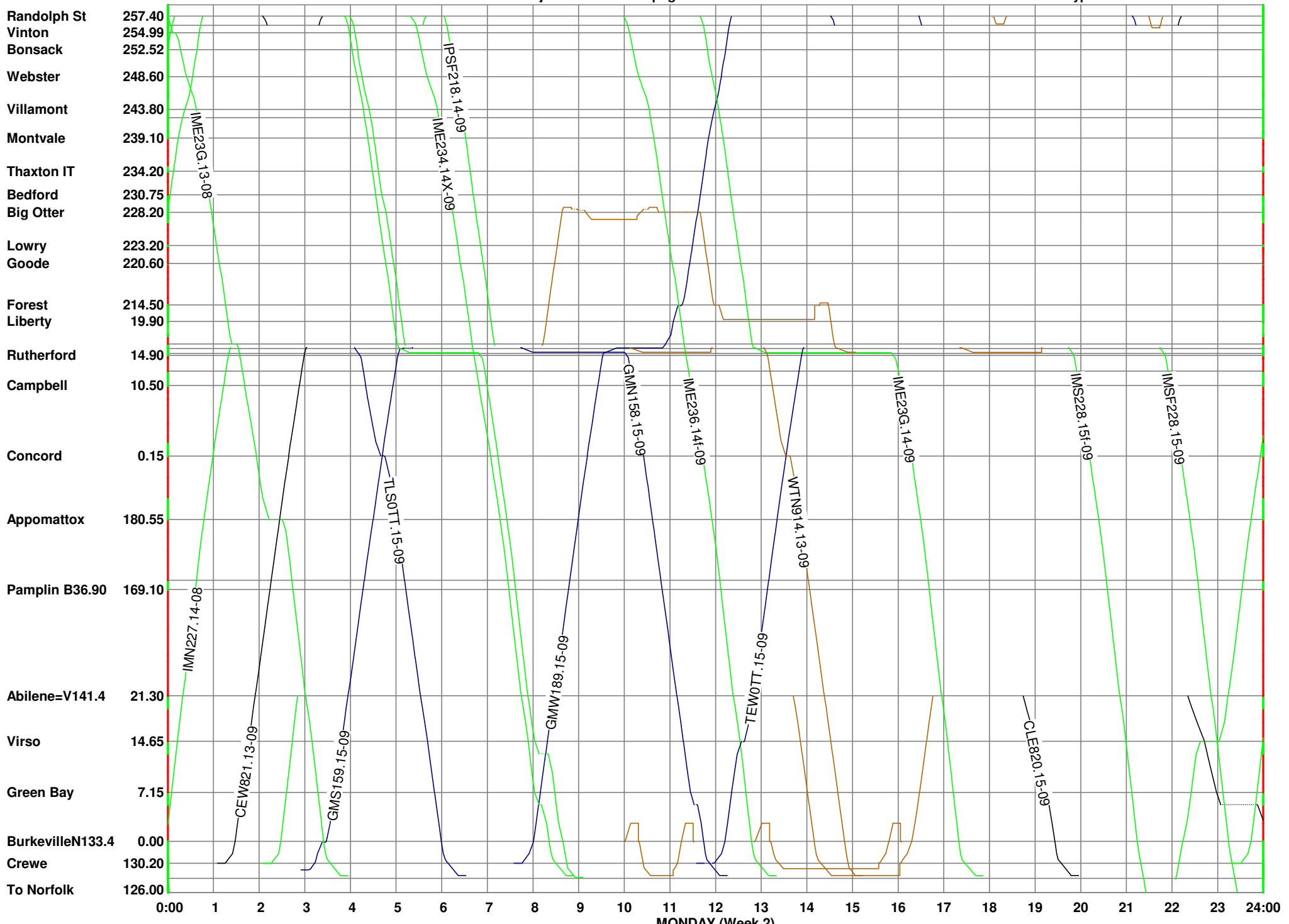


SUNDAY (Week 3)

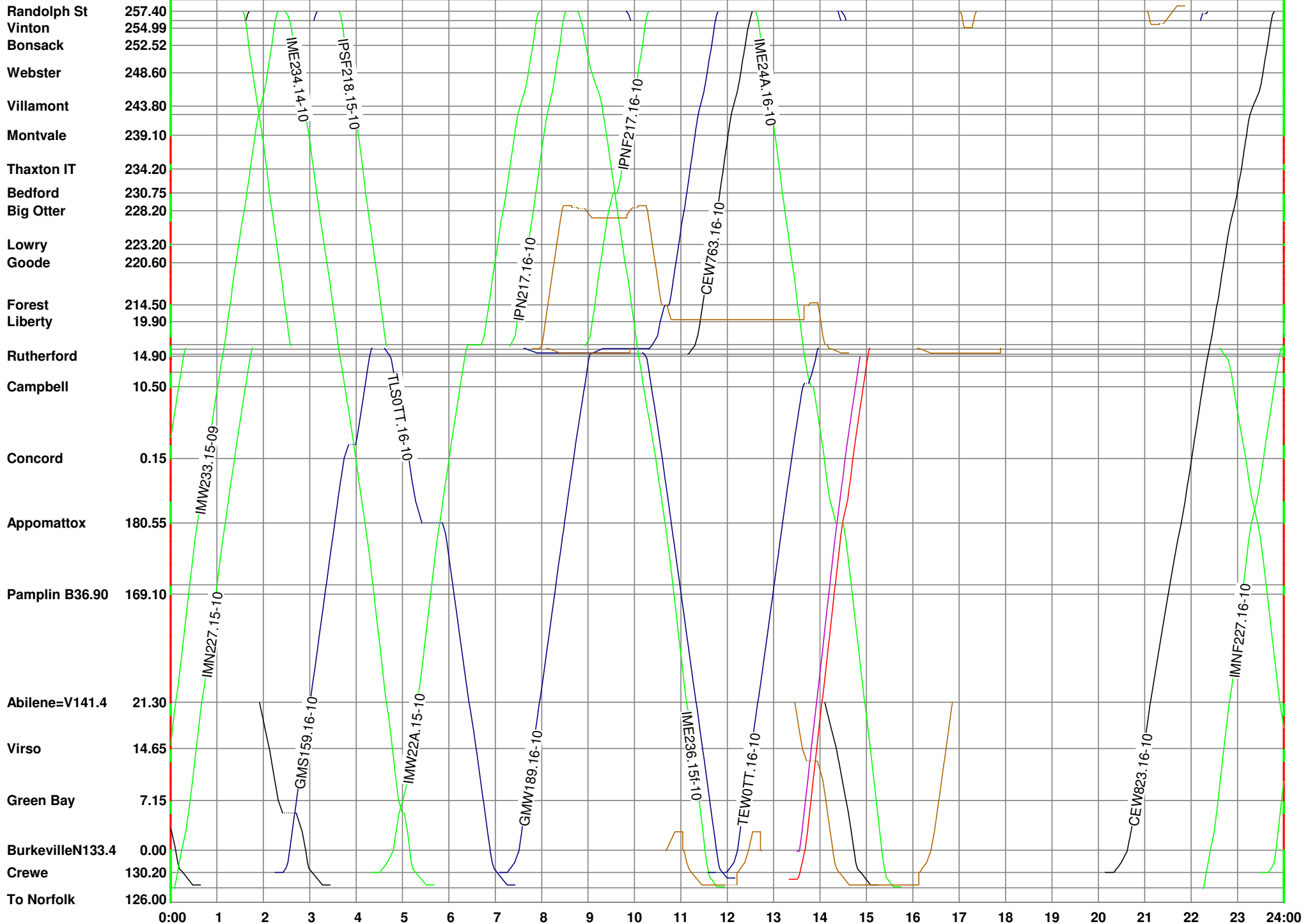


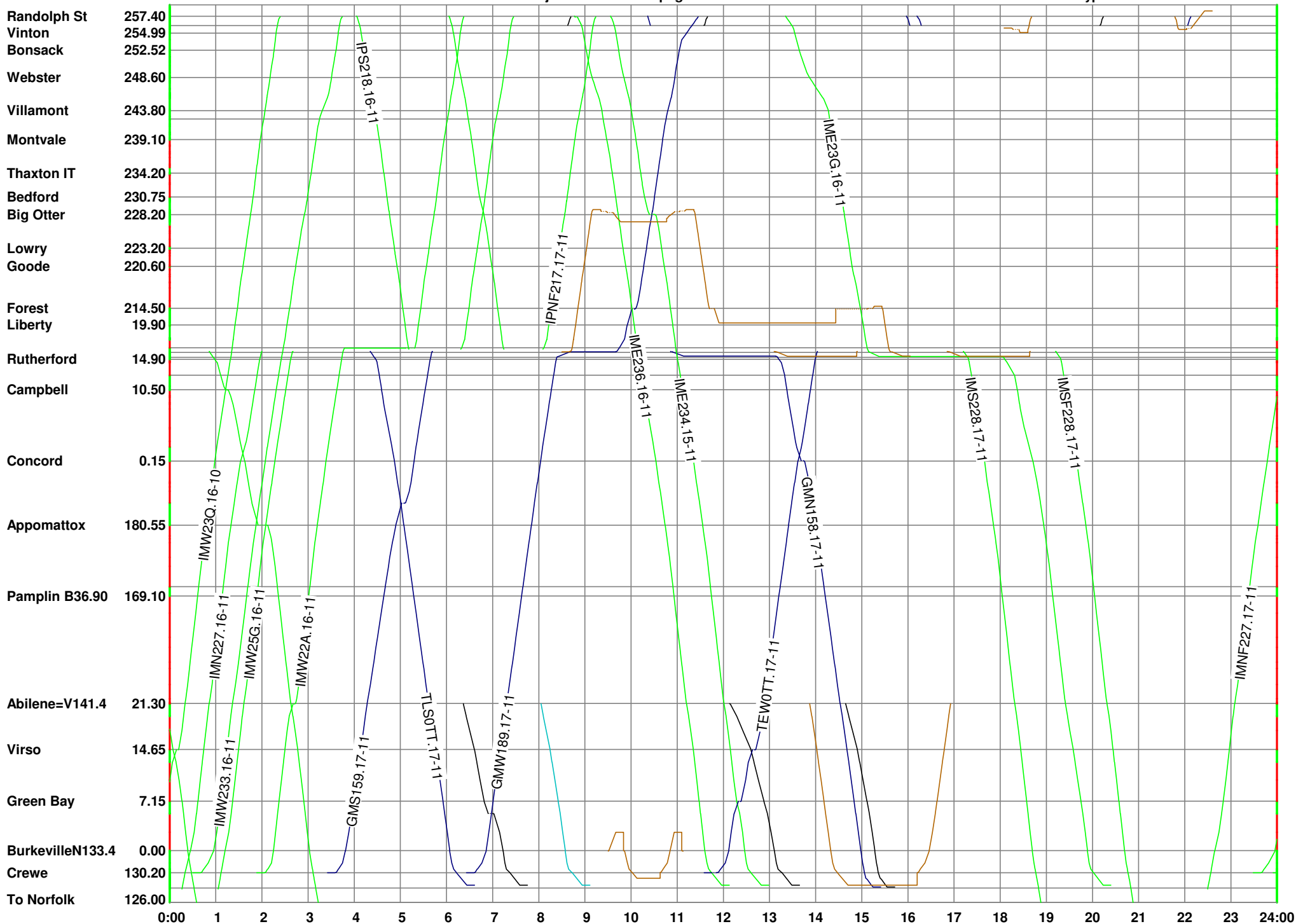


SUNDAY (Week 2)

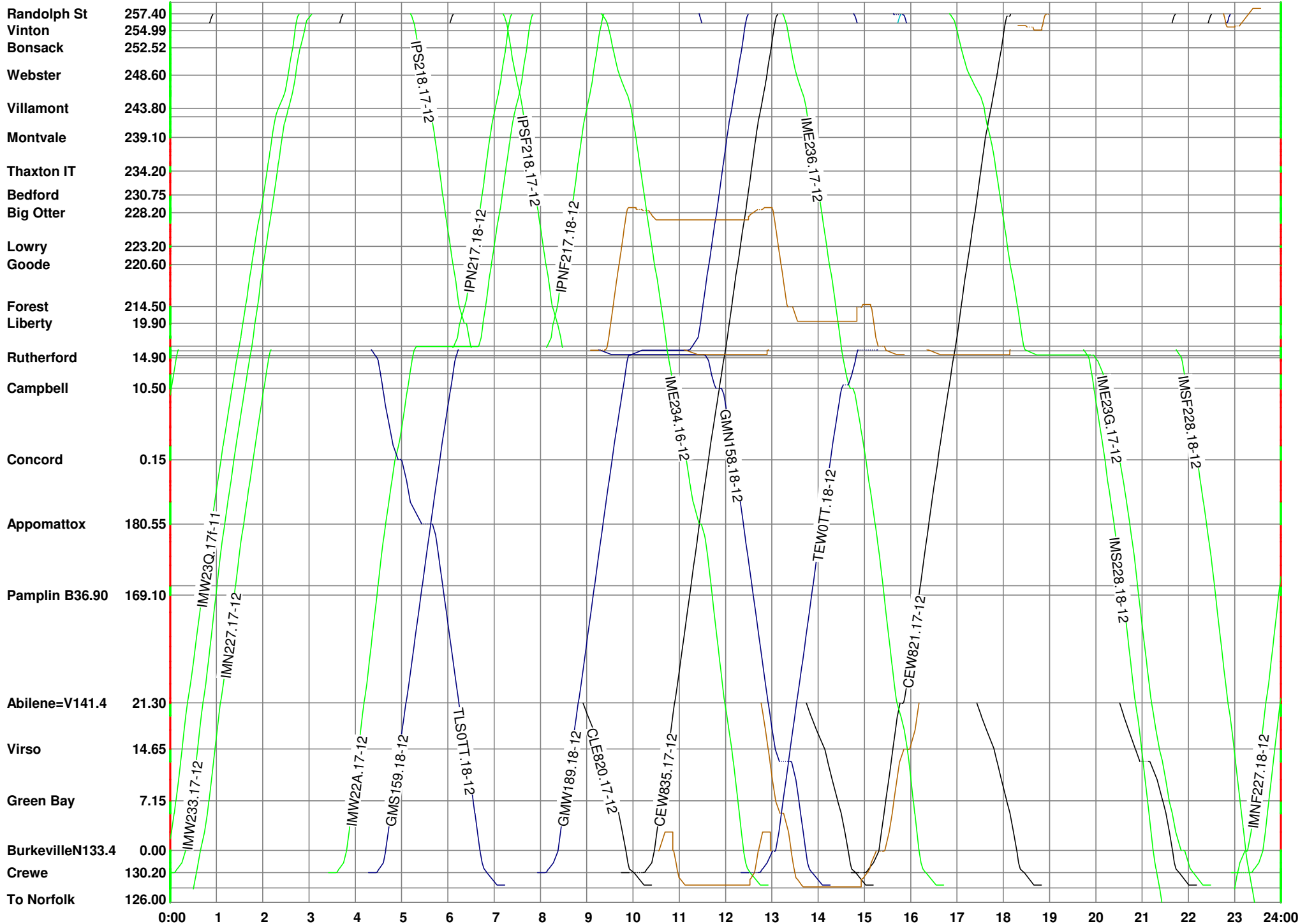


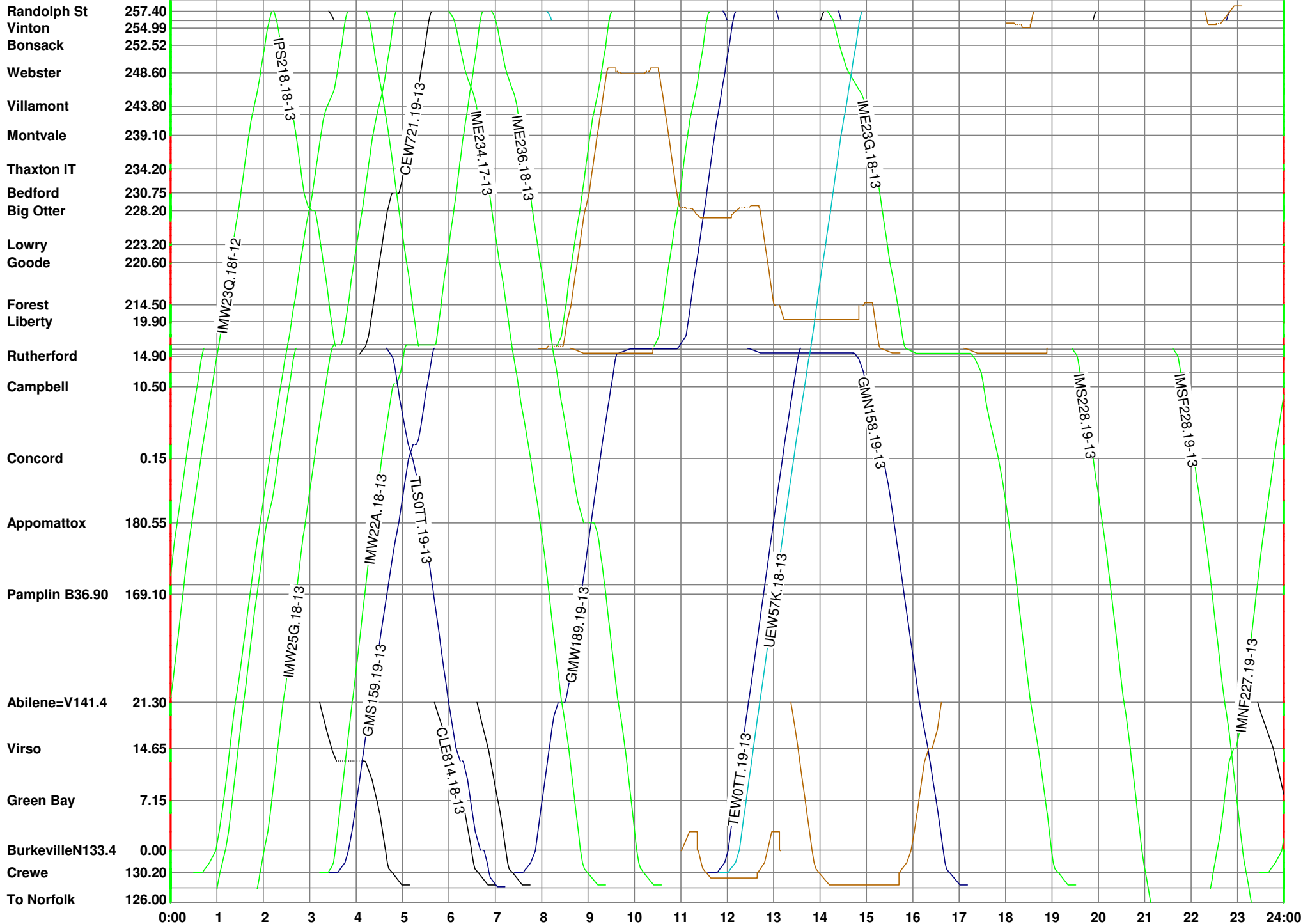
MONDAY (Week 2)





WEDNESDAY (Week 2)



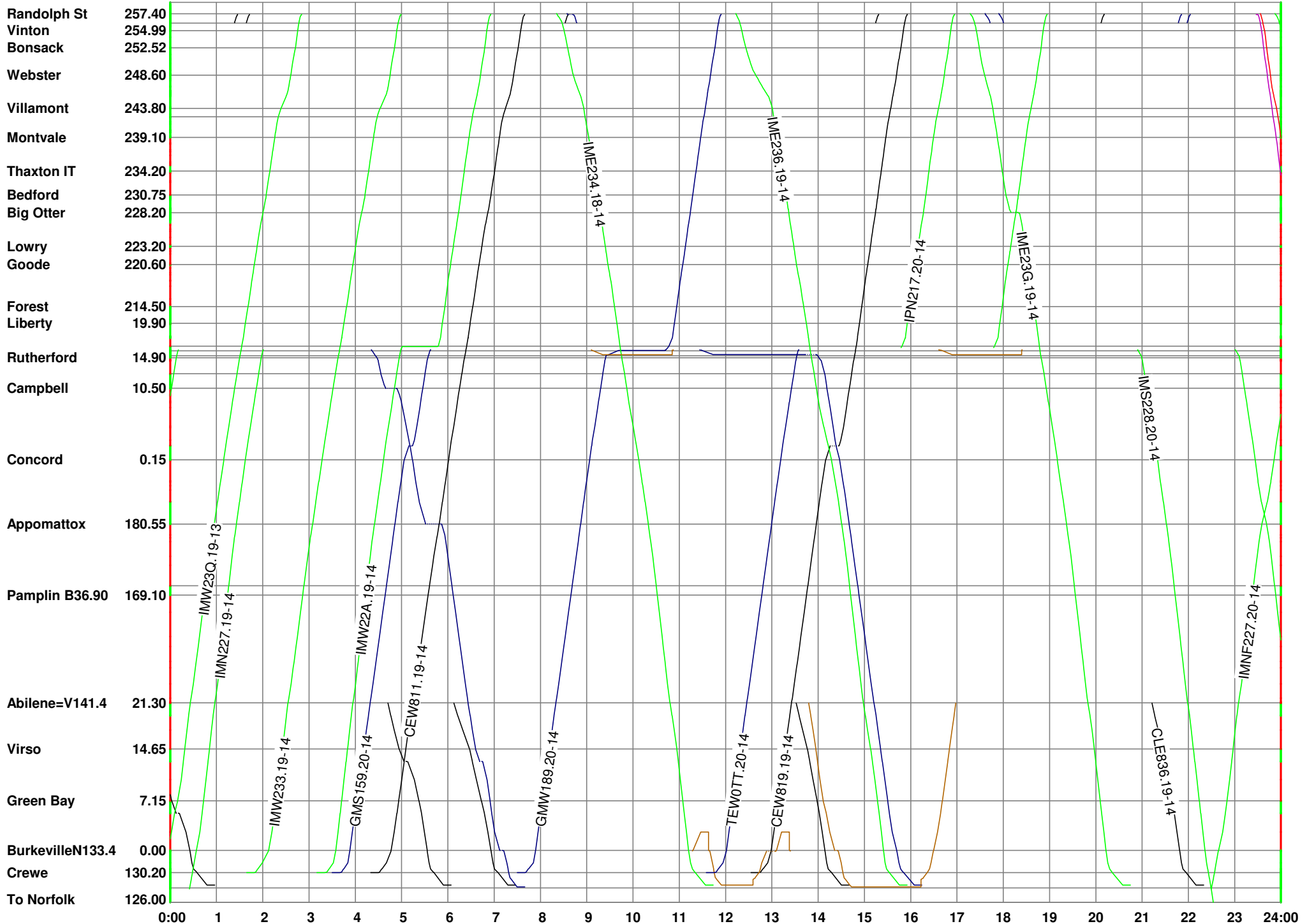


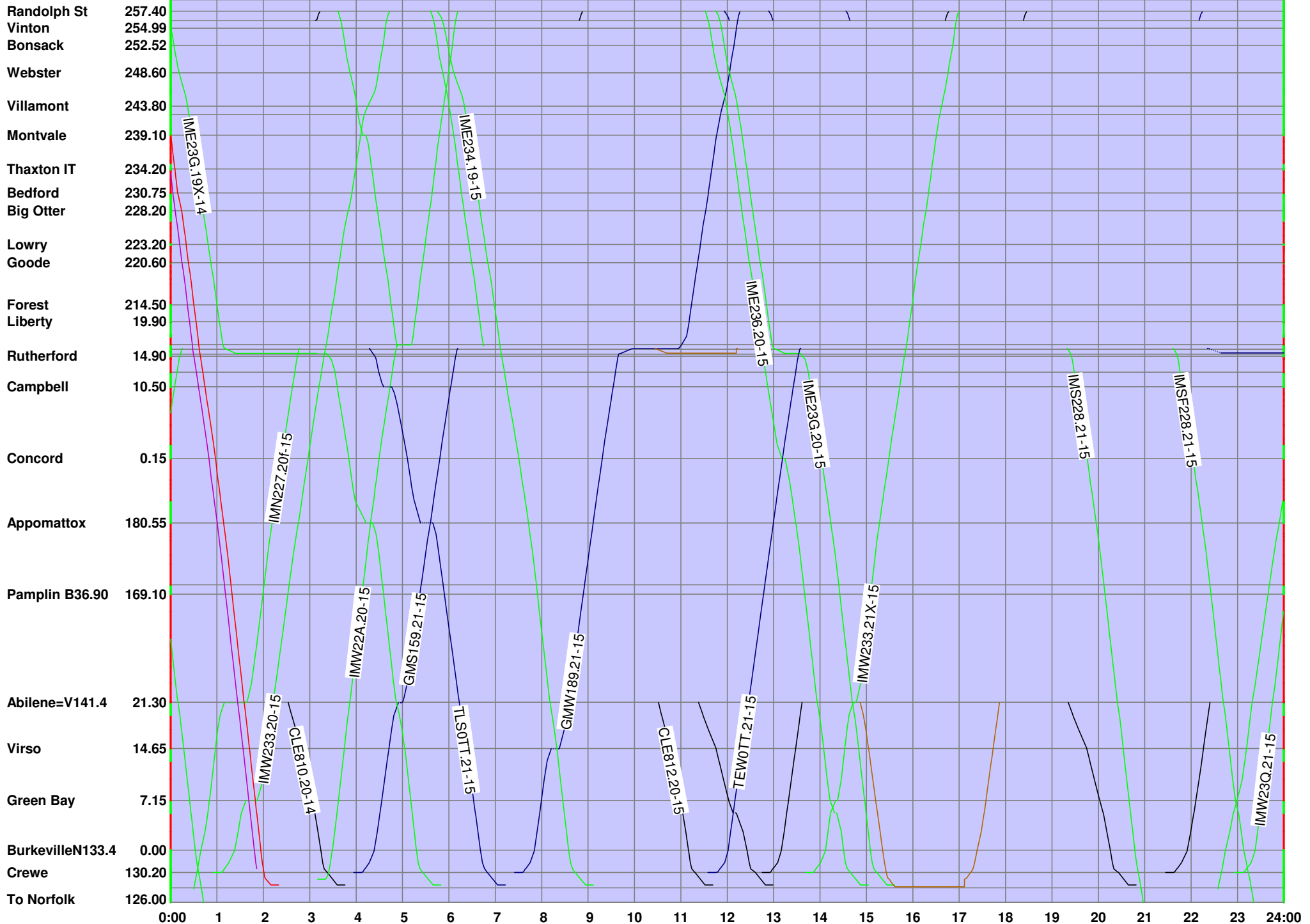
FRIDAY (Week 2)

All times displayed in Eastern time

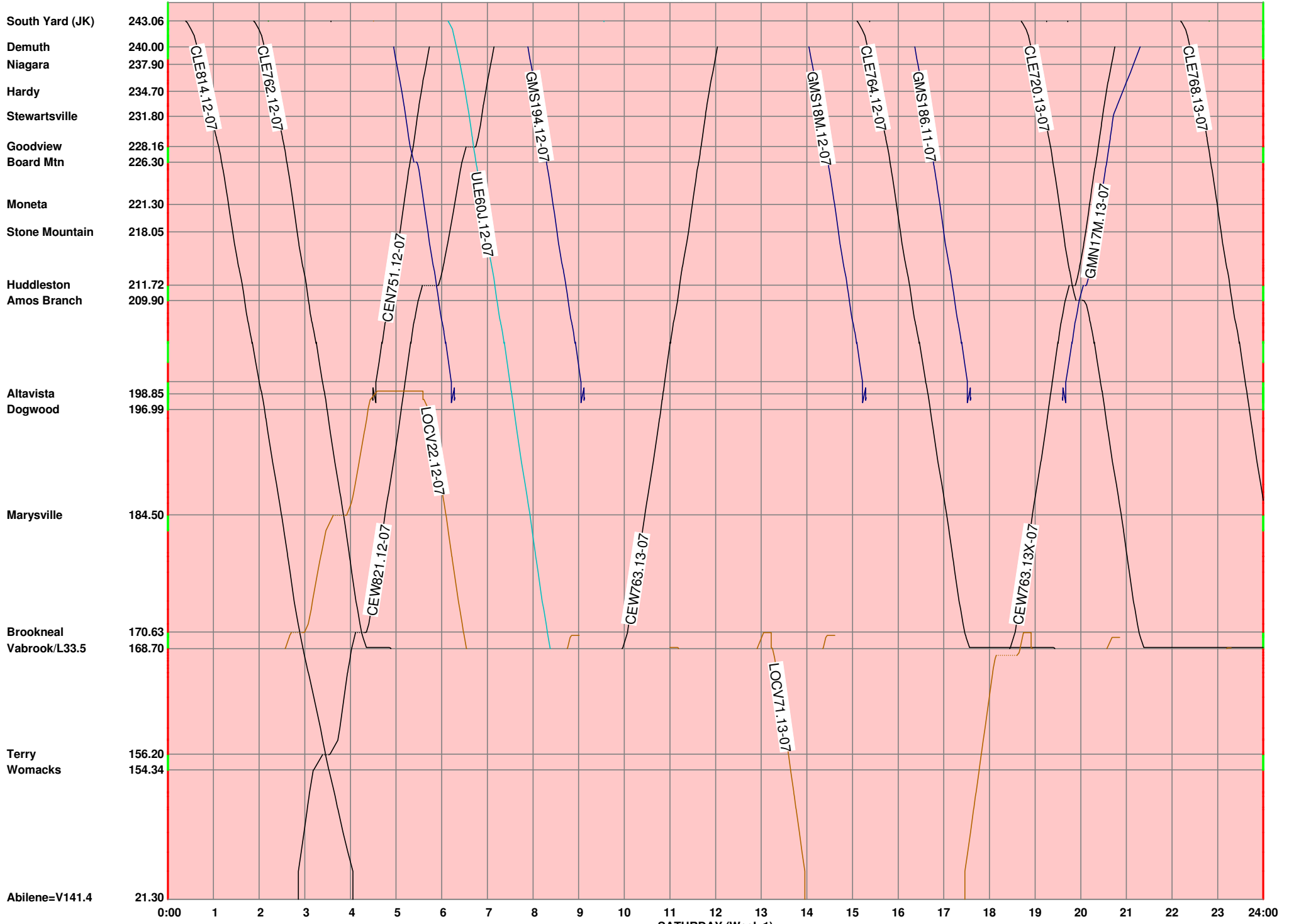
RTC version: 67T L67T

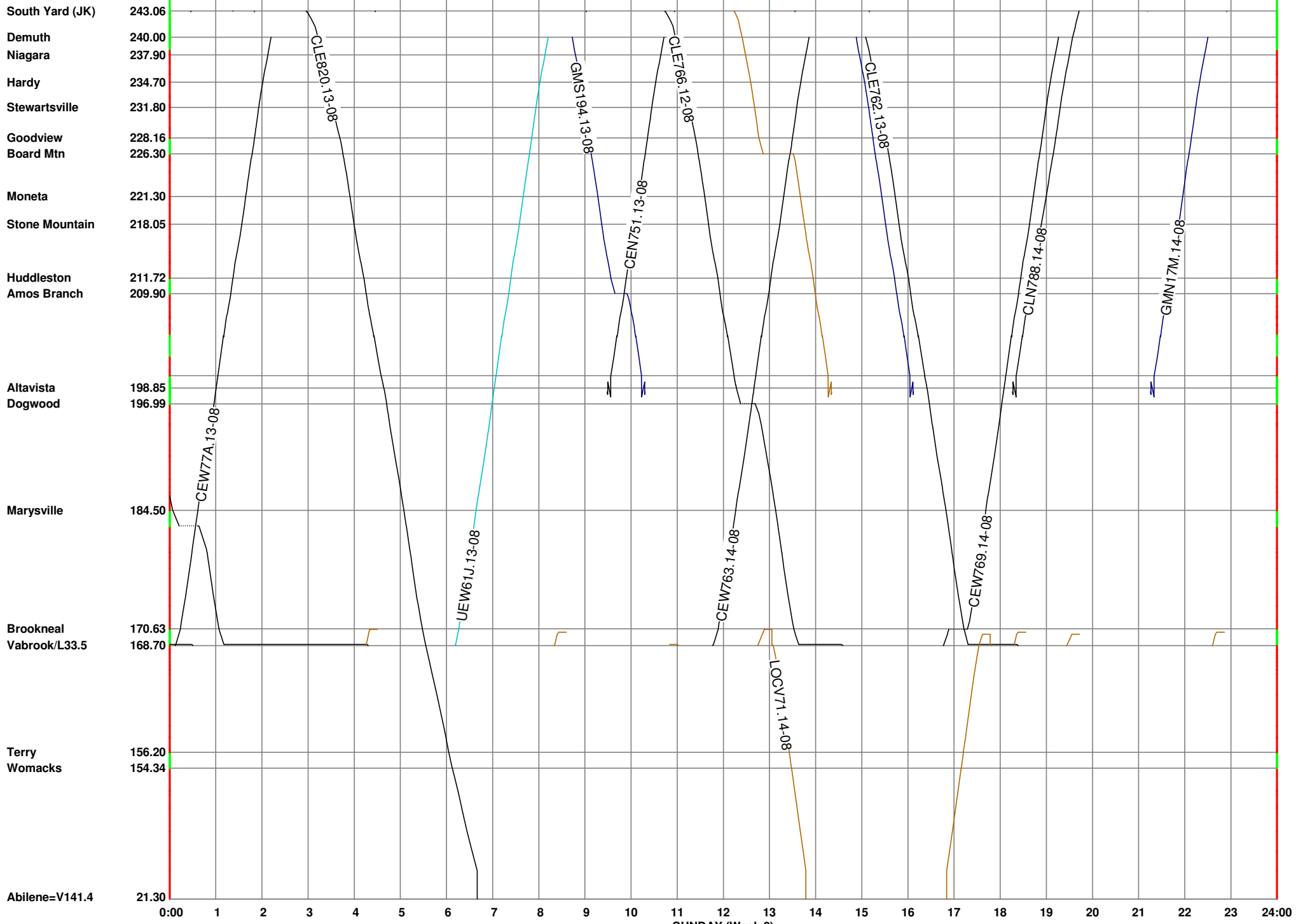
Run time: 02 August 2013 11:06:53

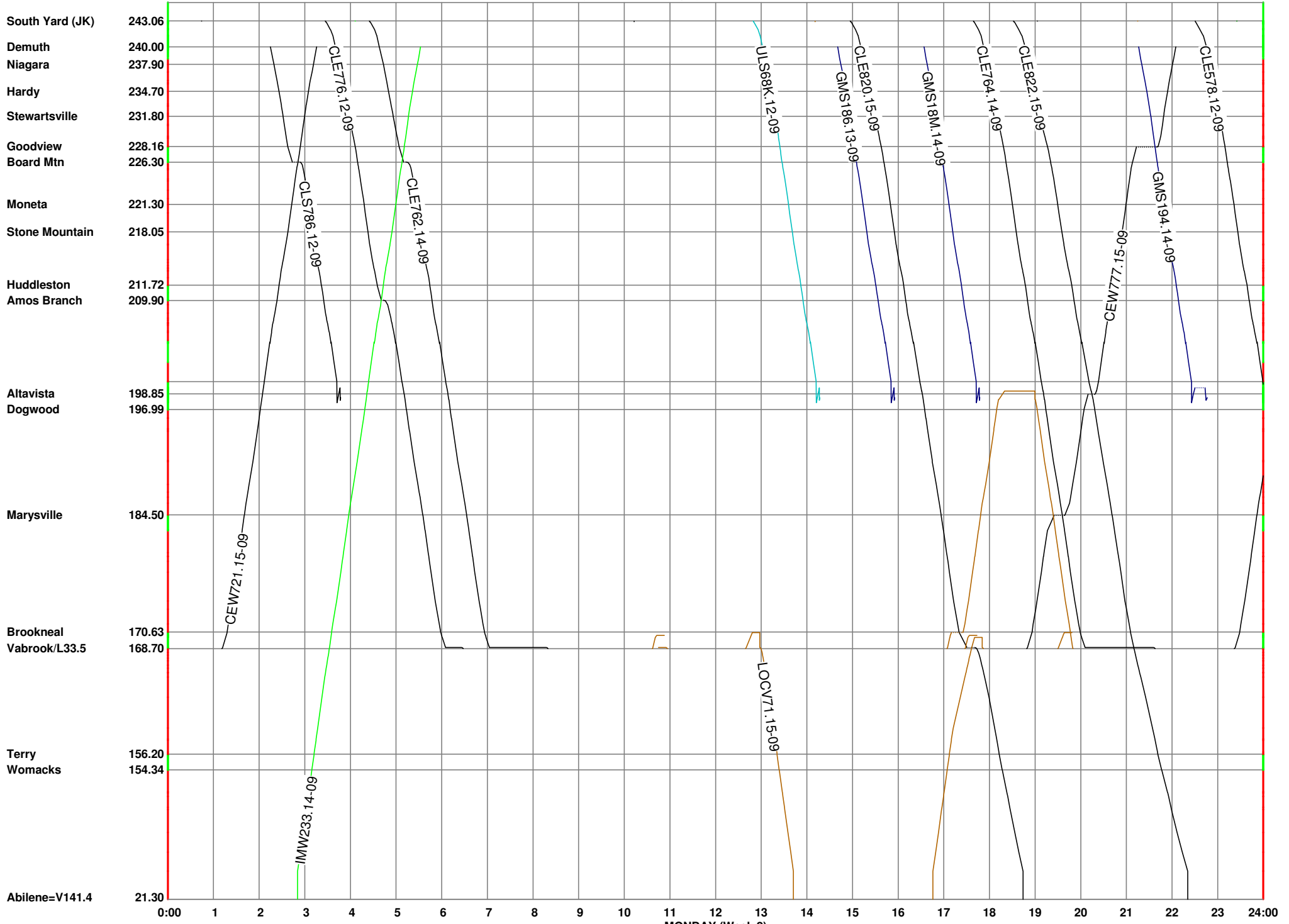


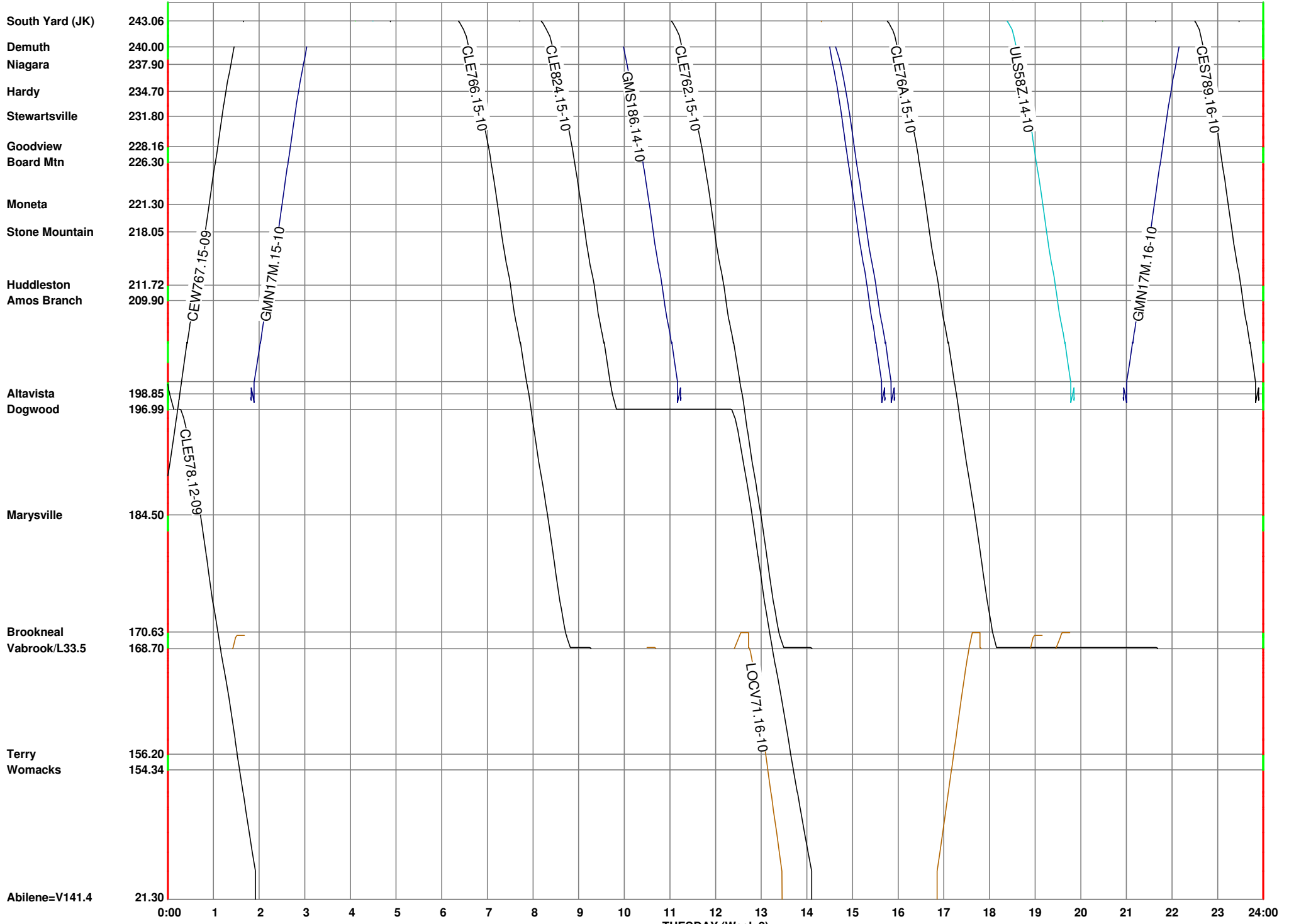


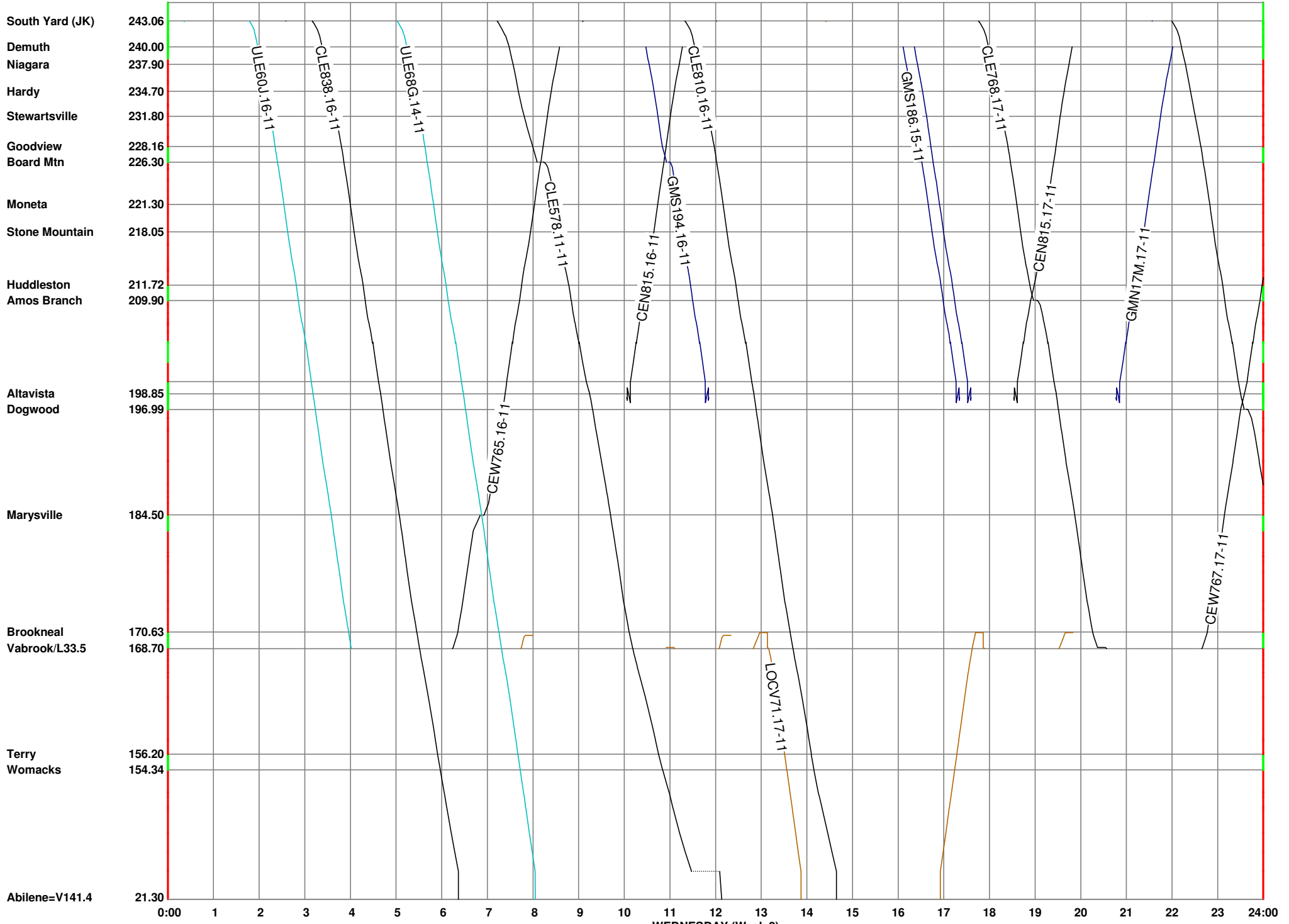
SUNDAY (Week 3)

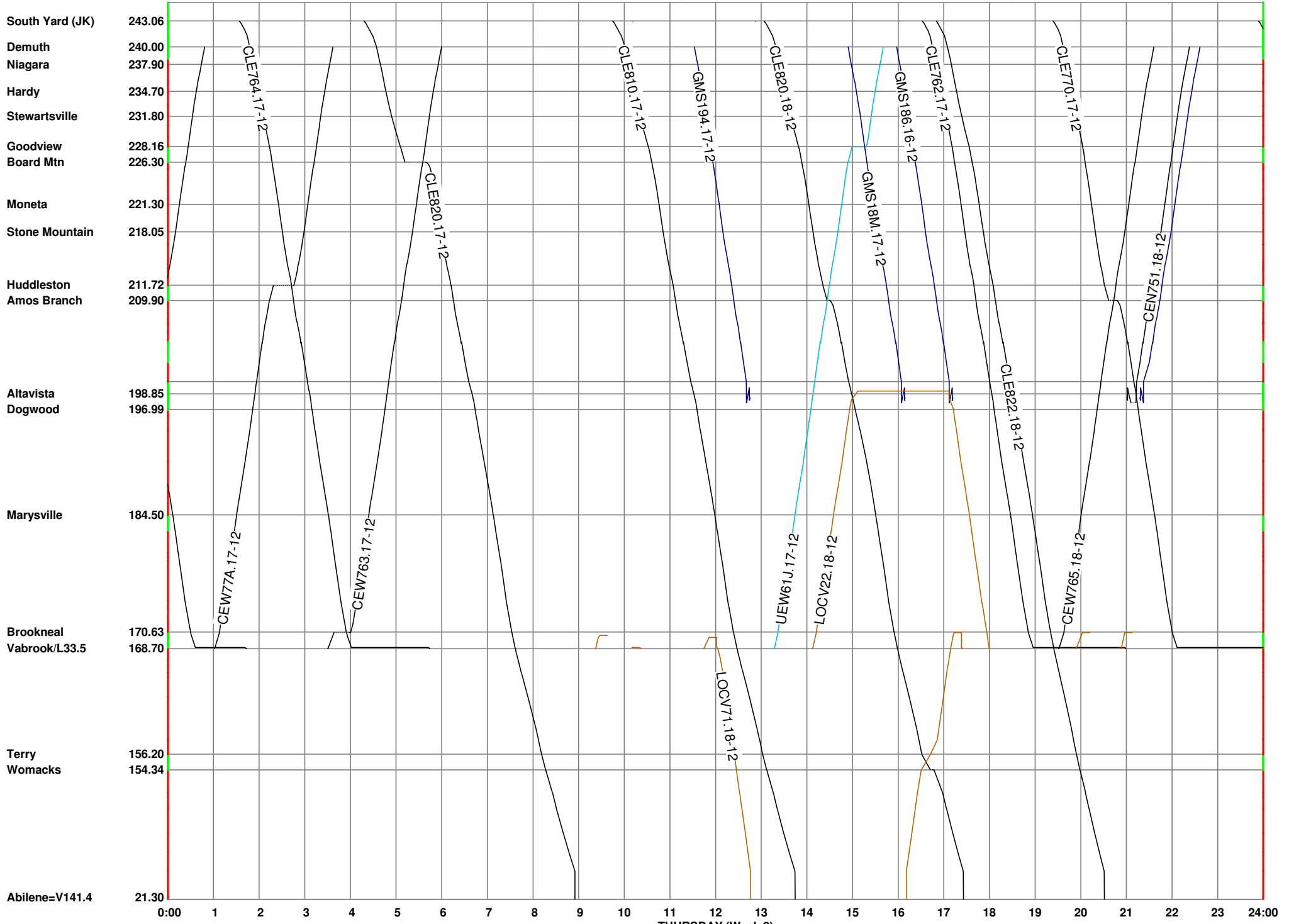




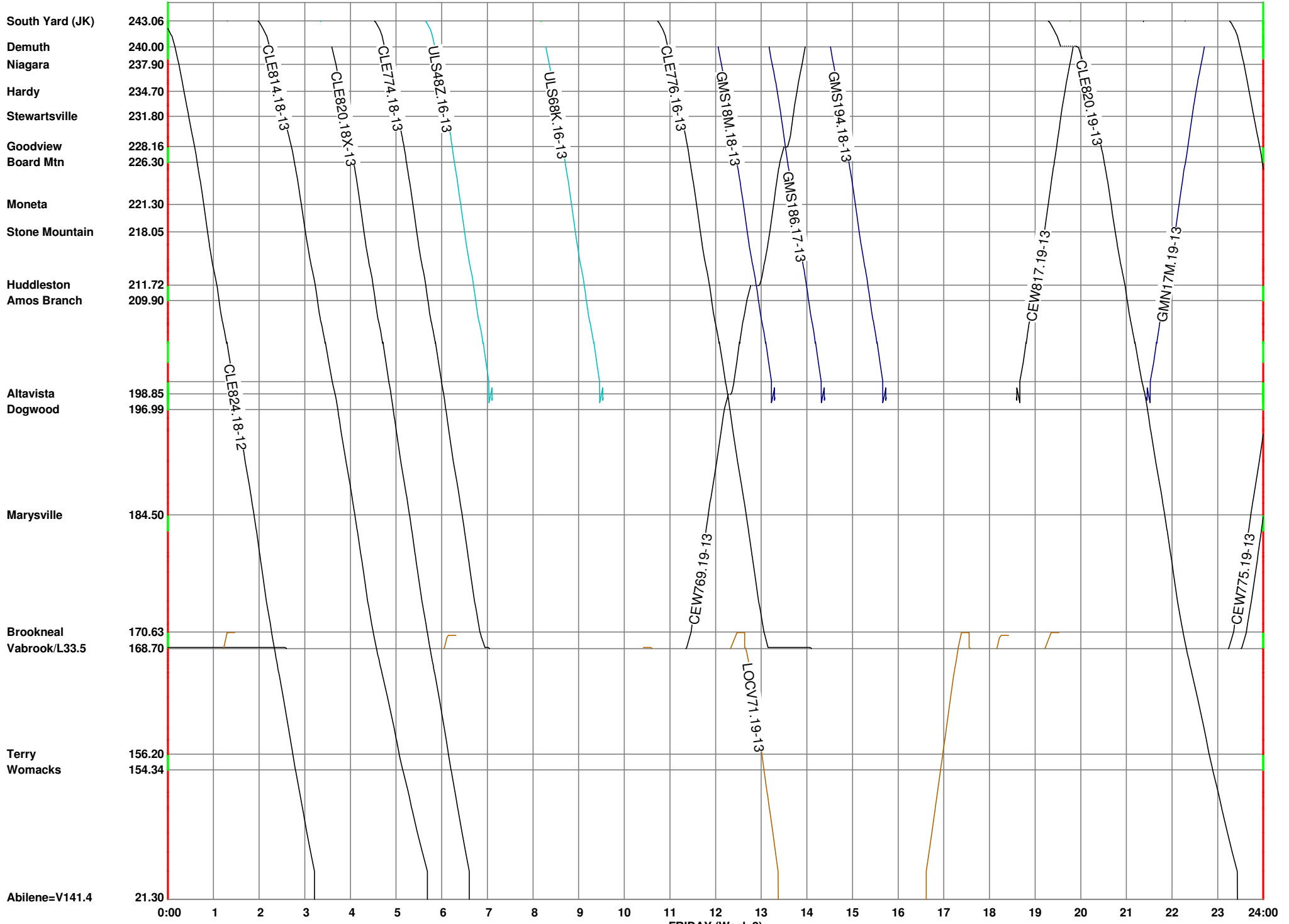


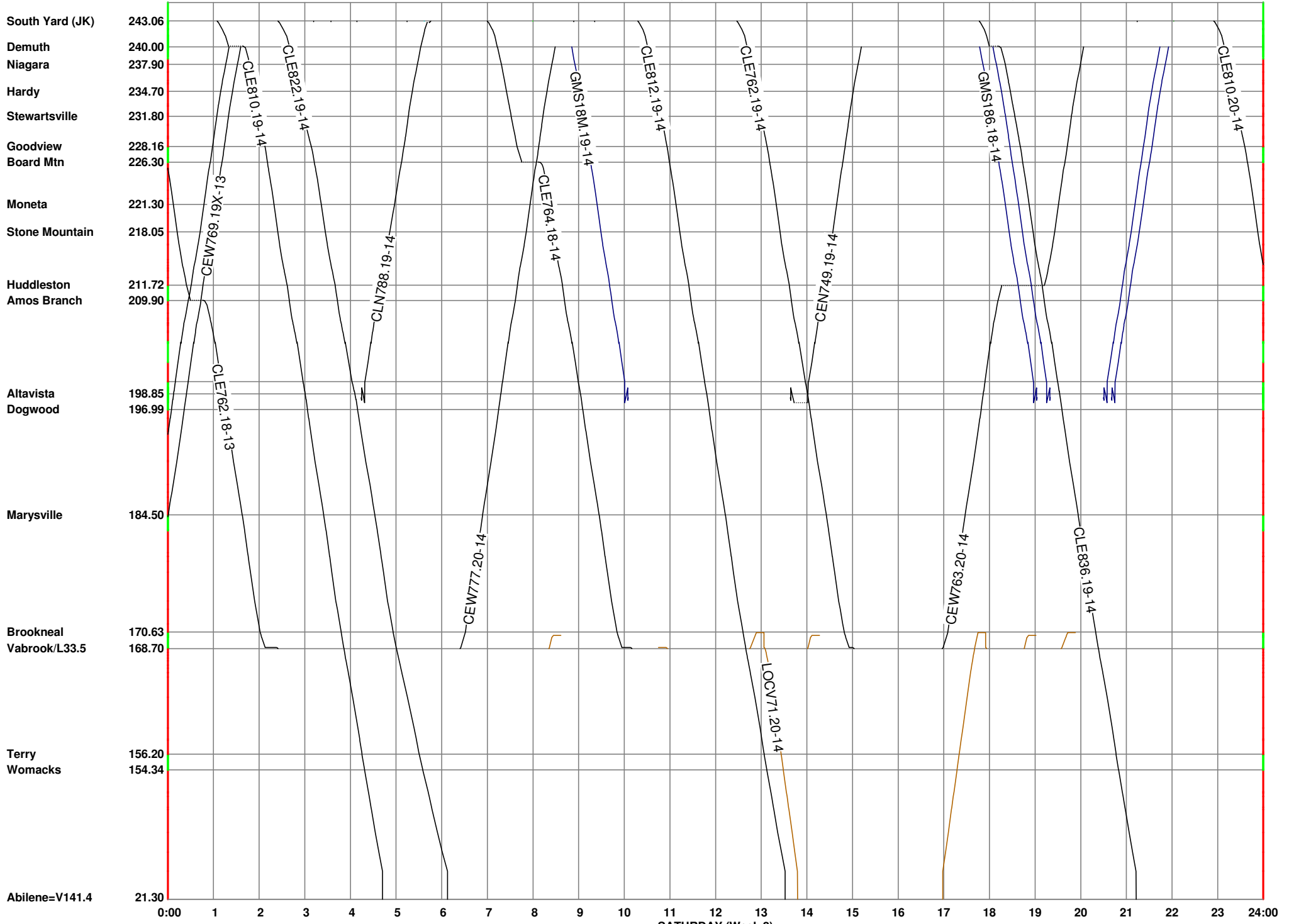


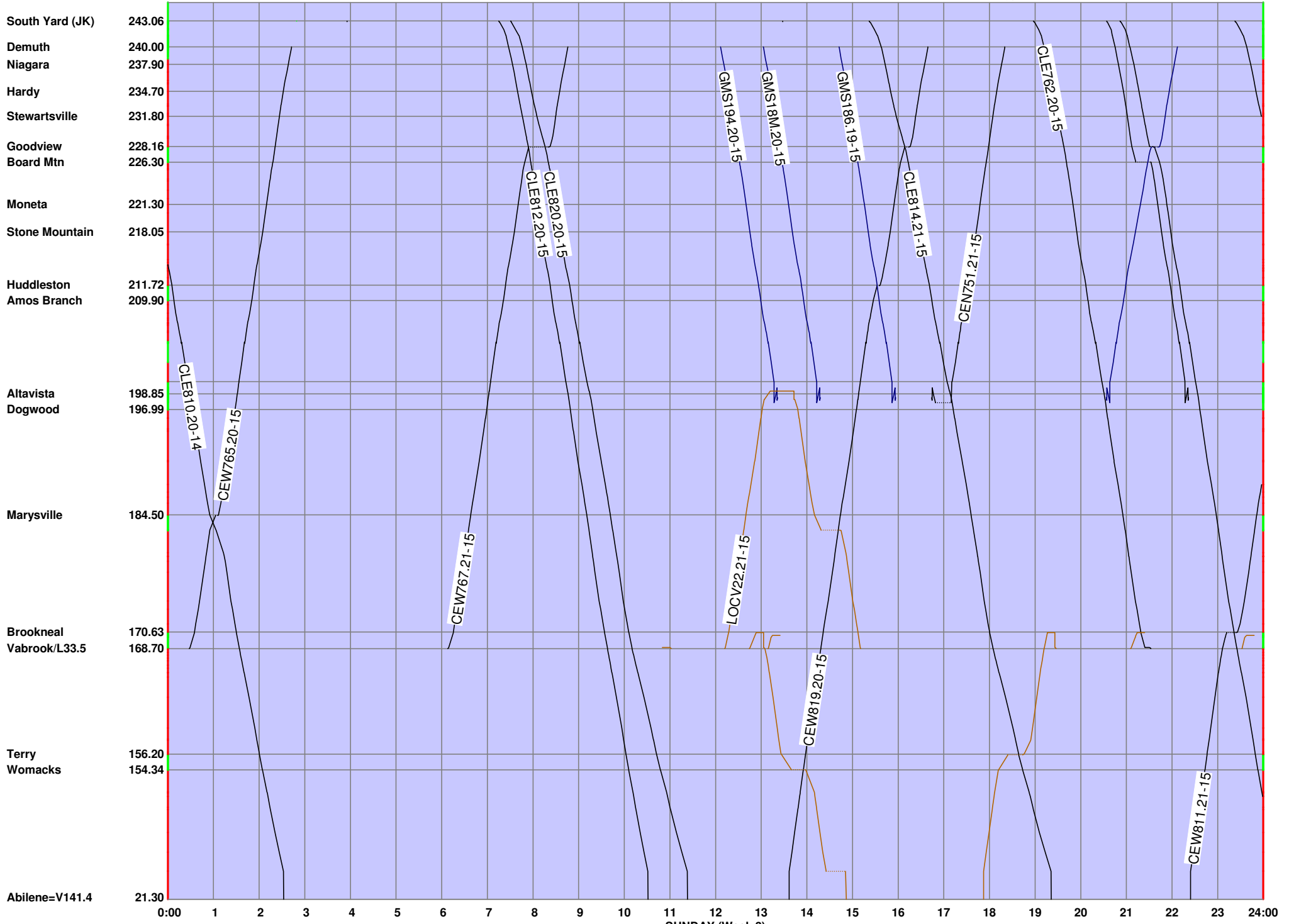




THURSDAY (Week 2)







Case: VA17B 2017PgrNoInf VA Project 2017 New pgr trns; No infrastructure

Elapsed execution time: 0:55 (HH:MM:SS)

Simulation start time: Sa:00:00

Duration: 9:00:00 (DD:HH:MM)

warm-up exclusion: 1:00:00 (DD:HH:MM)

Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,246 (692M + 554P) Gross conflicts = 1,365 (744M + 621P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 9 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	31	42.024	2.13	0:10:02	0:01:28	0	0:01:36	3:14:33	0	3:16:09	3704.9	8752.0	-----
E Premium Intermodal	95	31.568	7.35	1:14:24	0	0:00:05	0:17:08	11:07:34	0	12:00:42	9114.0	63550.8	-----
E Intermodal	77	32.500	7.32	1:12:37	0	0:00:13	0:17:56	11:17:52	0:00:18	12:11:27	9732.2	58990.2	-----
F Multi-level	17	29.637	14.18	0:04:40	0	0	0:05:00	1:15:56	0	1:20:57	1332.3	6405.4	-----
F General Merchandise	114	23.725	13.26	4:00:23	0	0:01:23	1:16:19	16:16:40	0:00:11	18:08:49	10458.5	86362.9	-----
F Coal	103	22.144	11.99	1:21:36	0	0	1:07:30	12:20:31	0:00:38	14:03:55	7527.1	76401.6	-----
F Unit	19	23.773	12.06	0:05:10	0	0:00:00	0:04:37	1:19:29	0:00:38	2:00:07	1143.9	9218.8	-----
F Local	77	11.864	11.95	5:17:45	0	0:07:45	0:13:40	10:12:21	0:00:19	11:01:58	3155.4	9664.0	-----
F Work Train	6	25.936	21.68	0:03:30	0	0:00:00	0:03:27	0:19:27	0:00:31	0:22:55	594.5	3848.2	-----
F Yard	19	2.897	13.09	1:11:20	0	0:00:43	0:02:08	2:04:35	0	2:05:45	155.7	148.9	-----
All train types	558	24.788	10.25	17:05:27	0:01:28	0:10:12	5:17:25	73:05:04	0:02:36	78:20:47	46918.6	323342.7	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	31	42.024	2.13	0:10:02	0:01:28	0	0:01:36	3:14:33	0	3:16:09	3704.9	8752.0	2.59	-----
Expedited	172	32.042	7.34	3:03:01	0	0:00:18	1:11:04	23:01:27	0:00:18	24:12:10	18846.2	122541.0	11.17	-----
Freight	355	20.031	12.80	13:16:24	0	0:09:53	4:04:44	46:13:03	0:02:18	50:16:27	24367.5	192049.7	24.81	-----
All groups	558	24.788	10.25	17:05:27	0:01:28	0:10:12	5:17:25	73:05:04	0:02:36	78:20:47	46918.6	323342.7	17.57	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late.

All others are on time.

Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017B

Case: VA17B 2017PgrNoInf VA Project 2017 New pgr trns; No infrastructure

Elapsed execution time: 0:55 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,246 (692M + 554P) Gross conflicts = 1,365 (744M + 621P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 9 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	DTP*
P	Amtrak	30	44.363	0.40	0:06:26	0:01:28	0	0:00:13	2:11:02	0	2:14:41	2780.9	6521.9	-----
E	Premium Intermodal	71	32.463	4.22	1:10:24	0	0:00:05	0:08:06	9:01:23	0	9:18:44	7620.1	55052.7	-----
E	Intermodal	30	31.016	6.50	0:05:50	0	0:00:08	0:03:29	2:11:39	0:00:12	2:15:07	1957.9	11106.7	-----
F	Multi-level	10	31.898	11.47	0:03:30	0	0	0:03:45	1:11:11	0	1:15:59	1275.6	5822.6	-----
F	General Merchandise	77	22.108	11.05	2:20:03	0	0:00:50	0:18:14	9:00:31	0:00:11	10:11:26	5559.0	48009.6	-----
F	Coal	11	27.327	17.77	0:02:50	0	0	0:02:01	0:12:48	0	0:16:18	445.6	4034.0	-----
F	Unit	5	20.365	6.73	0:02:20	0	0:00:00	0:00:32	0:08:36	0	0:10:55	222.6	2423.9	-----
F	Local	16	25.493	7.94	0:10:22	0	0:00:13	0:02:37	1:19:26	0:00:17	1:21:56	1171.3	3149.7	-----
F	Work Train	6	26.504	12.43	0:03:30	0	0:00:00	0:01:34	0:15:53	0:00:31	0:17:48	472.1	3461.4	-----
F	Yard	19	3.569	16.13	0:15:50	0	0:00:27	0:01:44	1:04:55	0	1:04:22	101.3	130.2	-----
All train types		275	28.011	7.37	6:09:05	0:01:28	0:01:46	1:18:20	29:01:28	0:01:12	32:03:21	21606.6	139712.8	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	30	44.363	0.40	0:06:26	0:01:28	0	0:00:13	2:11:02	0	2:14:41	2780.9	6521.9	0.47	-----
Expedited	101	32.156	4.72	1:16:14	0	0:00:13	0:11:36	11:13:02	0:00:12	12:09:51	9578.1	66159.4	7.27	-----
Freight	144	22.511	11.14	4:10:25	0	0:01:33	1:06:31	15:01:22	0:00:59	17:02:48	9247.6	67031.5	19.80	-----
All groups	275	28.011	7.37	6:09:05	0:01:28	0:01:46	1:18:20	29:01:28	0:01:12	32:03:21	21606.6	139712.8	11.76	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017B

Case: VA17B 2017PgrNoInf VA Project 2017 New pgr trns; No infrastructure

Elapsed execution time: 0:55 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,246 (692M + 554P) Gross conflicts = 1,365 (744M + 621P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 9 (scale 0-100)

G R P	Train Type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	16	40.330	0.00	0:03:21	0	0	0	0:18:46	0	0:21:57	885.7	2165.4	-----
E	Premium Intermodal	33	31.778	4.81	0:05:30	0	0	0:01:16	1:01:30	0	1:09:26	1062.6	5121.7	-----
E	Intermodal	77	34.287	3.36	1:06:47	0	0:00:05	0:06:09	8:10:20	0	9:04:03	7545.0	46955.7	-----
F	Multi-level	7	0.120	0.00	0:01:10	0	0	0	0	0	0:01:10	0.1	0.0	-----
F	General Merchandise	77	24.662	6.87	1:11:00	0	0:00:33	0:05:57	4:14:57	0	5:07:43	3150.1	24724.3	-----
F	Coal	83	19.914	7.81	0:19:20	0	0	0:03:44	2:04:29	0	2:22:56	1412.7	13871.5	-----
F	Unit	15	26.750	3.10	0:03:10	0	0	0:00:16	0:09:09	0	0:12:14	327.4	2240.2	-----
F	Local	37	9.441	13.01	2:03:44	0	0:05:16	0:04:24	3:03:22	0	3:18:01	850.0	2779.2	-----
F	Work Train	1	33.878	8.05	0:00:10	0	0	0:00:09	0:02:00	0	0:02:17	77.5	275.2	-----
F	Yard	13	1.900	20.46	0:23:50	0	0:00:15	0:00:49	0:23:39	0	1:04:39	54.4	18.7	-----
All train types		359	25.251	5.54	7:06:02	0	0:06:10	0:22:47	21:16:15	0	25:08:30	15365.6	98151.8	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	40.330	0.00	0:03:21	0	0	0	0:18:46	0	0:21:57	885.7	2165.4	0.00	-----
Expedited	110	33.956	3.55	1:12:17	0	0:00:05	0:07:26	9:11:50	0	10:13:29	8607.6	52077.4	5.19	-----
Freight	233	17.632	8.38	5:14:24	0	0:06:05	0:15:21	11:09:38	0	13:21:02	5872.3	43909.0	15.69	-----
All groups	359	25.251	5.54	7:06:02	0	0:06:10	0:22:47	21:16:15	0	25:08:30	15365.6	98151.8	8.90	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late.

All others are on time.

warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017B

Case: VA17B 2017PgrNoInf VA Project 2017 New pgr trns; No infrastructure

Elapsed execution time: 0:55 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,246 (692M + 554P) Gross conflicts = 1,365 (744M + 621P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 9 (scale 0-100)

G R P	Train Type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	-----
E	Intermodal	77	5.574	0.00	0:15:15	0	0	0	0:00:01	0	0:18:02	100.6	343.0	-----
F	Multi-level	7	0.340	0.00	0:01:10	0	0	0	0:00:02	0	0:01:14	0.4	3.2	-----
F	General Merchandise	64	24.909	1.45	0:11:50	0	0	0:00:30	1:10:43	0	1:23:29	1183.0	7407.3	-----
F	Coal	101	22.699	4.66	1:21:16	0	0	0:08:04	7:19:39	0	9:10:31	5142.0	47434.7	-----
F	Unit	18	25.547	2.05	0:04:00	0	0	0:00:18	0:14:58	0	0:19:29	497.8	2962.9	-----
F	Local	31	17.139	2.72	0:14:40	0	0	0:00:31	1:04:41	0	1:10:18	588.0	1877.0	-----
F	Work Train	2	17.204	41.88	0:00:30	0	0	0:00:37	0:01:23	0	0:02:38	45.3	112.4	-----
All train types		316	21.422	4.07	3:23:41	0	0	0:10:02	11:03:33	0	14:16:49	7558.1	60141.3	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	0.00	-----
Expedited	77	5.574	0.00	0:15:15	0	0	0	0:00:01	0	0:18:02	100.6	343.0	0.00	-----
Freight	223	22.481	4.11	3:05:26	0	0	0:10:02	11:03:29	0	13:19:41	7456.6	59797.4	8.08	-----
All groups	316	21.422	4.07	3:23:41	0	0	0:10:02	11:03:33	0	14:16:49	7558.1	60141.3	7.98	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

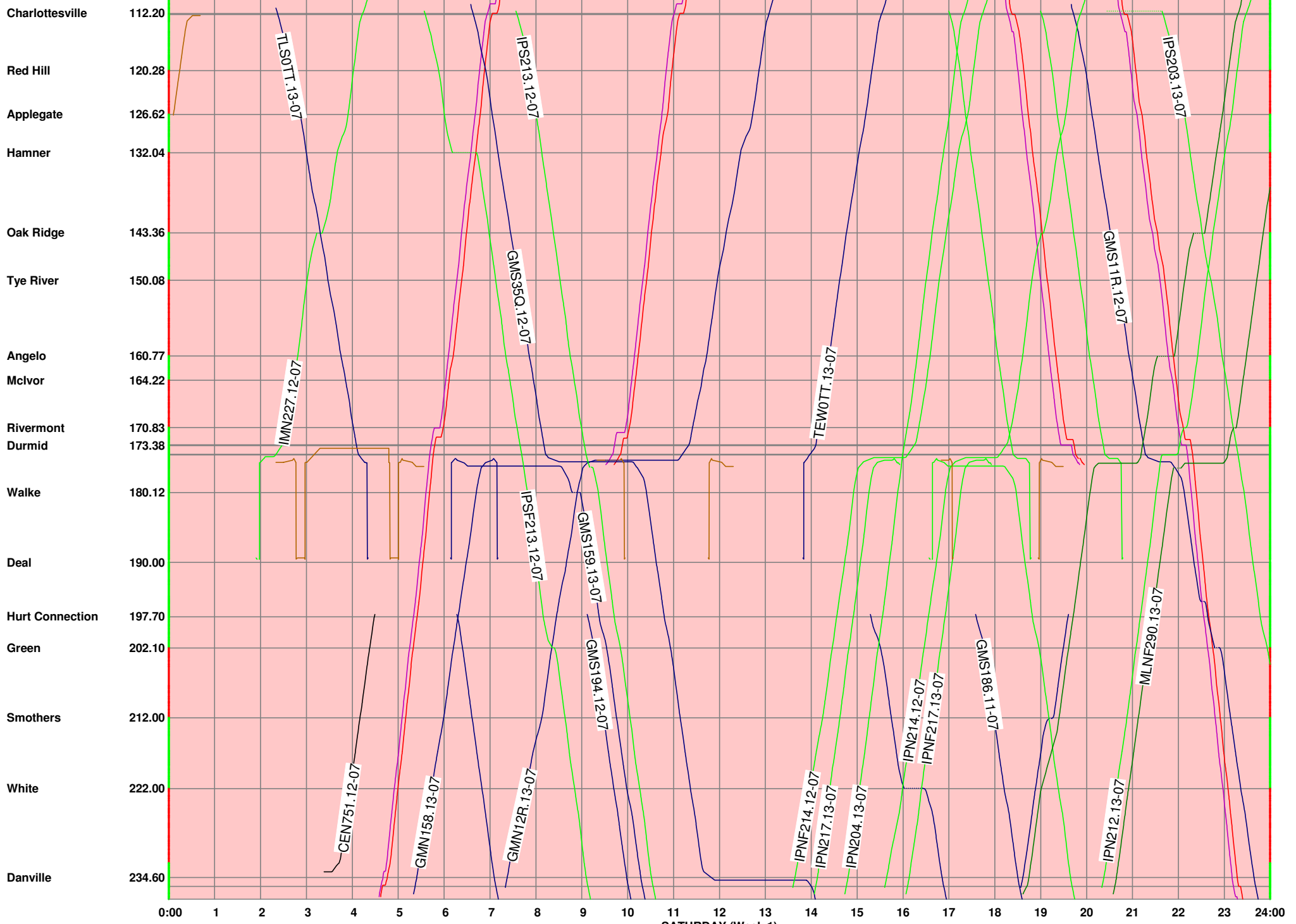
Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

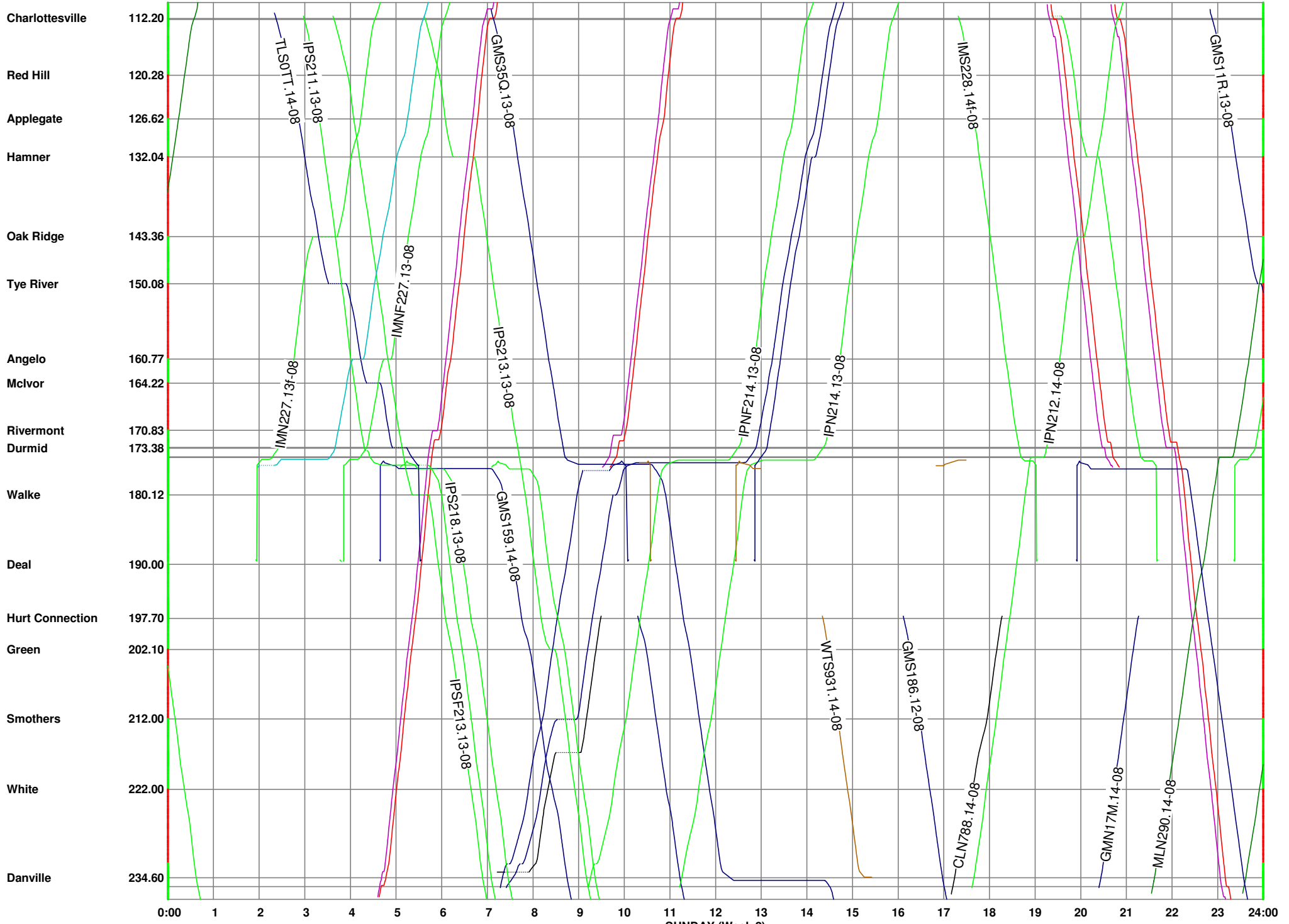
Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

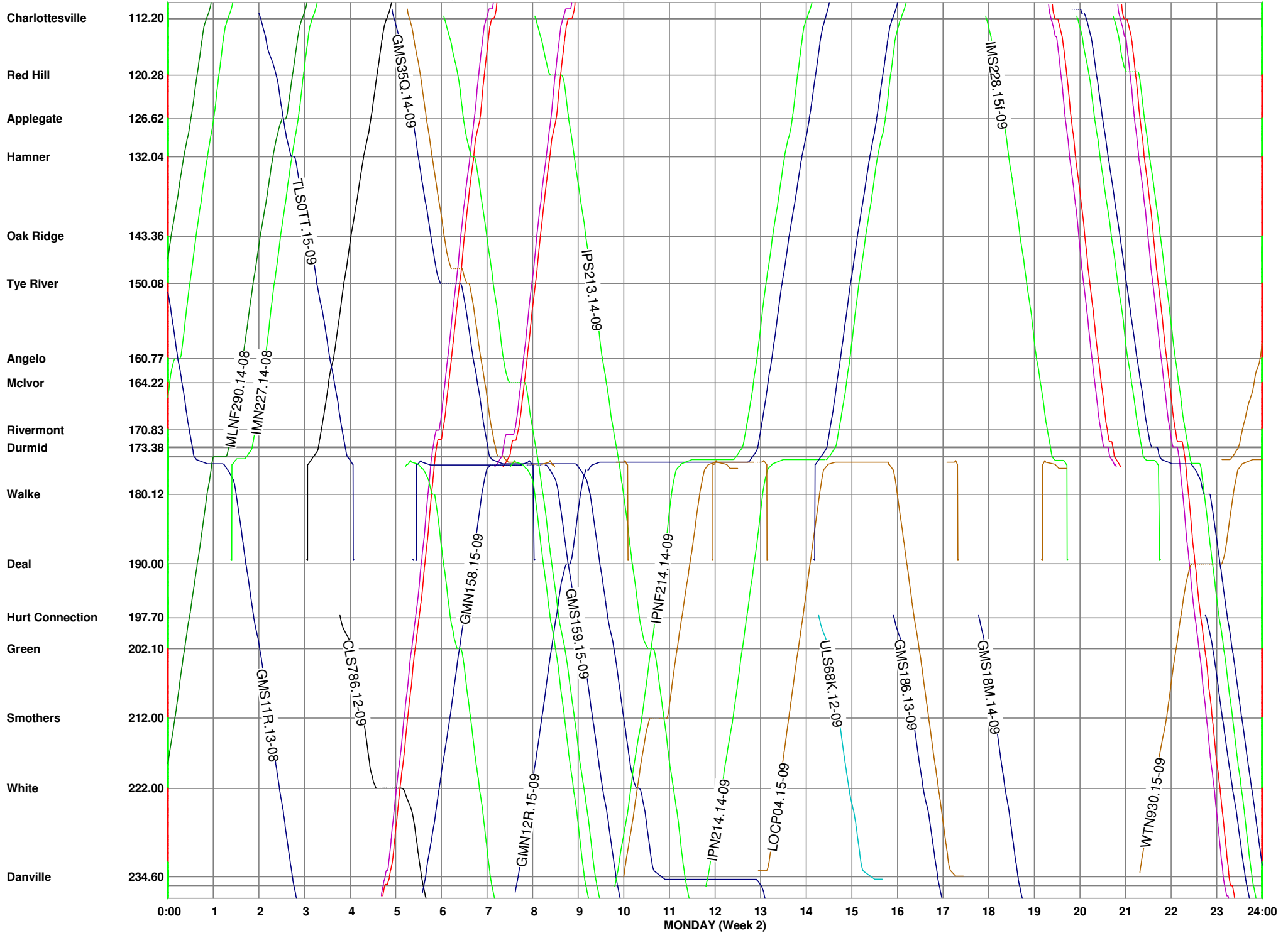
OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

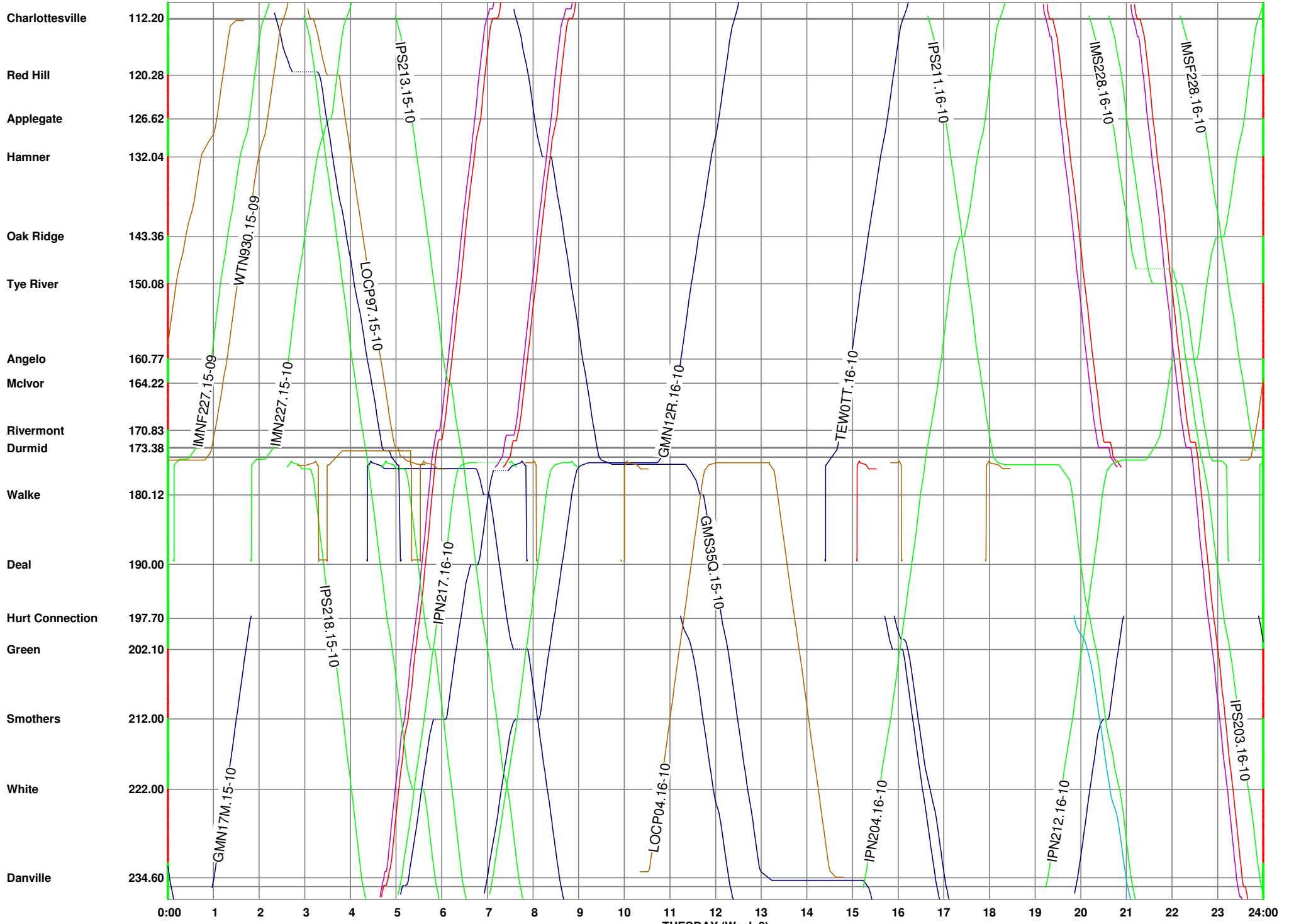
Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

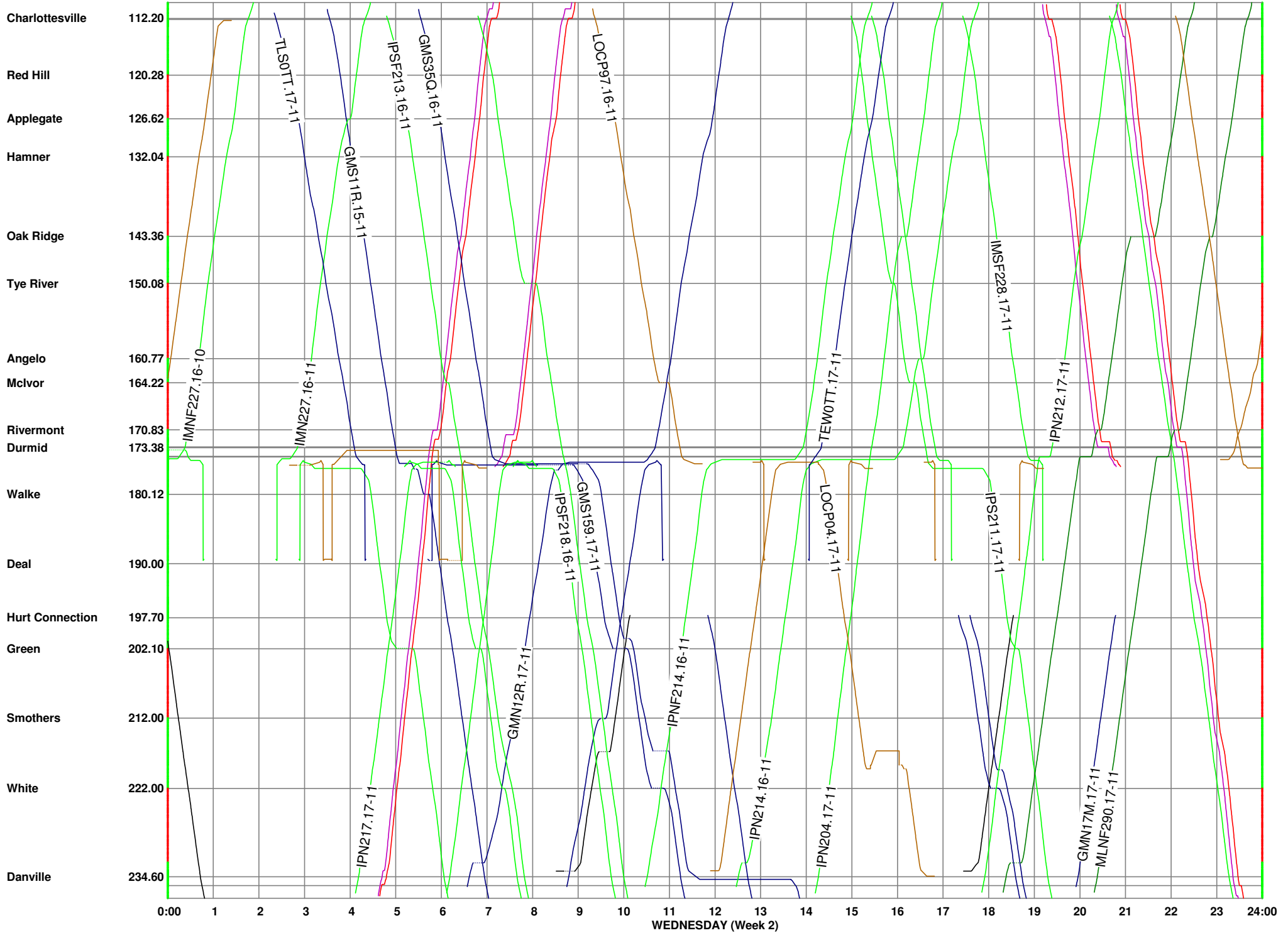
Case 2017B

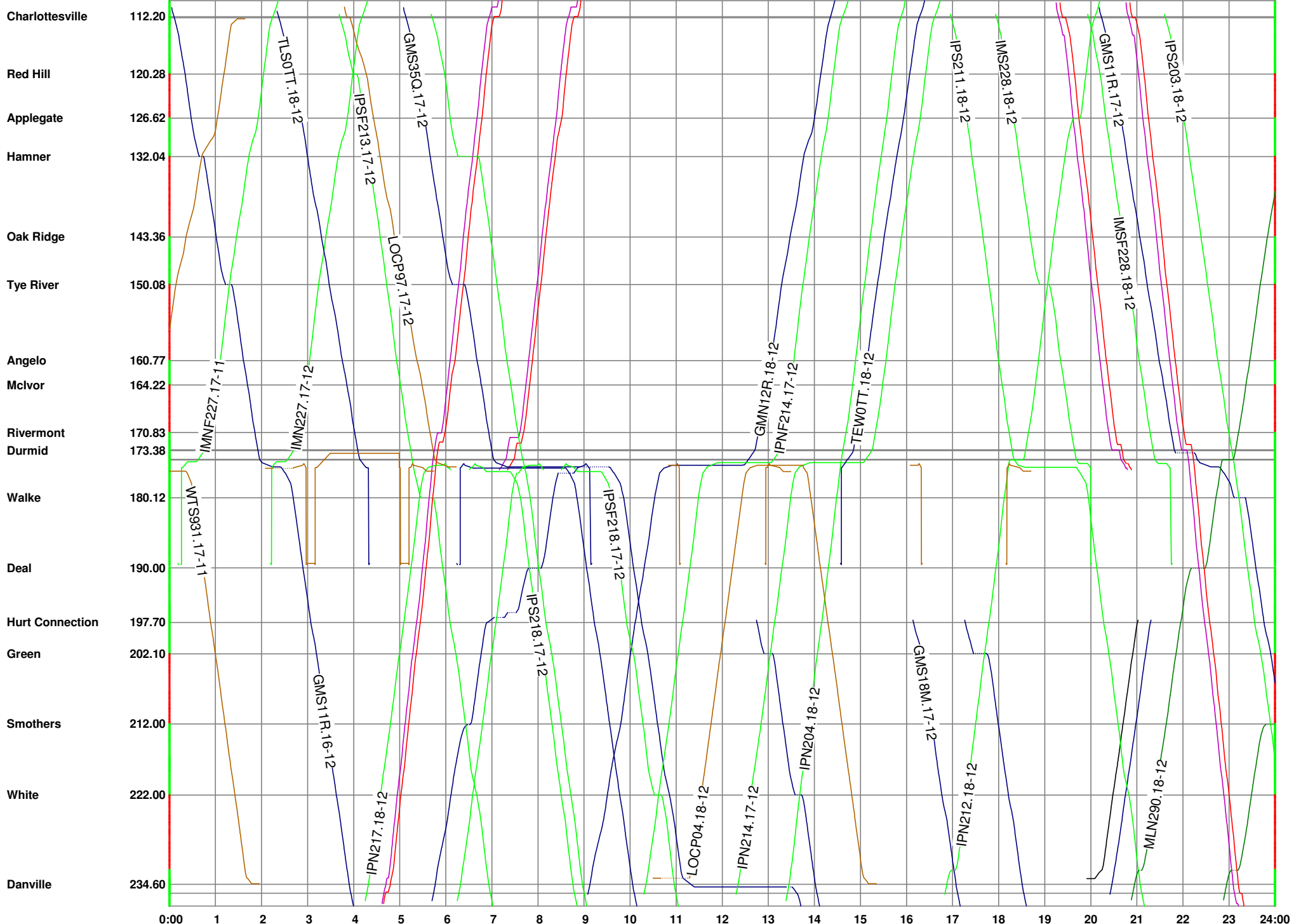












0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00

THURSDAY (Week 2)

All times displayed in Eastern time

RTC version: 67T L67T

Run time: 02 August 2013 11:15:54

Charlottesville
Red Hill
Applegate
Hamner
Oak Ridge
Tye River
Angelo
McIvor
Rivermont
Durmid
Walke
Deal
Hurt Connection
Green
Smothers
White
Danville

TLSOTT.18-12

GMS35Q.17-12

IPSF213.17-12

LOCP97.17-12

IMNF227.17-17-11

IMNF227.17-17-12

GMM12R.18-12

PNF214.17-12

TEWOTT.18-12

IPSF211.18-12

IMS228.18-12

GMS11R.17-12

IPSF203.18-12

IMS228.18-12

WTS931.17-11

IPSF218.17-12

IPSF218.17-12

GMS11R.16-12

IPN217.18-12

LOCP04.18-12

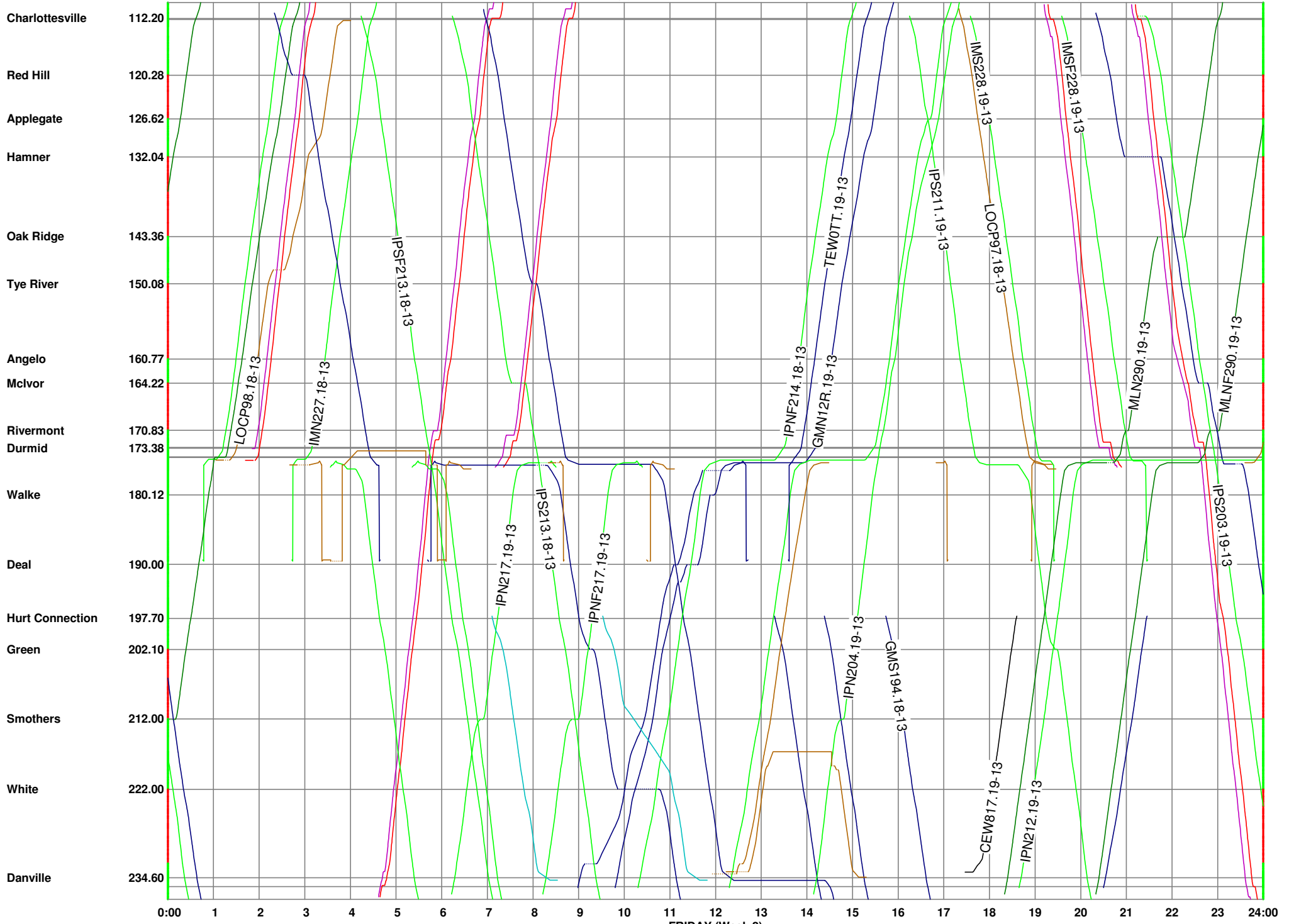
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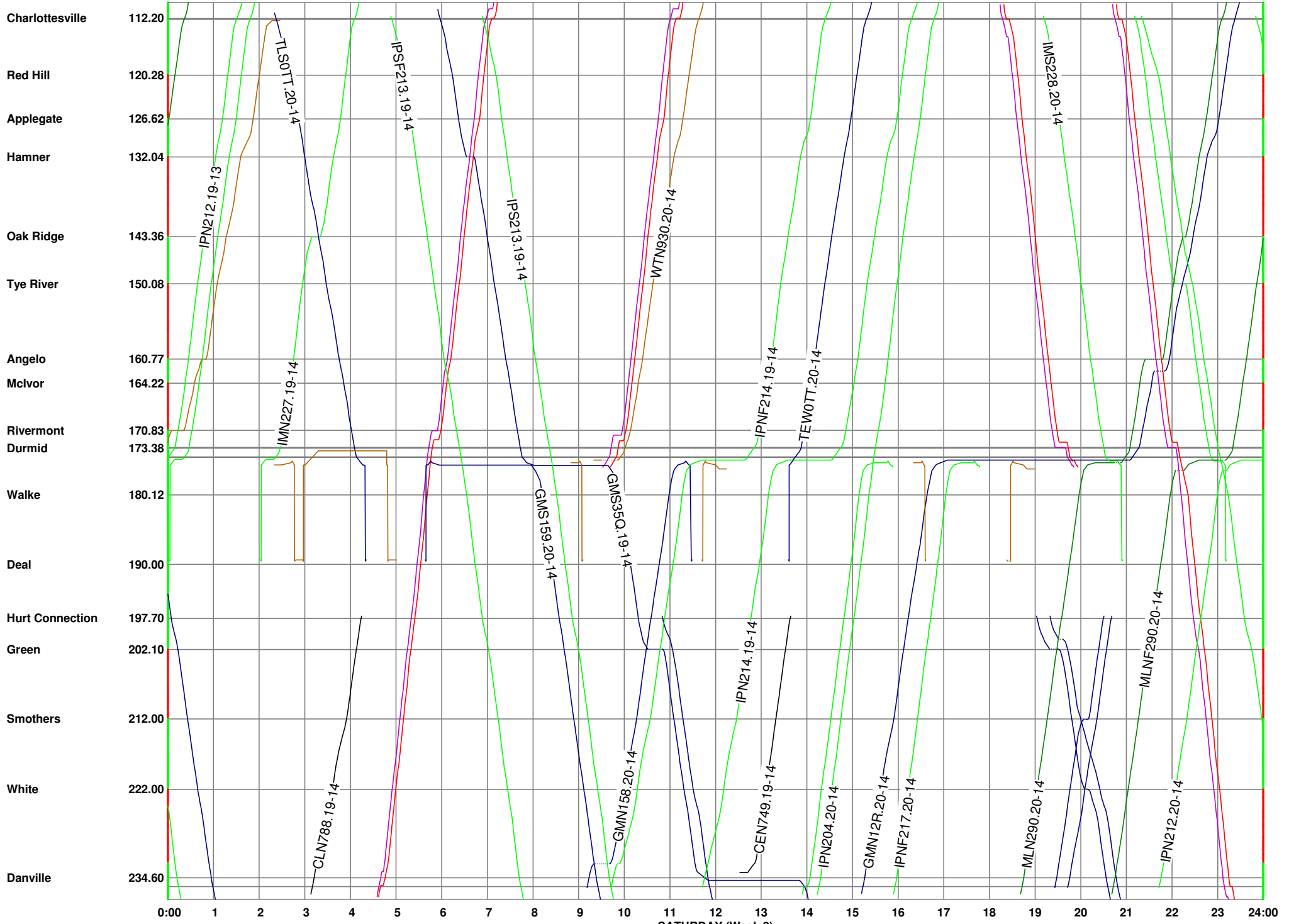
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MLN290.18-12



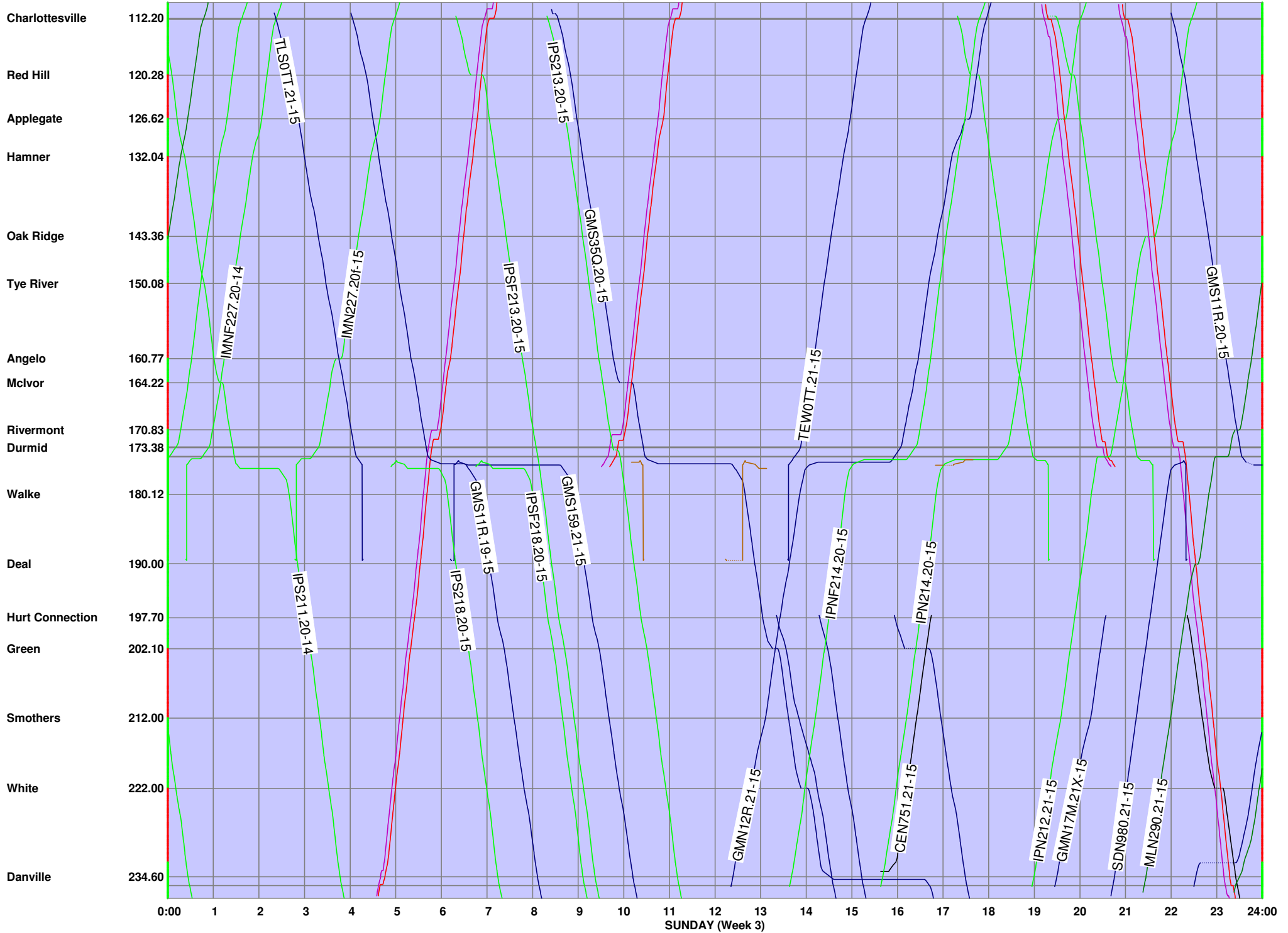


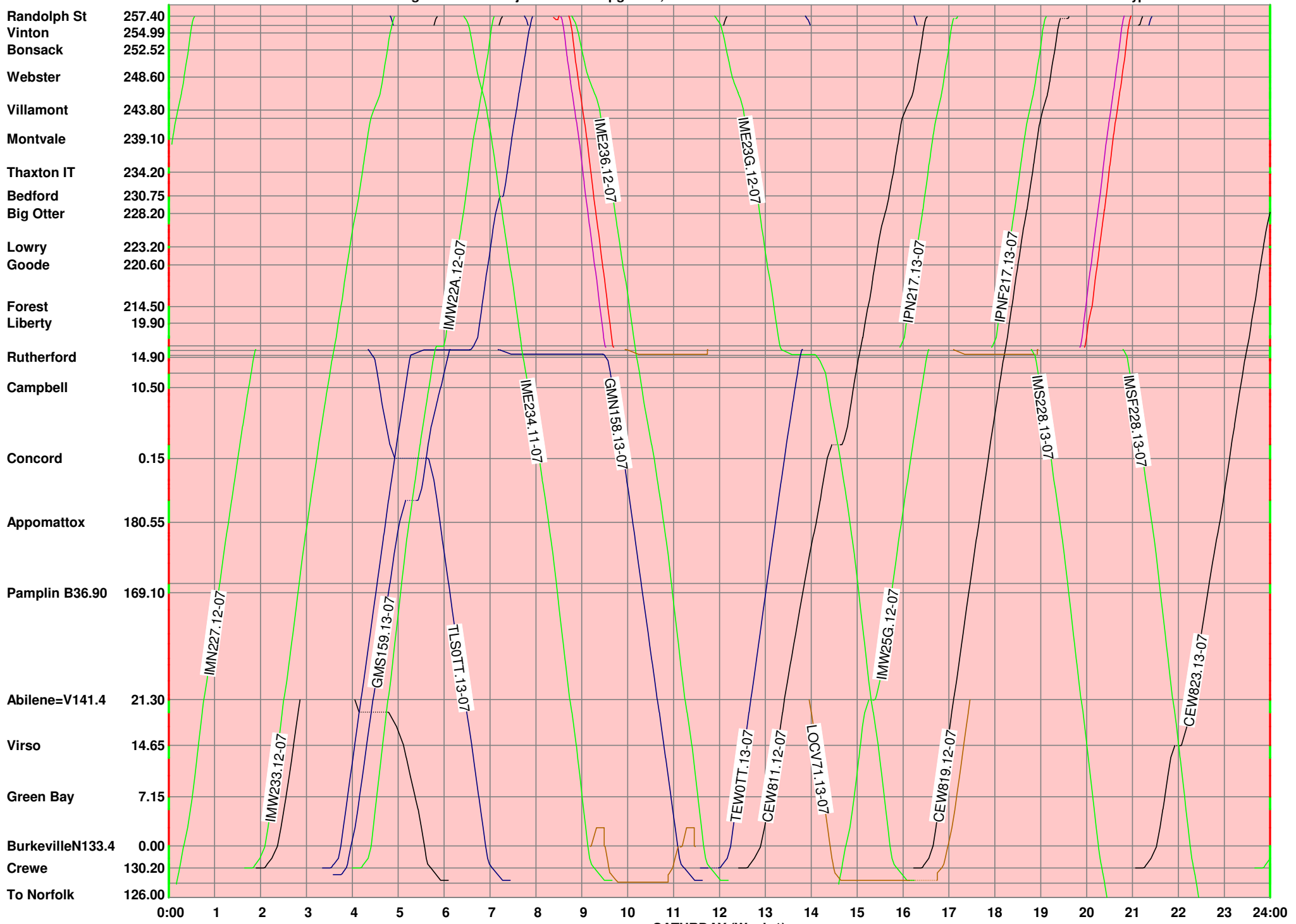
SATURDAY (Week 2)

All times displayed in Eastern time

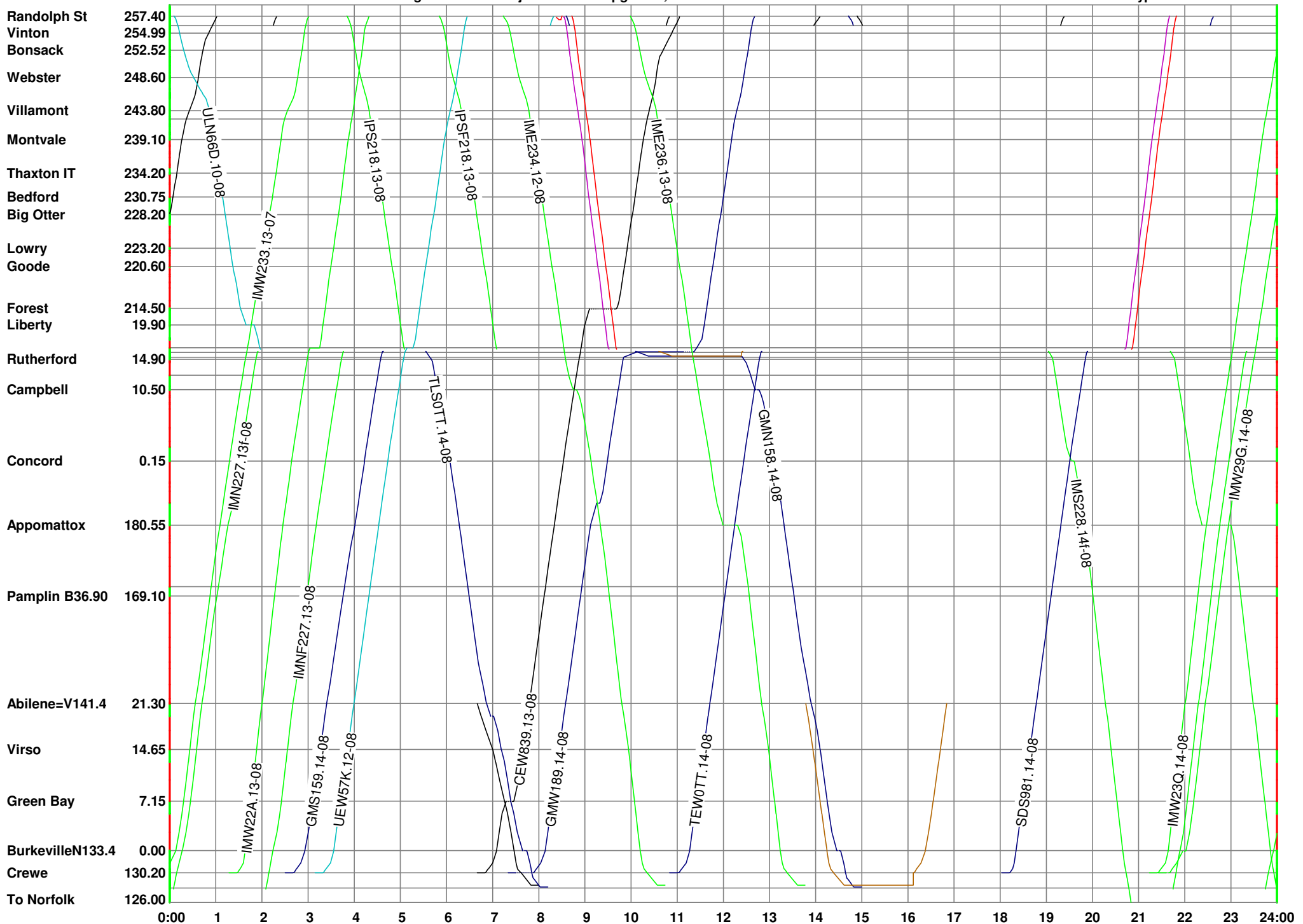
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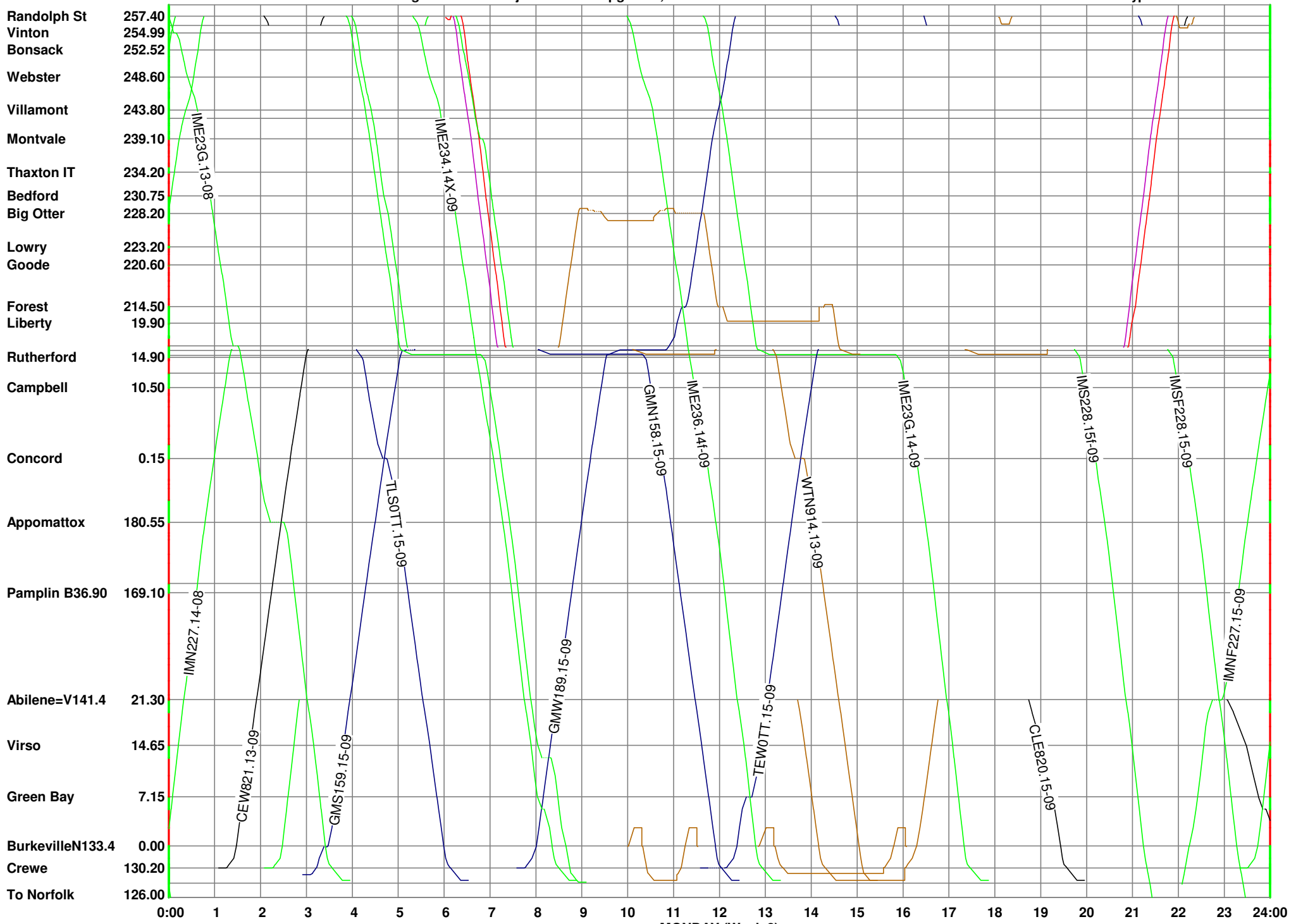
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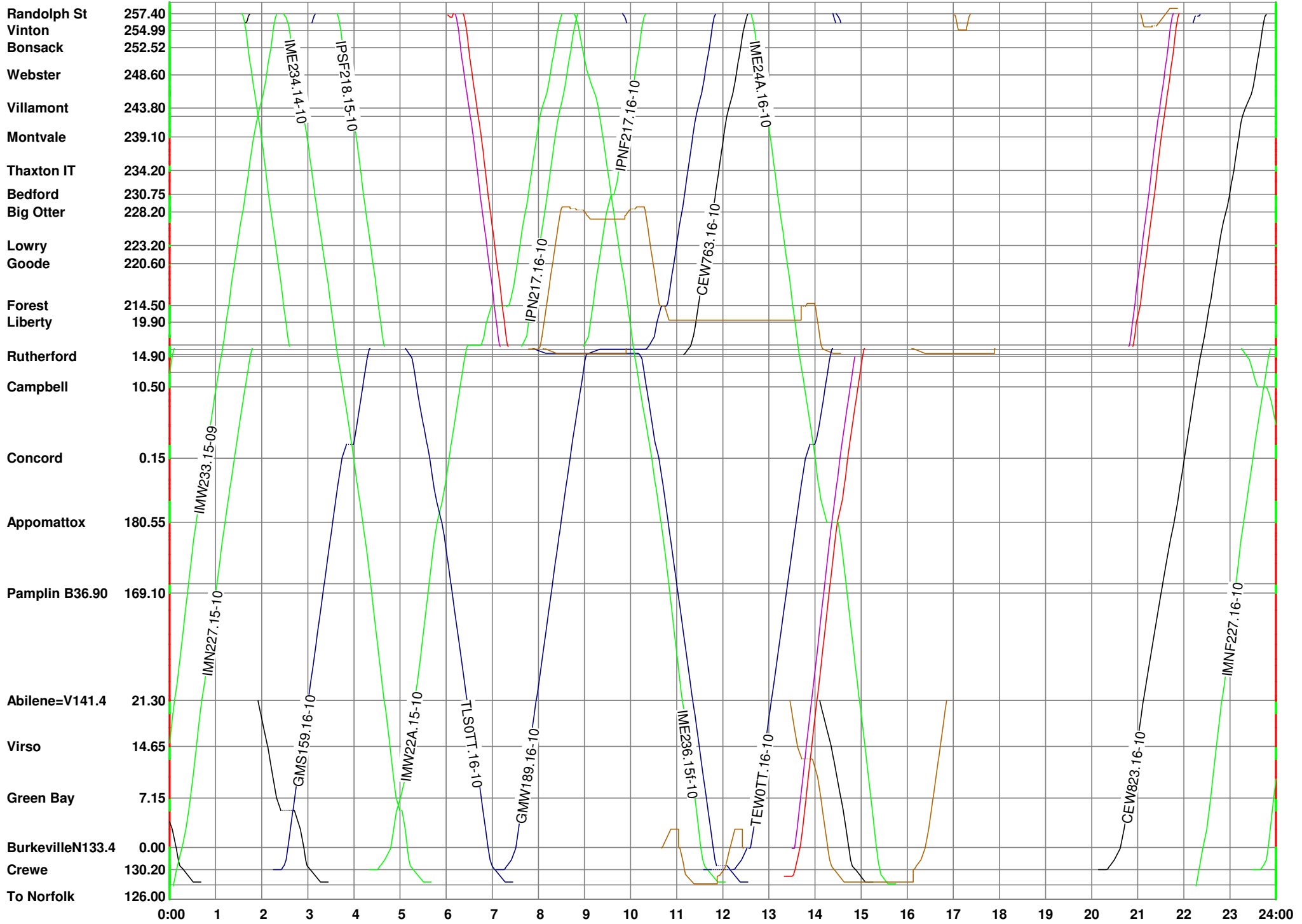


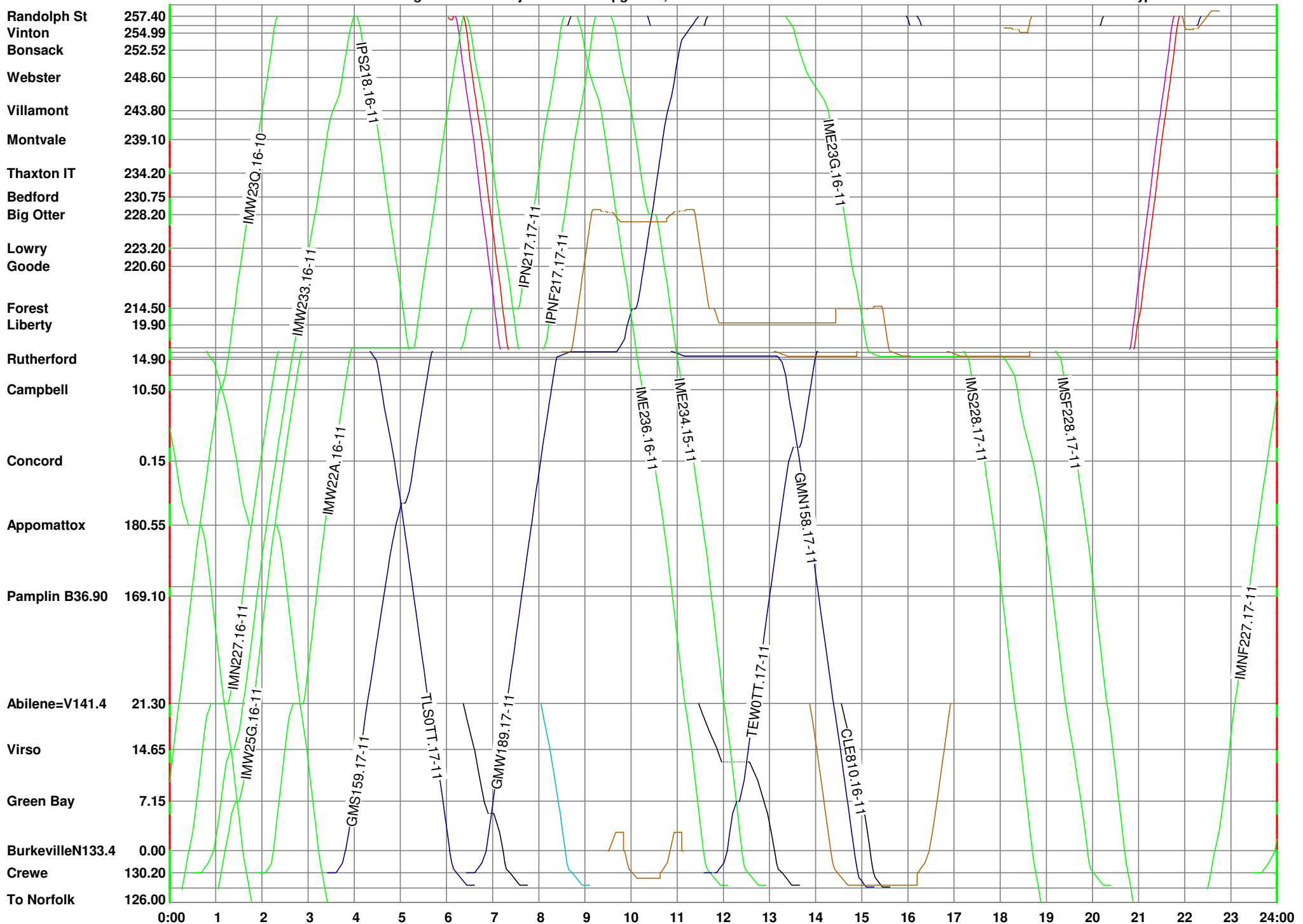
SATURDAY (Week 1)



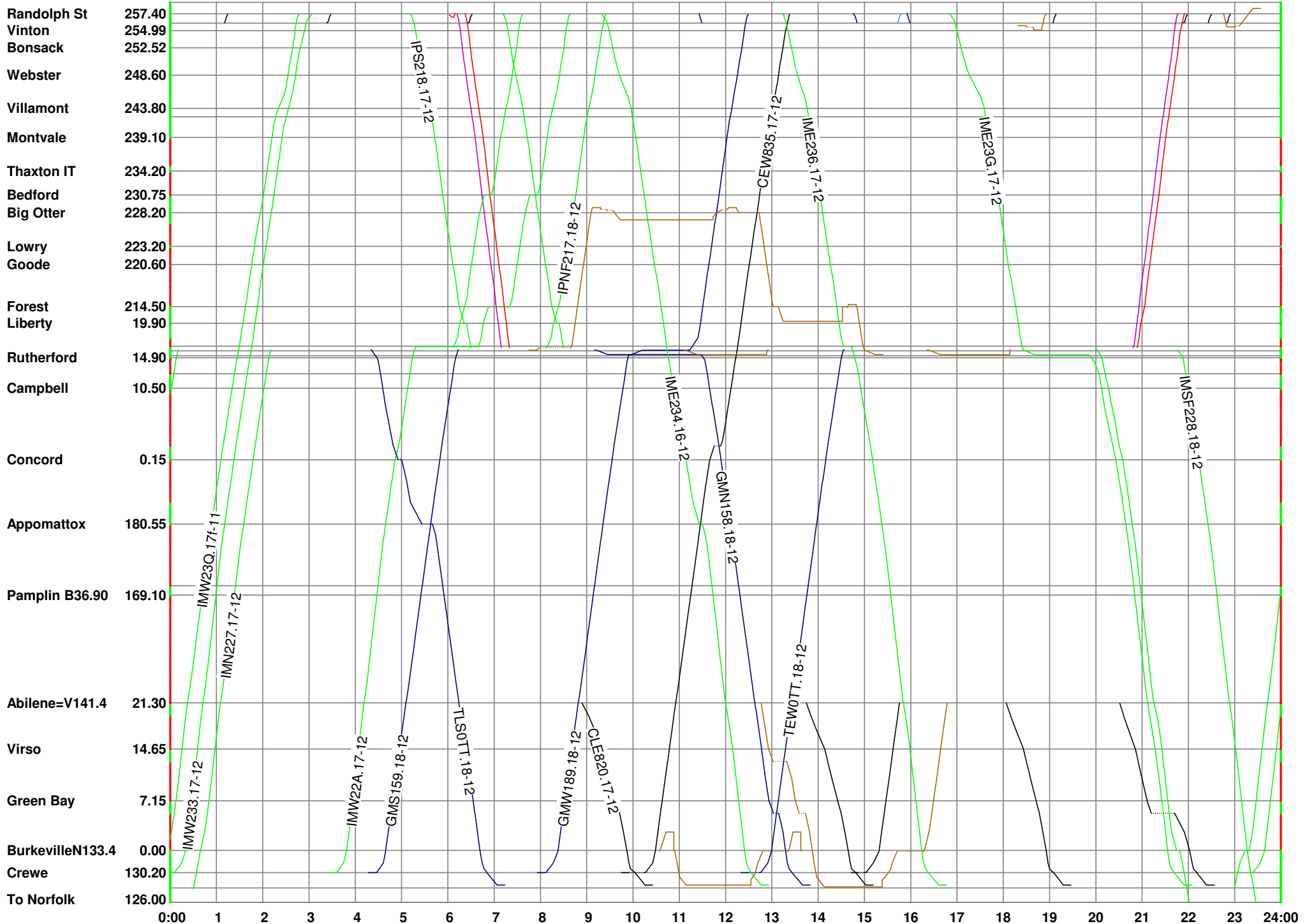


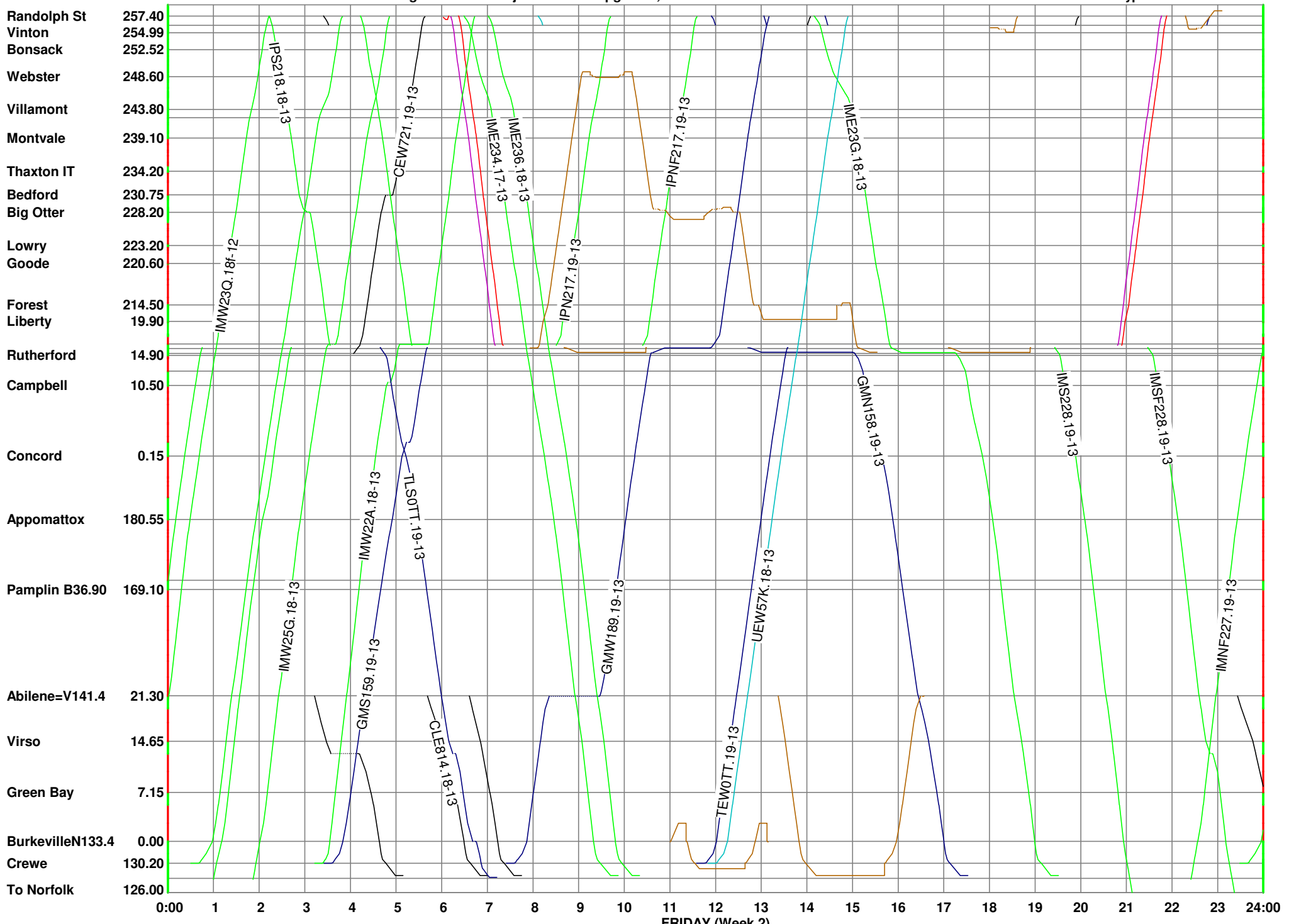
MONDAY (Week 2)

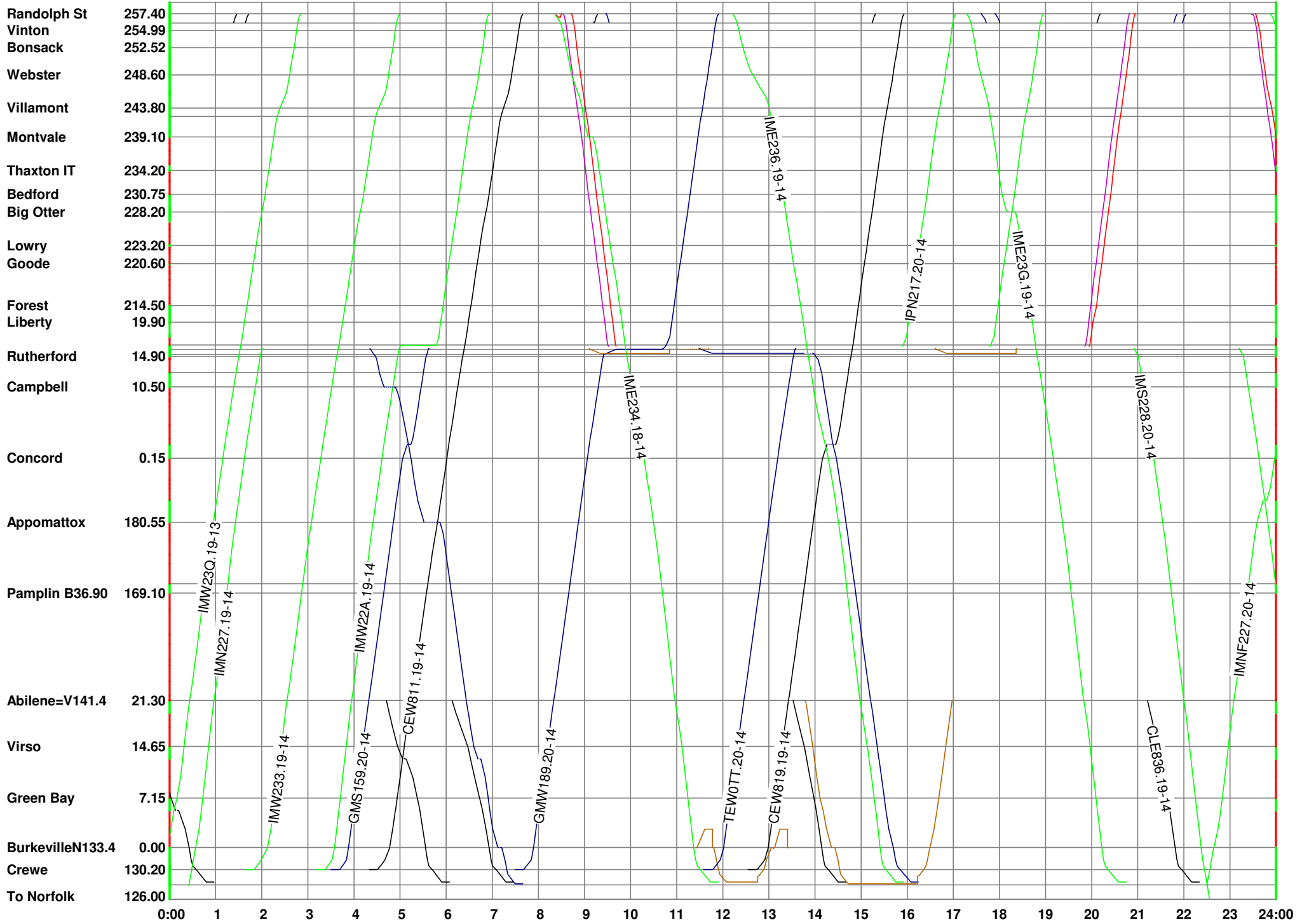


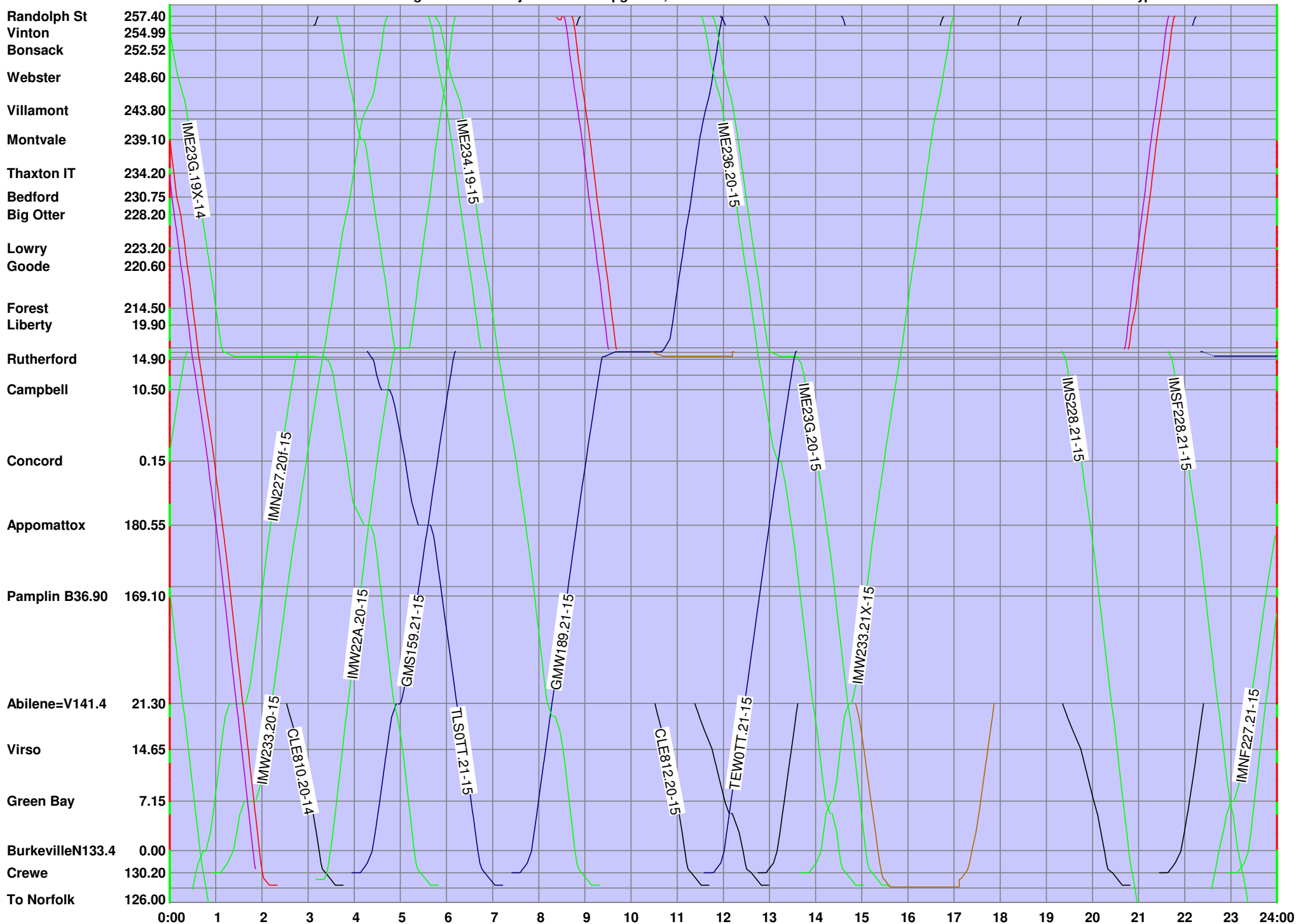


WEDNESDAY (Week 2)

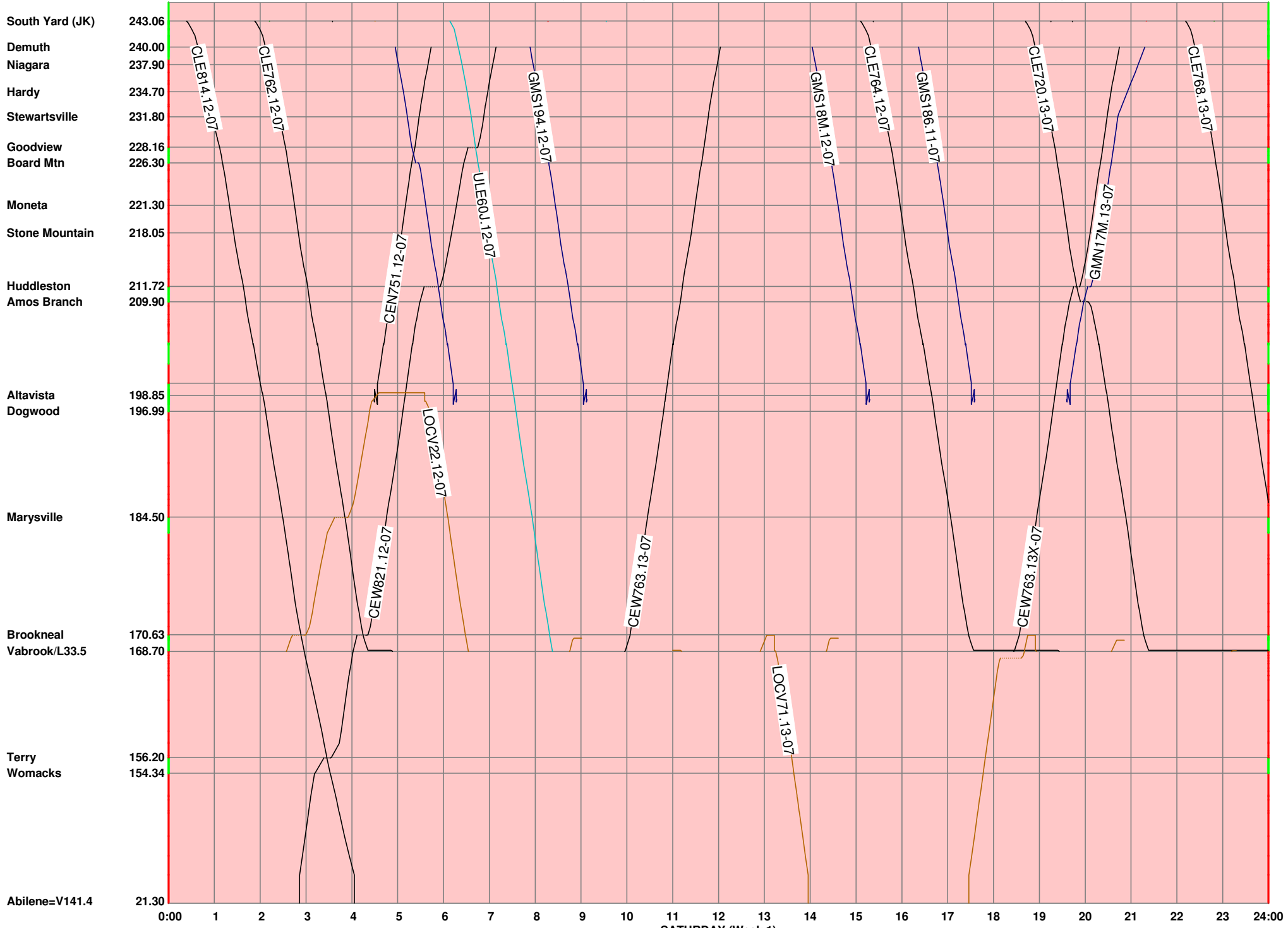


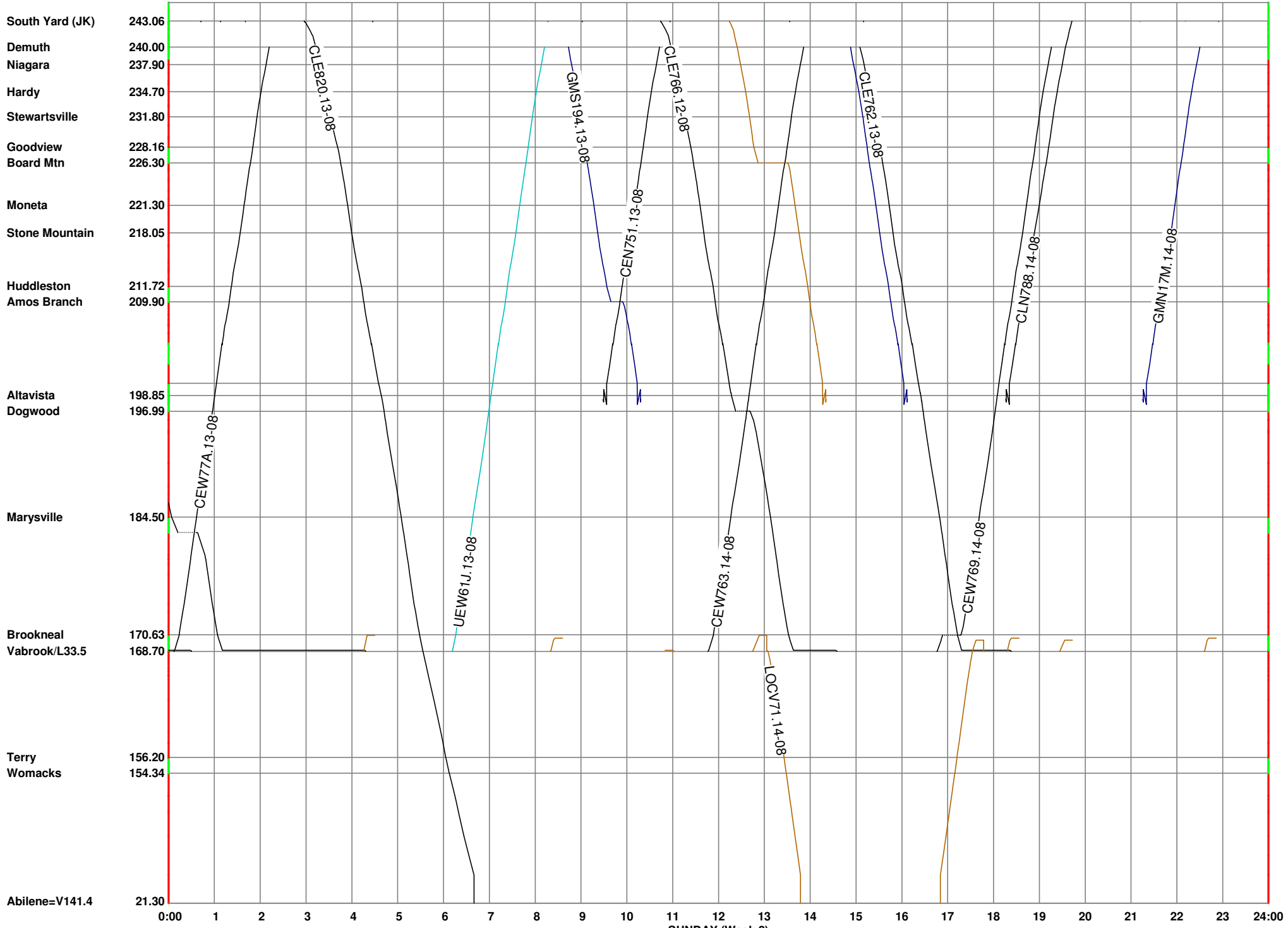


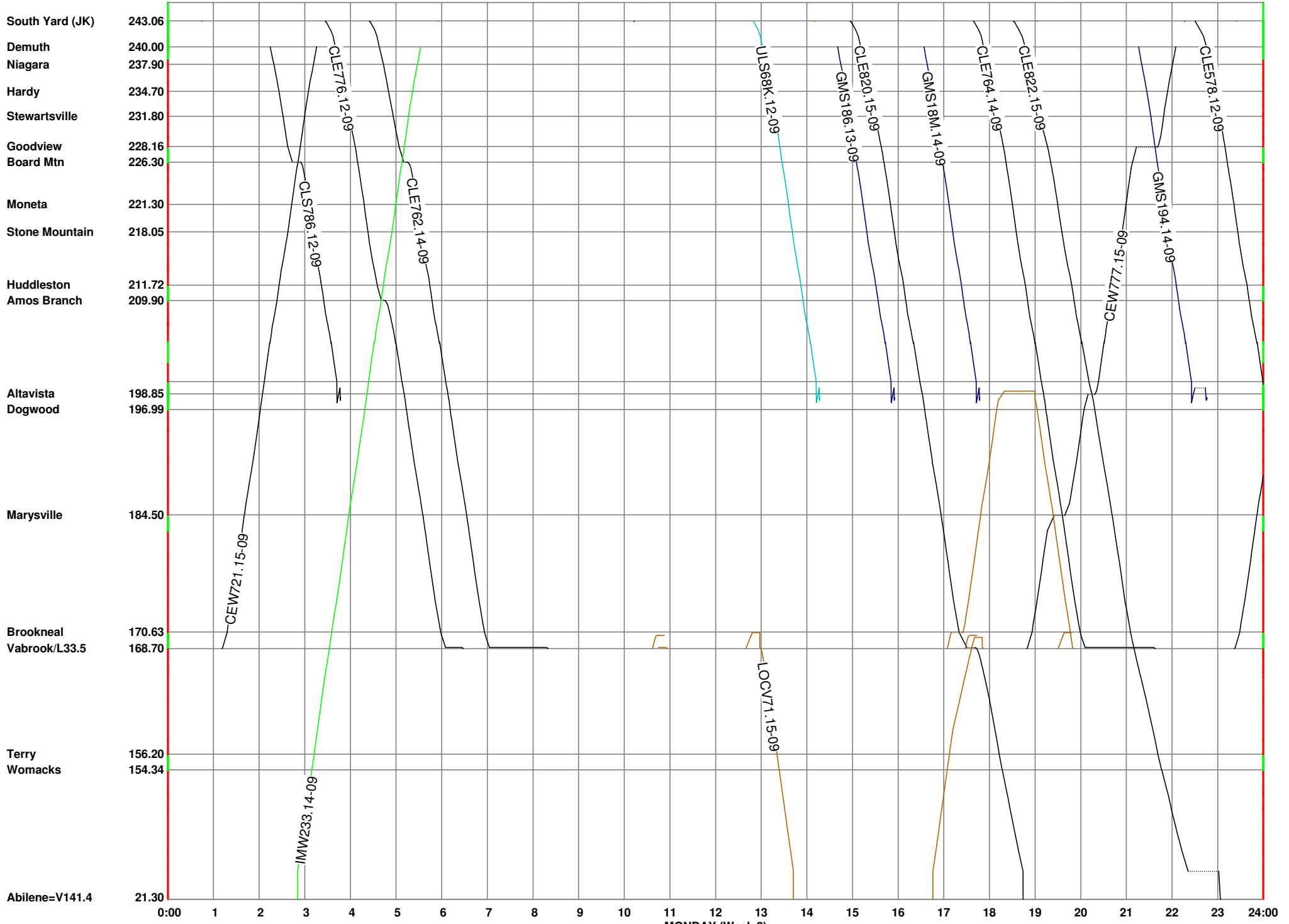


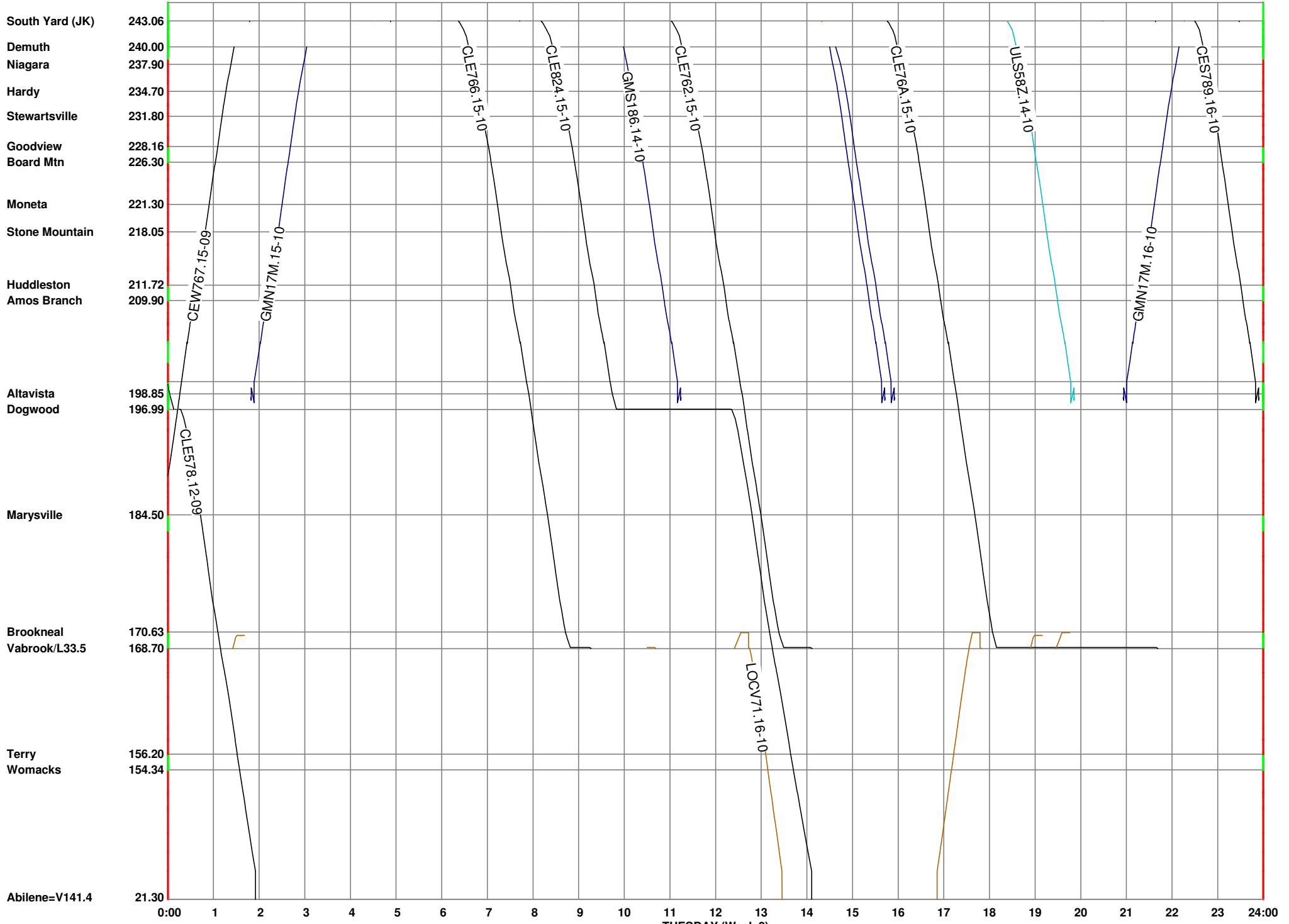


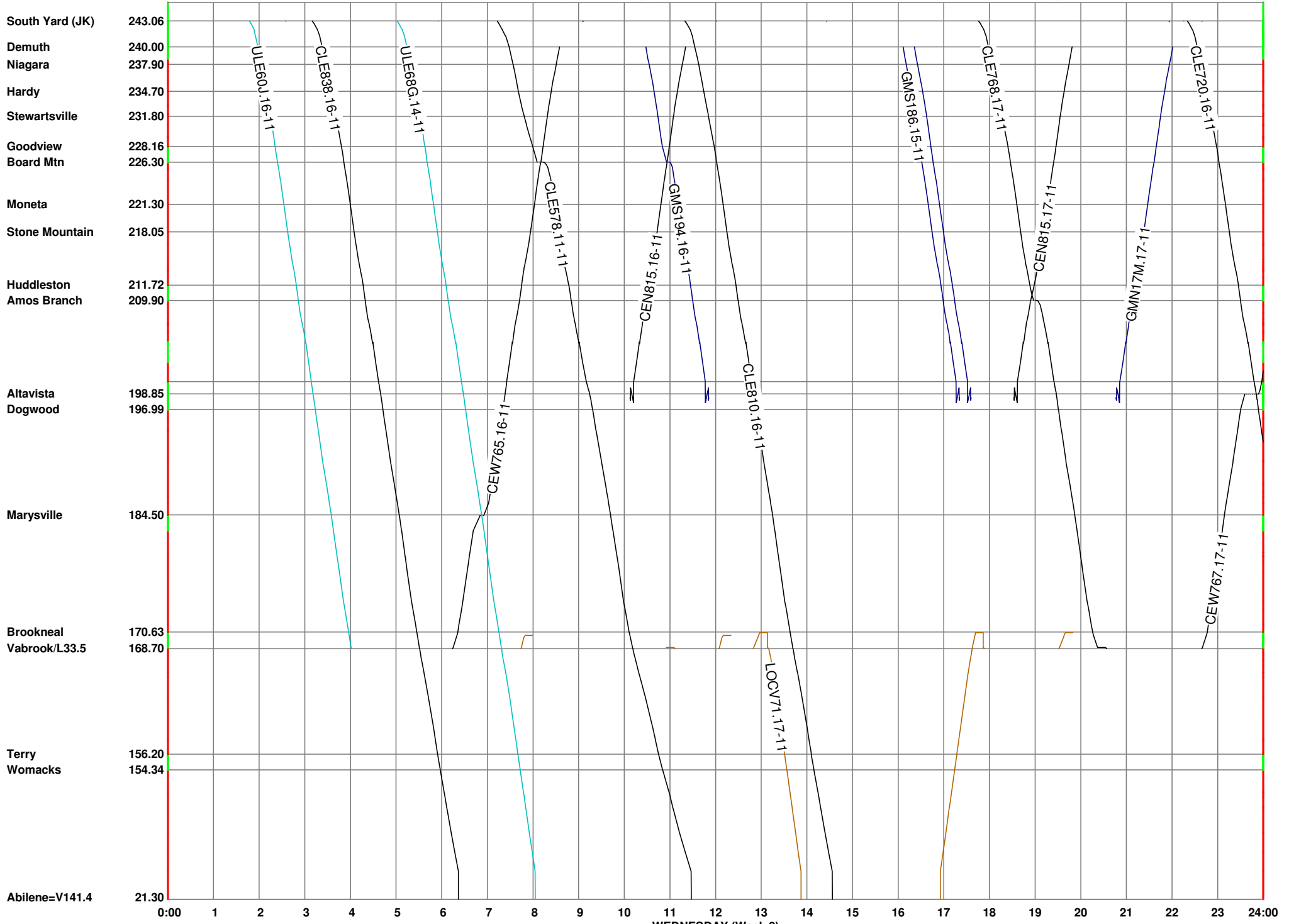
SUNDAY (Week 3)

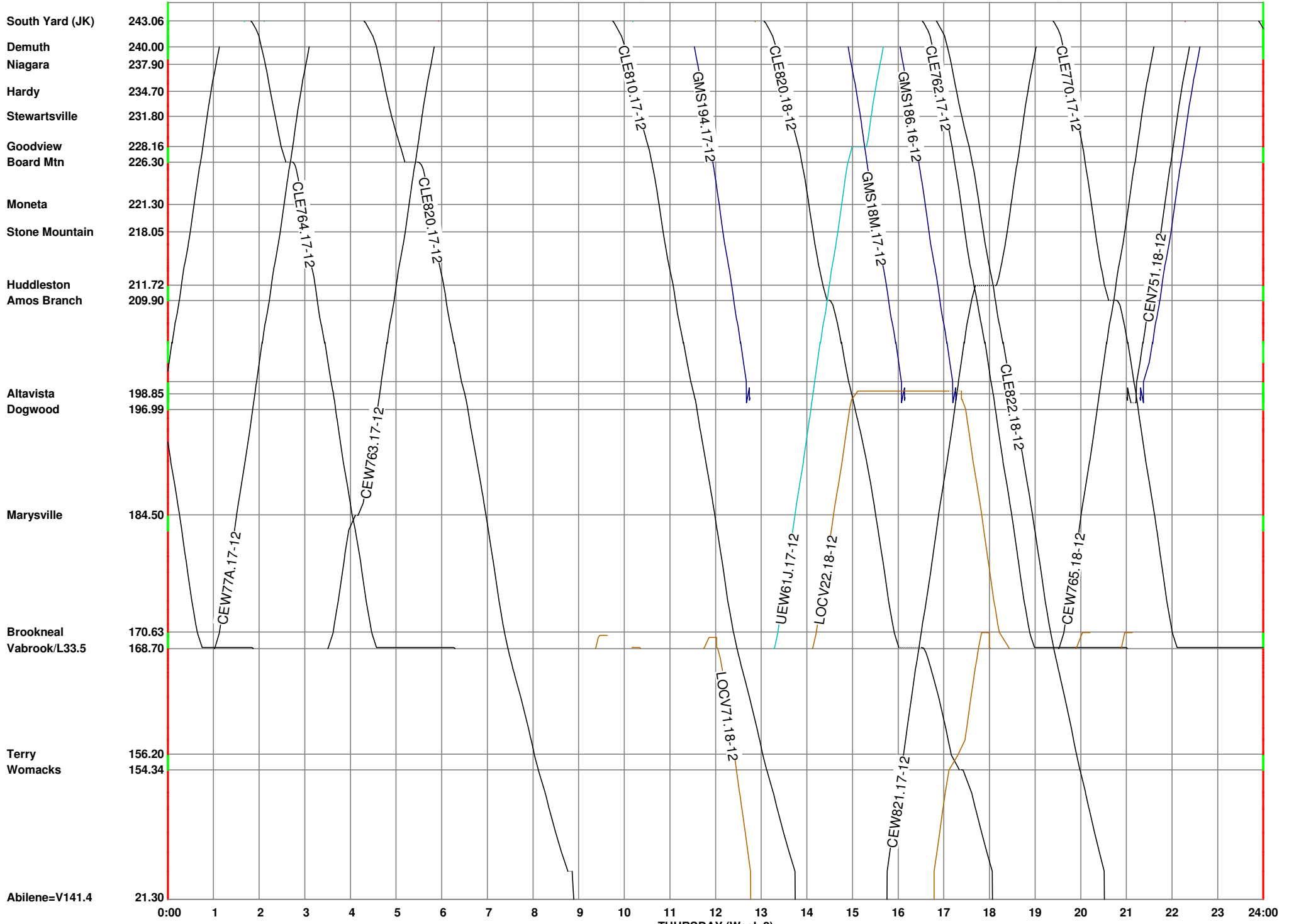


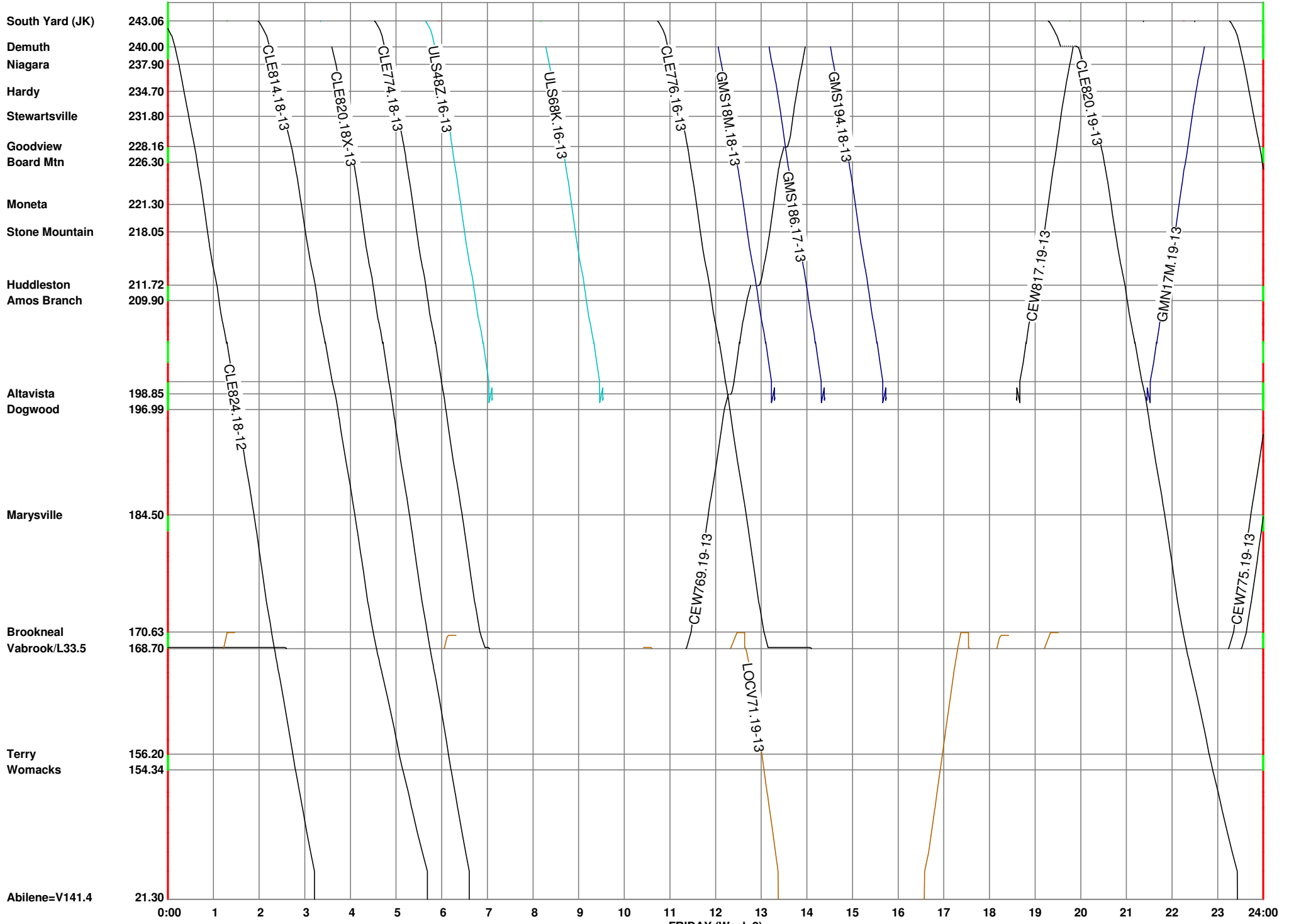


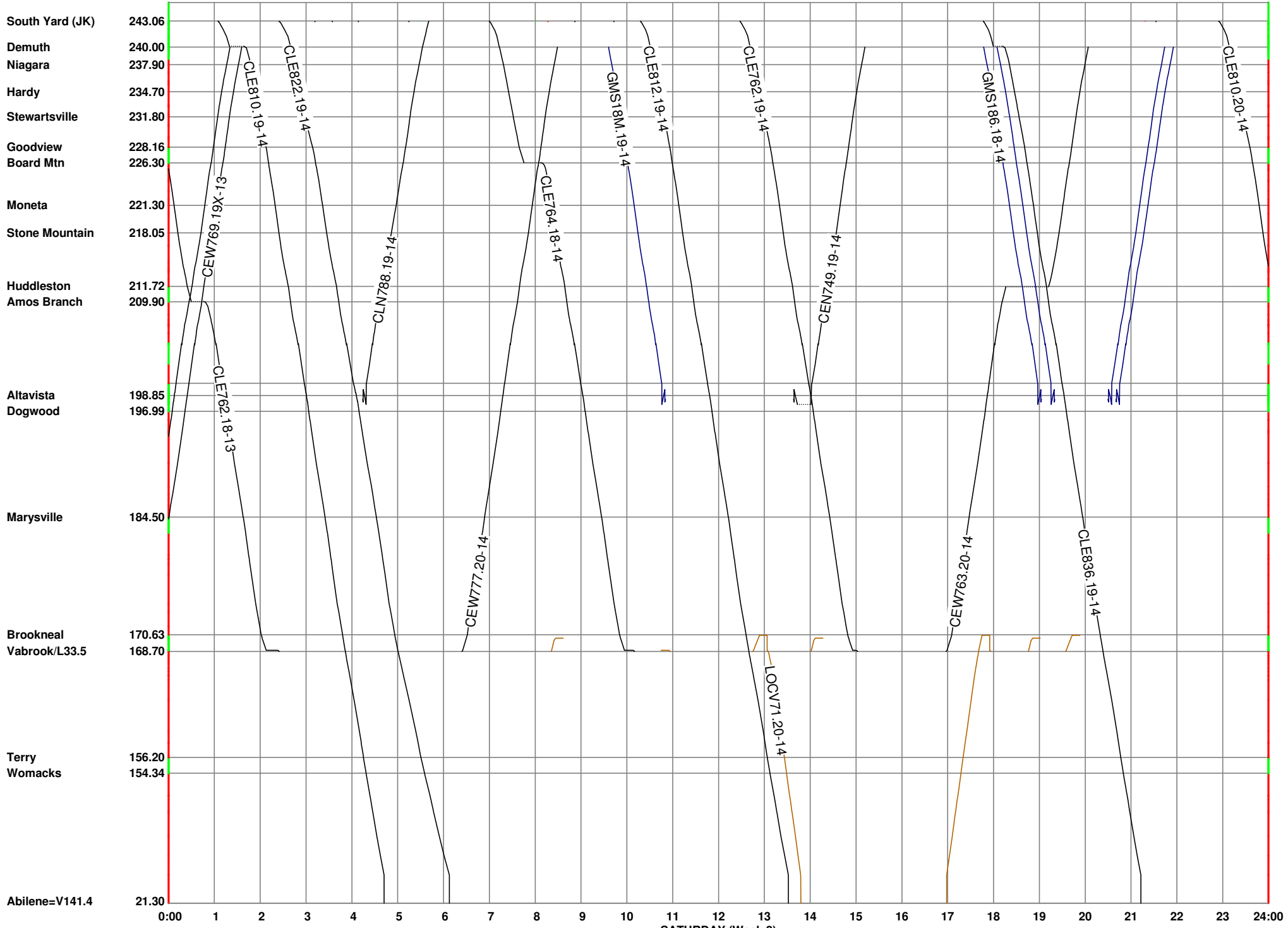


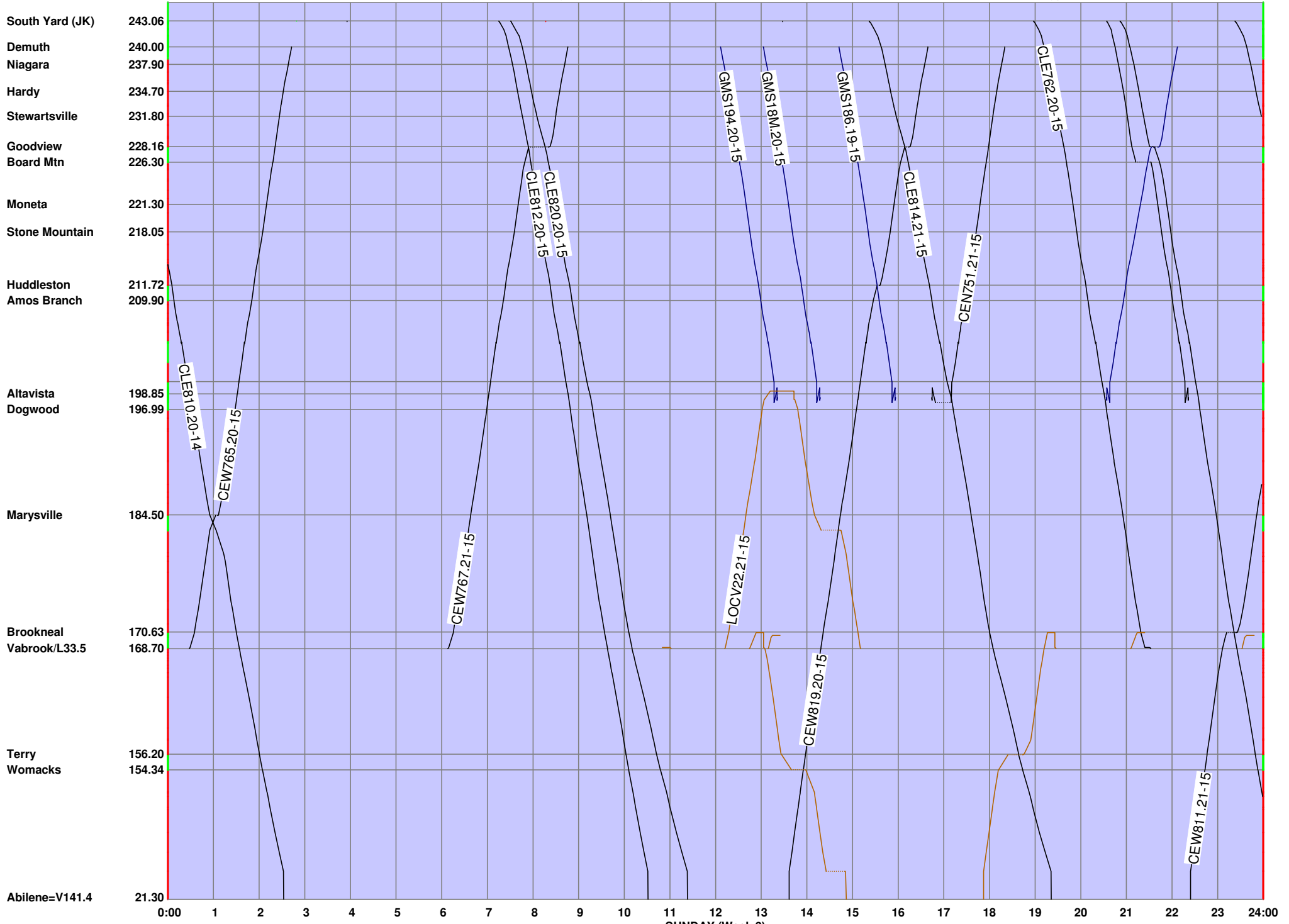












Case: VA17C 2017PgrInf VA 2017 New pgr trains; Frt Trn Shifts and New Infrastructure Elapsed execution time: 0:42 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,063 (578M + 485P) Gross conflicts = 1,127 (602M + 525P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 6 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	31	42.472	2.25	0:10:12	0:01:41	0	0:01:39	3:13:32	0	3:15:11	3703.5	8676.9	-----
E Premium Intermodal	95	32.525	5.64	1:08:34	0	0	0:12:13	10:09:14	0	10:21:27	8504.2	59406.3	-----
E Intermodal	77	34.053	4.87	1:01:37	0	0	0:12:05	11:10:06	0:00:12	11:22:05	9742.4	55930.6	-----
F Multi-level	17	30.019	12.88	0:04:40	0	0	0:04:31	1:15:50	0	1:20:22	1332.3	6420.4	-----
F General Merchandise	114	24.794	7.85	4:00:23	0	0:00:33	0:23:40	16:13:47	0:00:11	17:13:25	10449.0	86456.9	-----
F Coal	103	22.397	10.85	1:21:41	0	0	1:04:19	12:18:54	0:01:17	13:23:06	7505.3	76724.3	-----
F Unit	19	23.649	13.59	0:05:10	0	0	0:05:09	1:19:10	0:00:38	2:00:20	1143.2	9336.7	-----
F Local	77	12.031	11.32	5:17:45	0	0:06:14	0:12:52	10:11:26	0:00:02	11:00:15	3179.2	10017.0	-----
F Work Train	6	26.853	15.88	0:03:30	0	0	0:02:33	0:19:36	0:00:31	0:22:10	595.3	3846.4	-----
F Yard	19	3.057	6.53	1:11:30	0	0:00:12	0:00:58	2:02:42	0	2:03:21	157.0	134.4	-----
All train types	558	25.421	7.89	16:13:02	0:01:41	0:07:00	4:08:04	71:14:22	0:02:53	75:21:48	46311.4	316949.7	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	31	42.472	2.25	0:10:12	0:01:41	0	0:01:39	3:13:32	0	3:15:11	3703.5	8676.9	2.68	-----
Expedited	172	33.323	5.23	2:10:11	0	0	1:00:19	21:19:21	0:00:12	22:19:33	18246.6	115336.9	8.00	-----
Freight	355	20.523	10.01	13:16:39	0	0:07:00	3:06:05	46:05:29	0:02:40	49:11:02	24361.3	192936.0	19.23	-----
All groups	558	25.421	7.89	16:13:02	0:01:41	0:07:00	4:08:04	71:14:22	0:02:53	75:21:48	46311.4	316949.7	13.48	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late.

All others are on time.

Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017C

Case: VA17C 2017PgrInf VA 2017 New pgr trains; Frt Trn Shifts and New Infrastructure

Elapsed execution time: 0:42 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,063 (578M + 485P) Gross conflicts = 1,127 (602M + 525P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 6 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	30	45.059	0.09	0:06:26	0:01:41	0	0:00:02	2:10:02	0	2:13:33	2773.9	6488.7	-----
E Premium Intermodal	71	34.476	3.44	1:04:34	0	0	0:05:53	8:00:22	0	8:13:40	7090.7	52887.9	-----
E Intermodal	30	34.877	2.22	0:05:10	0	0	0:01:05	2:05:35	0:00:12	2:07:27	1934.3	10960.1	-----
F Multi-level	10	32.227	10.77	0:03:30	0	0	0:03:30	1:11:05	0	1:15:35	1275.6	5838.3	-----
F General Merchandise	77	23.552	5.71	2:20:03	0	0:00:01	0:09:00	8:18:56	0:00:11	9:18:46	5529.4	47903.1	-----
F Coal	11	29.762	6.40	0:02:50	0	0	0:00:43	0:12:32	0	0:14:56	444.8	4034.1	-----
F Unit	5	21.425	8.60	0:02:20	0	0	0:00:38	0:08:31	0	0:10:23	222.6	2499.9	-----
F Local	16	25.857	5.89	0:10:22	0	0:00:12	0:01:56	1:19:16	0	1:21:17	1171.1	3150.4	-----
F Work Train	6	26.520	8.71	0:03:30	0	0	0:01:08	0:15:58	0:00:31	0:17:49	472.6	3458.7	-----
F Yard	19	2.941	11.17	0:16:00	0	0:00:00	0:00:56	1:00:53	0	1:01:21	74.6	73.2	-----
All train types	275	29.527	4.64	6:02:45	0:01:41	0:00:15	1:00:56	27:07:15	0:00:55	29:14:51	20989.5	137294.2	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	30	45.059	0.09	0:06:26	0:01:41	0	0:00:02	2:10:02	0	2:13:33	2773.9	6488.7	0.10	-----
Expedited	101	34.561	3.17	1:09:44	0	0	0:06:59	10:05:57	0:00:12	10:21:07	9025.0	63848.0	4.64	-----
Freight	144	23.677	6.79	4:10:35	0	0:00:15	0:17:54	14:15:16	0:00:42	16:04:09	9190.7	66957.6	11.69	-----
All groups	275	29.527	4.64	6:02:45	0:01:41	0:00:15	1:00:56	27:07:15	0:00:55	29:14:51	20989.5	137294.2	7.13	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late.

All others are on time.

warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017C

Case: VA17C 2017PgrInf VA 2017 New pgr trains; Frt Trn Shifts and New Infrastructure

Elapsed execution time: 0:42 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,063 (578M + 485P) Gross conflicts = 1,127 (602M + 525P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 6 (scale 0-100)

G R P	Train Type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	16	41.203	0.02	0:03:21	0	0	0:00:00	0:18:10	0	0:21:27	884.3	2119.1	-----
E	Premium Intermodal	32	4.275	0.00	0:05:20	0	0	0:00:00	0:01:25	0	0:06:50	29.3	99.1	-----
E	Intermodal	77	35.744	2.49	0:19:47	0	0	0:03:10	5:17:43	0	6:06:19	5373.4	30939.8	-----
F	Multi-level	7	0.120	0.00	0:01:10	0	0	0:00:00	0:00:00	0	0:01:10	0.1	0.0	-----
F	General Merchandise	77	25.282	3.30	1:11:00	0	0:00:31	0:02:52	4:15:11	0	5:04:38	3151.1	24851.7	-----
F	Coal	83	20.284	7.73	0:19:20	0	0	0:03:36	2:04:36	0	2:21:41	1413.5	14455.9	-----
F	Unit	15	25.588	2.20	0:03:10	0	0	0:00:12	0:09:04	0	0:12:47	327.5	2242.4	-----
F	Local	37	9.767	9.28	2:03:44	0	0:03:46	0:03:09	3:03:01	0	3:16:53	868.2	2820.7	-----
F	Work Train	1	34.795	4.48	0:00:10	0	0	0:00:05	0:02:00	0	0:02:13	77.5	277.7	-----
F	Yard	13	1.941	0.00	0:23:50	0	0:00:11	0	0:23:31	0	1:03:36	53.6	17.2	-----
All train types		358	24.085	3.98	6:18:52	0	0:04:29	0:13:06	17:22:45	0	21:01:38	12178.4	77823.7	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	41.203	0.02	0:03:21	0	0	0:00:00	0:18:10	0	0:21:27	884.3	2119.1	0.02	-----
Expedited	109	34.374	2.46	1:01:07	0	0	0:03:10	5:19:09	0	6:13:10	5402.7	31039.0	3.52	-----
Freight	233	18.016	5.44	5:14:24	0	0:04:29	0:09:56	11:09:25	0	13:15:00	5891.4	44665.6	10.12	-----
All groups	358	24.085	3.98	6:18:52	0	0:04:29	0:13:06	17:22:45	0	21:01:38	12178.4	77823.7	6.46	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017C

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	-----
E	Premium Intermodal	22	29.346	1.03	0:03:40	0	0	0:00:16	1:02:51	0	1:07:24	921.8	2819.3	-----
E	Intermodal	77	28.395	1.88	0:15:15	0	0	0:01:10	2:10:53	0	3:07:14	2250.2	13018.1	-----
F	Multi-level	7	0.340	0.00	0:01:10	0	0	0	0:00:02	0	0:01:14	0.4	3.0	-----
F	General Merchandise	64	24.537	1.73	0:11:50	0	0	0:00:36	1:10:36	0	1:23:50	1174.1	7370.3	-----
F	Coal	101	22.693	3.35	1:21:21	0	0	0:05:50	7:18:40	0	9:09:39	5120.9	47202.9	-----
F	Unit	18	24.132	5.83	0:04:00	0	0	0:00:54	0:14:53	0	0:20:31	495.3	2993.6	-----
F	Local	31	17.325	3.54	0:14:40	0	0	0:00:40	1:04:19	0	1:10:15	593.5	2188.6	-----
F	Work Train	2	20.231	15.65	0:00:30	0	0	0:00:14	0:01:23	0	0:02:13	45.0	109.0	-----
All train types		338	23.798	2.89	4:03:26	0	0	0:09:43	14:15:43	0	18:13:30	10602.1	75705.6	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	0.00	-----
Expedited	99	28.665	1.62	0:18:55	0	0	0:01:27	3:13:45	0	4:14:39	3172.1	15837.3	2.77	-----
Freight	223	22.394	3.36	3:05:31	0	0	0:08:15	11:01:55	0	13:19:45	7429.1	59867.4	6.67	-----
All groups	338	23.798	2.89	4:03:26	0	0	0:09:43	14:15:43	0	18:13:30	10602.1	75705.6	5.50	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

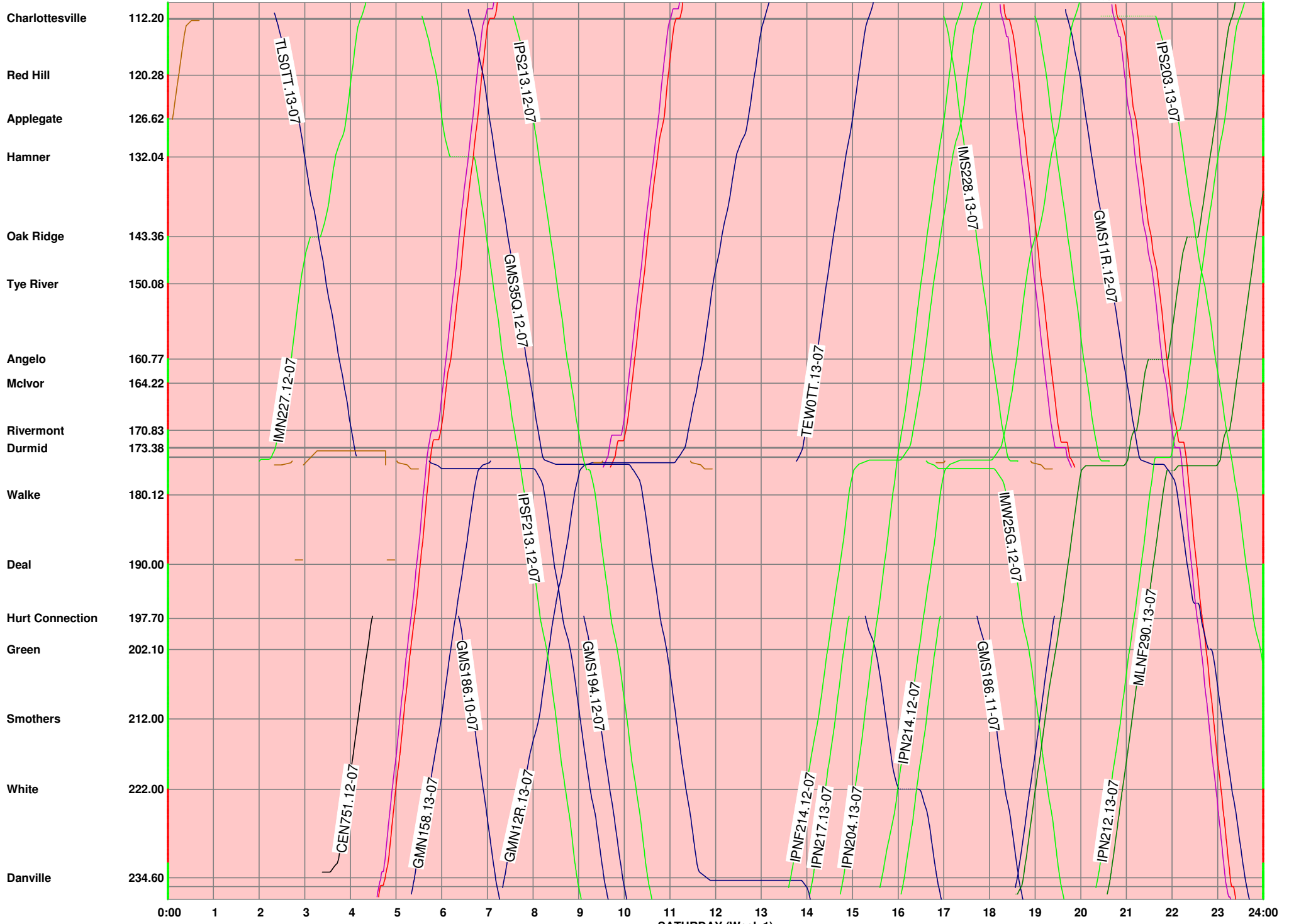
True delay includes the acceleration and deceleration associated with conflict resolutions.

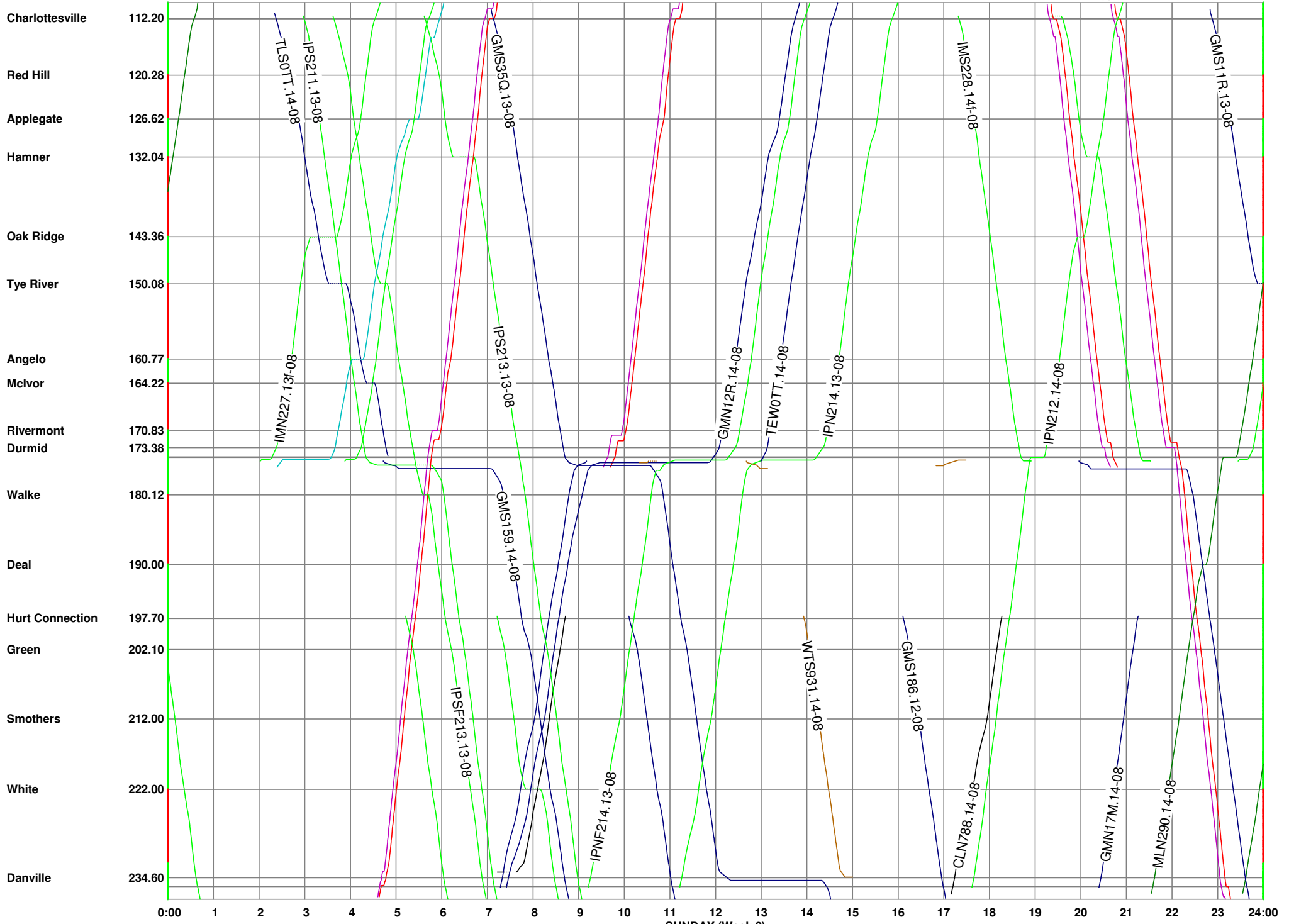
Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

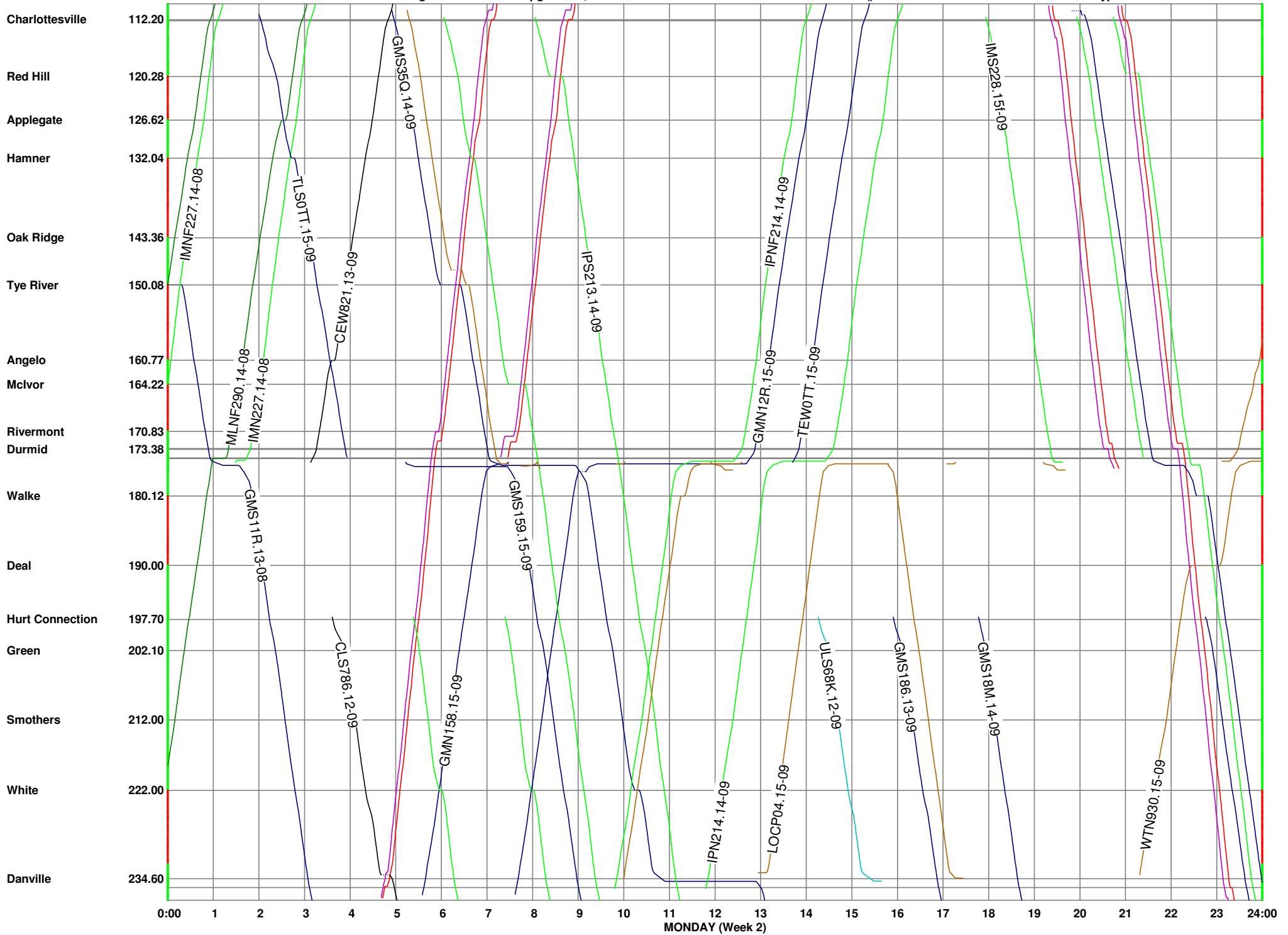
Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

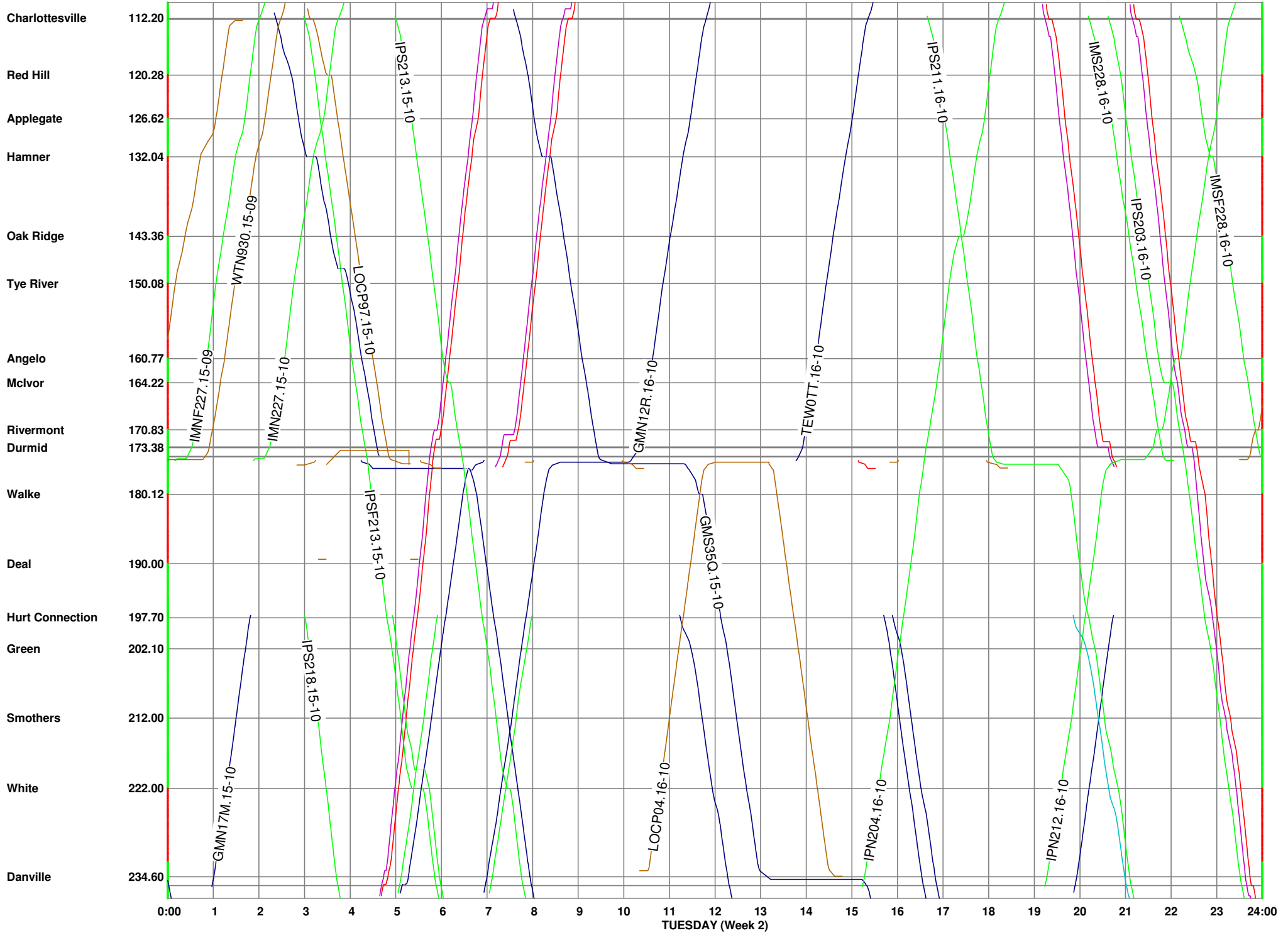
OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

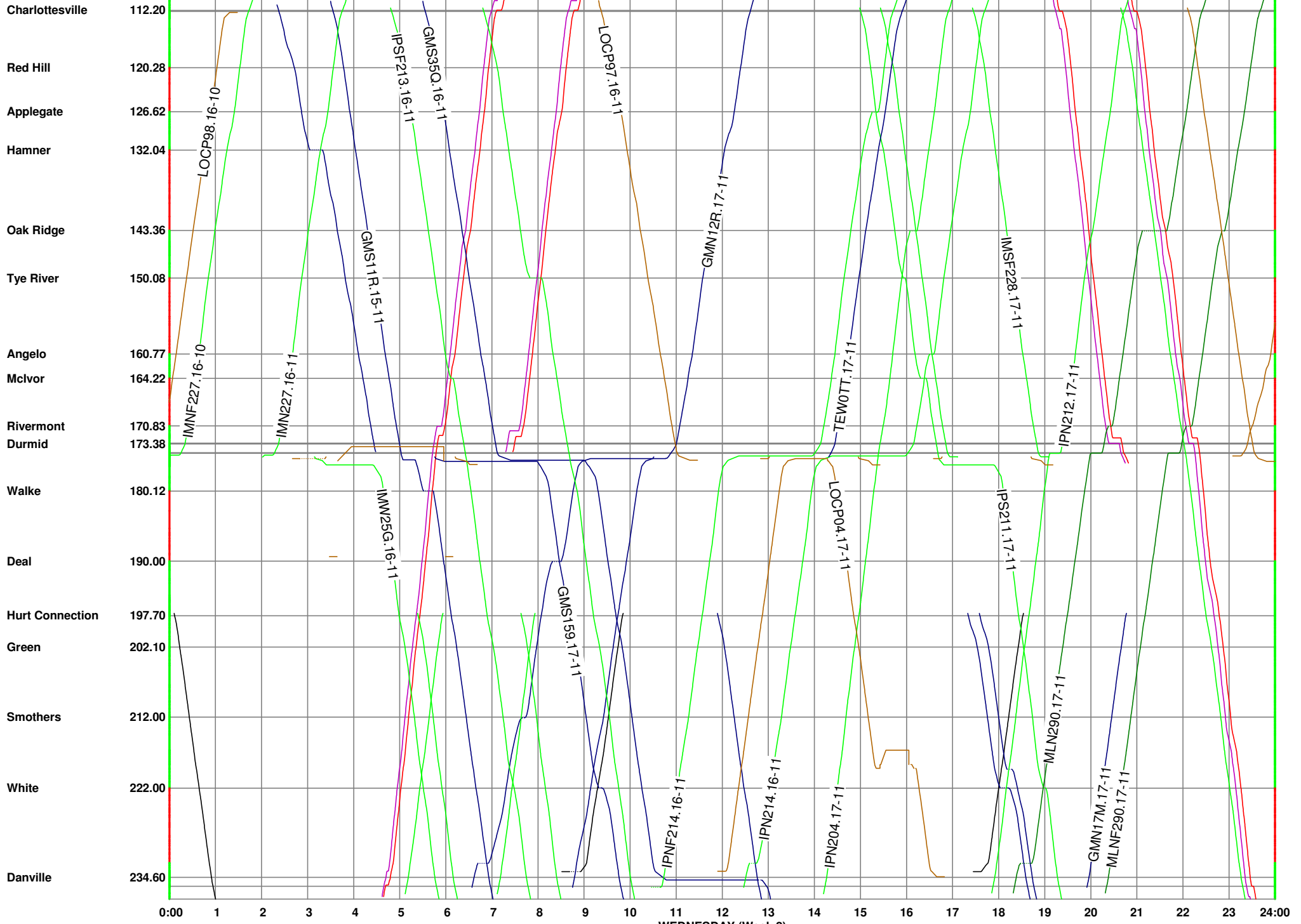
Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

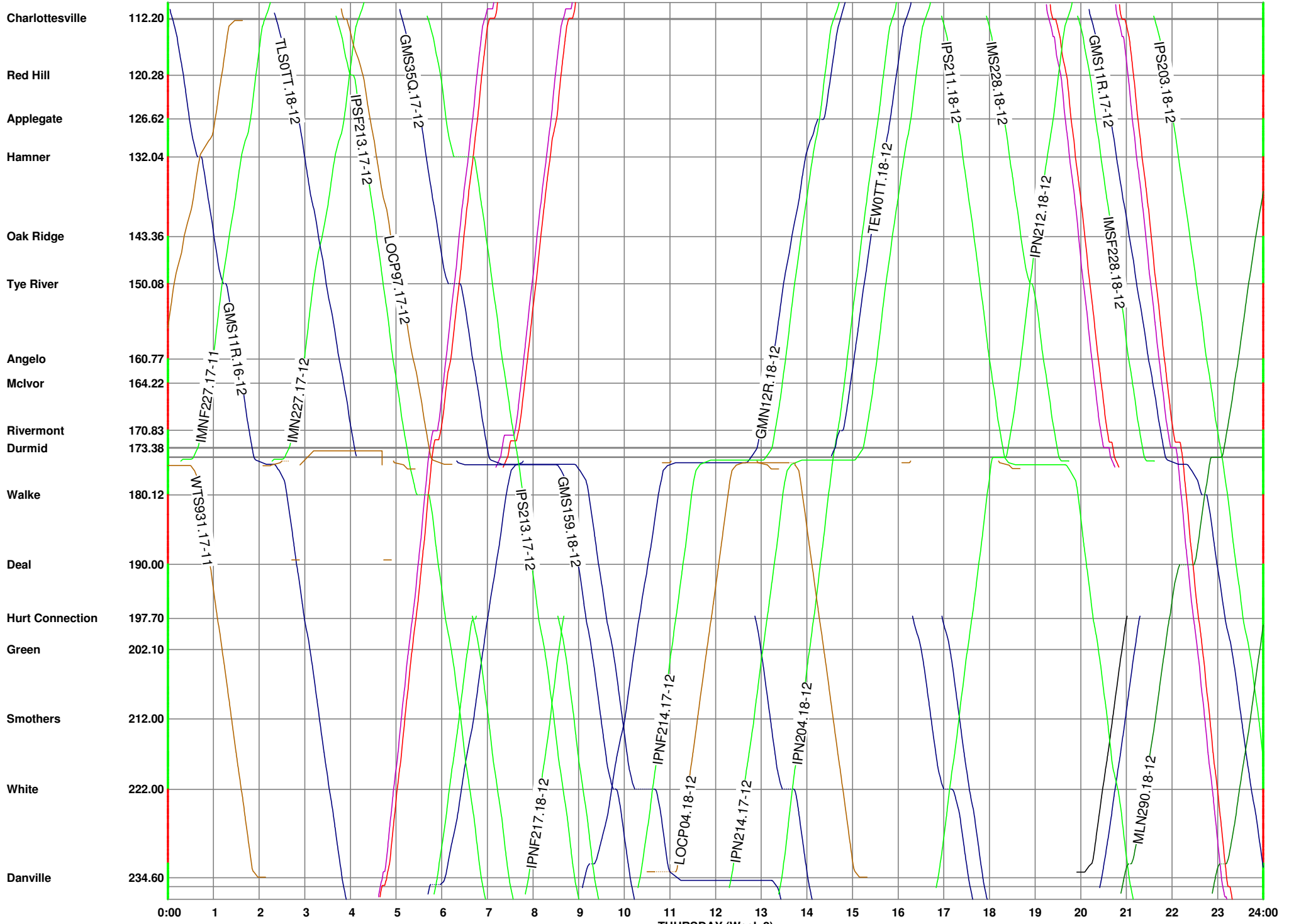


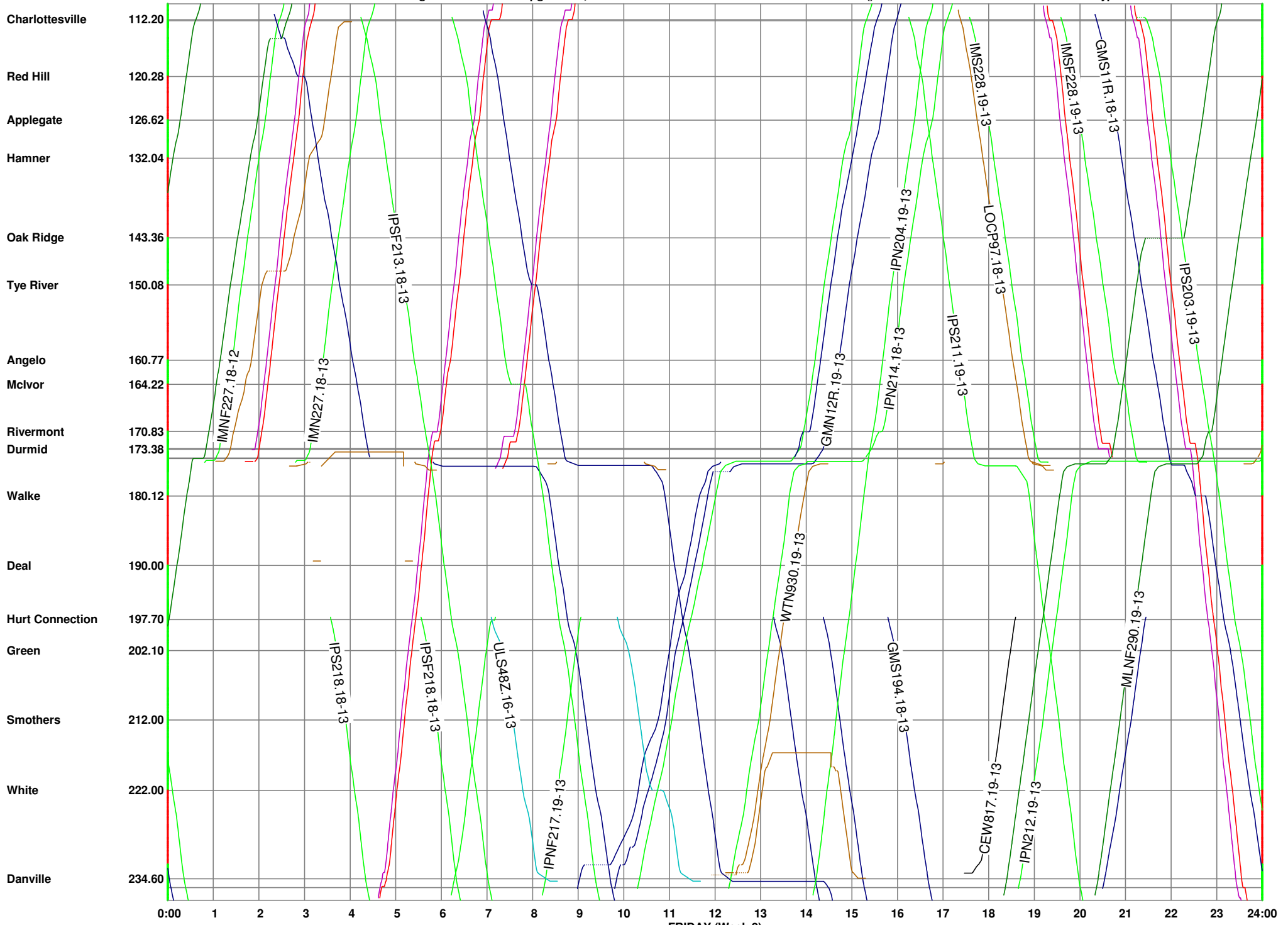


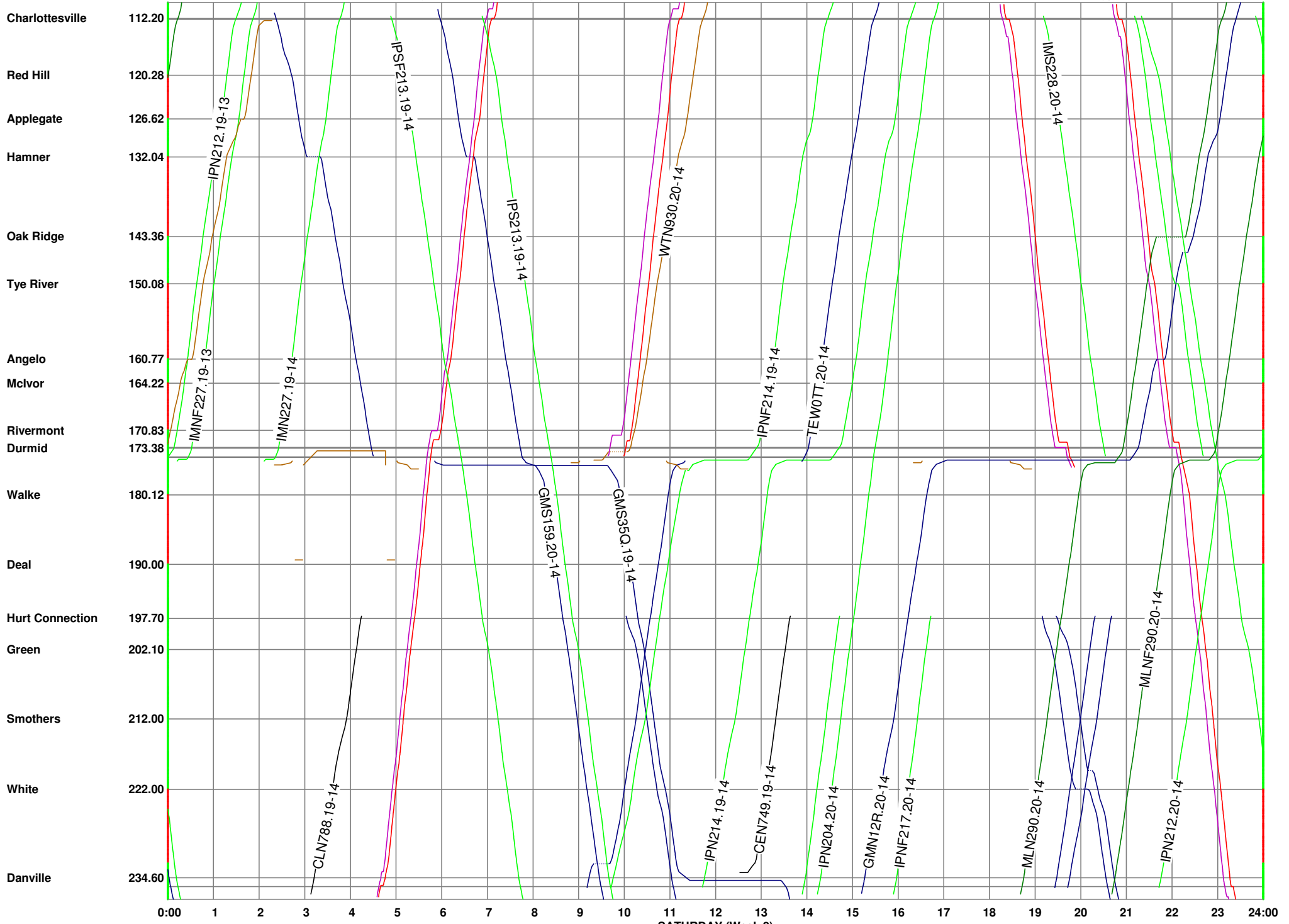










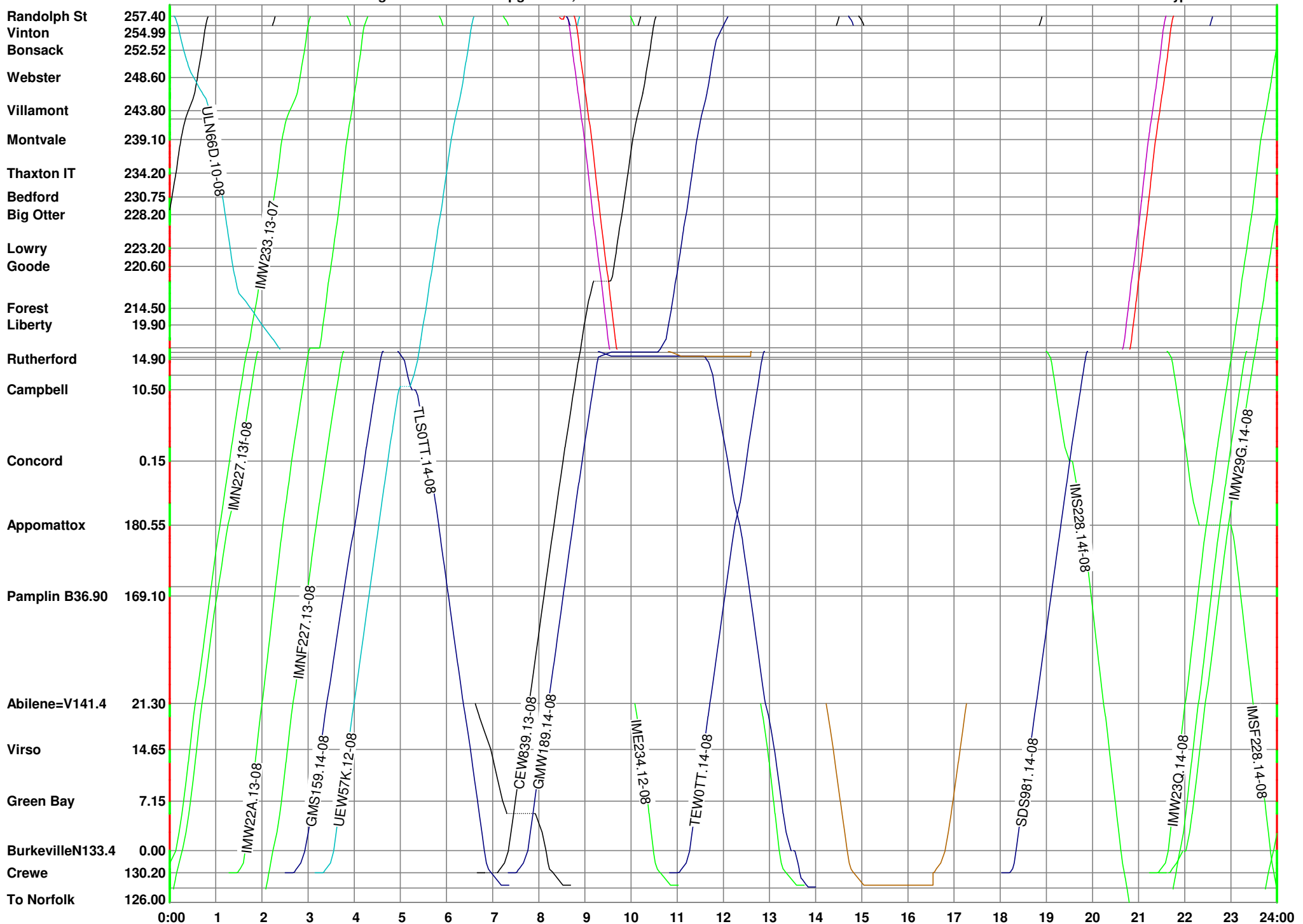


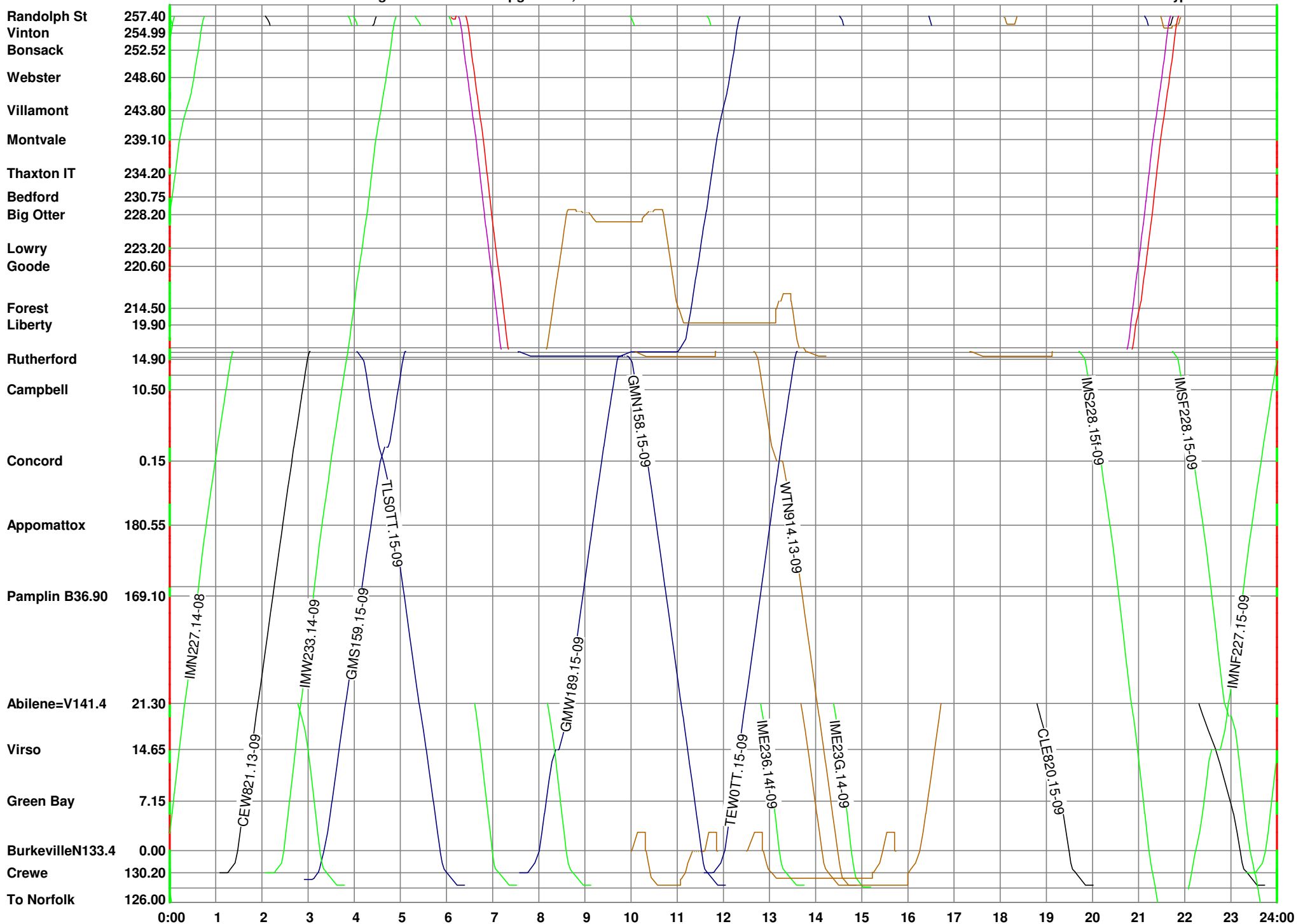
SATURDAY (Week 2)

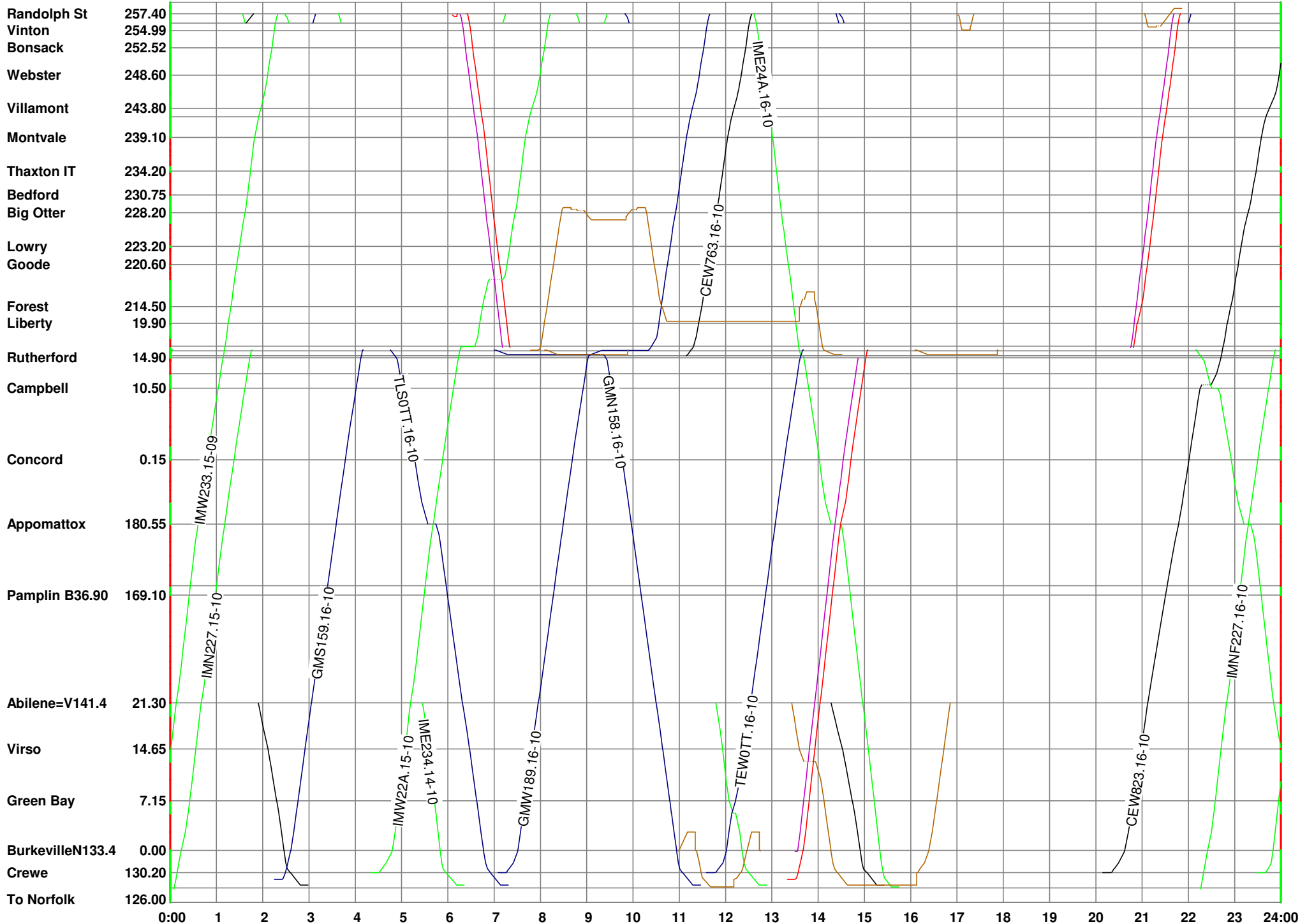
All times displayed in Eastern time

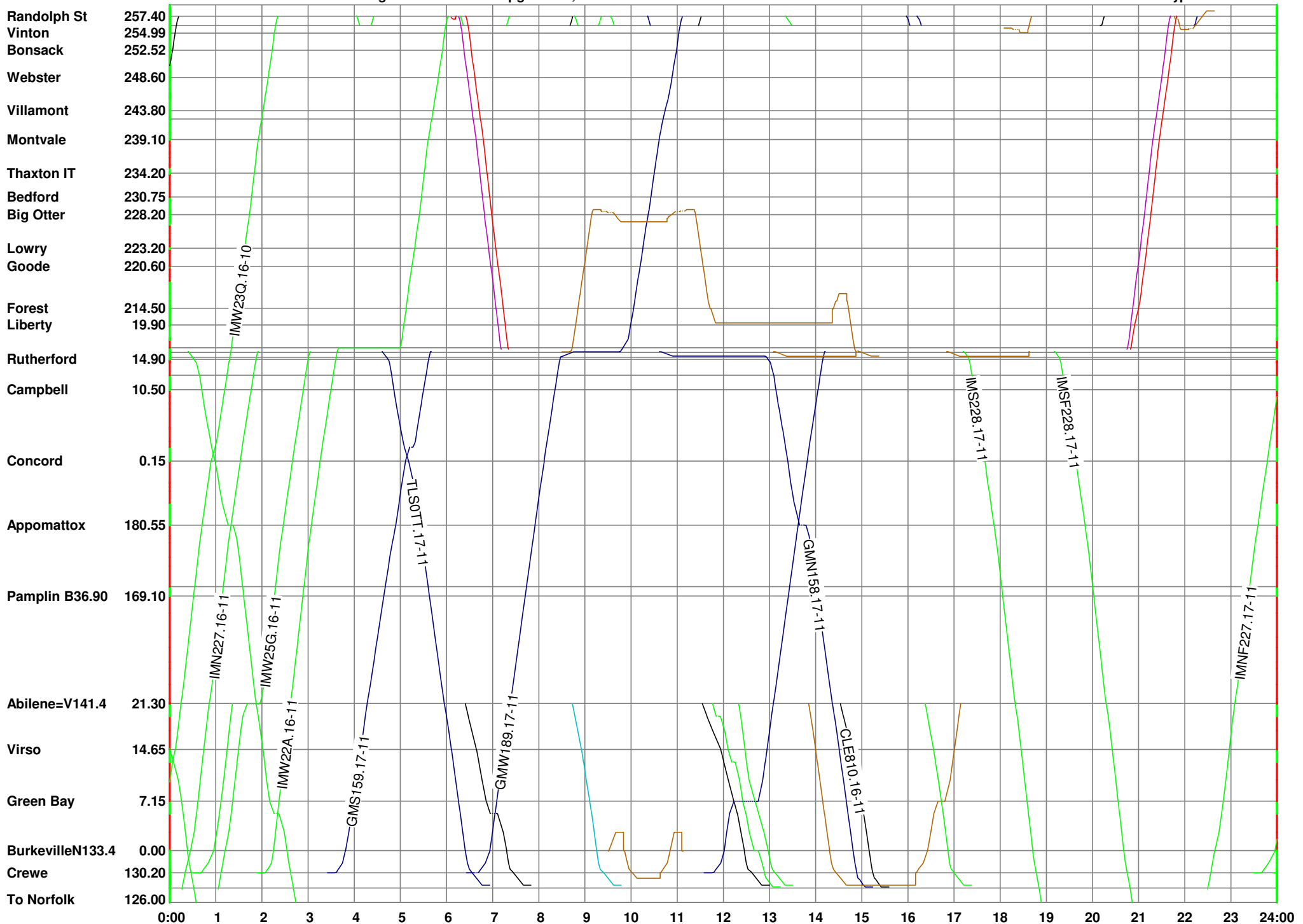
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Run time: 09 September 2013 14:00:46

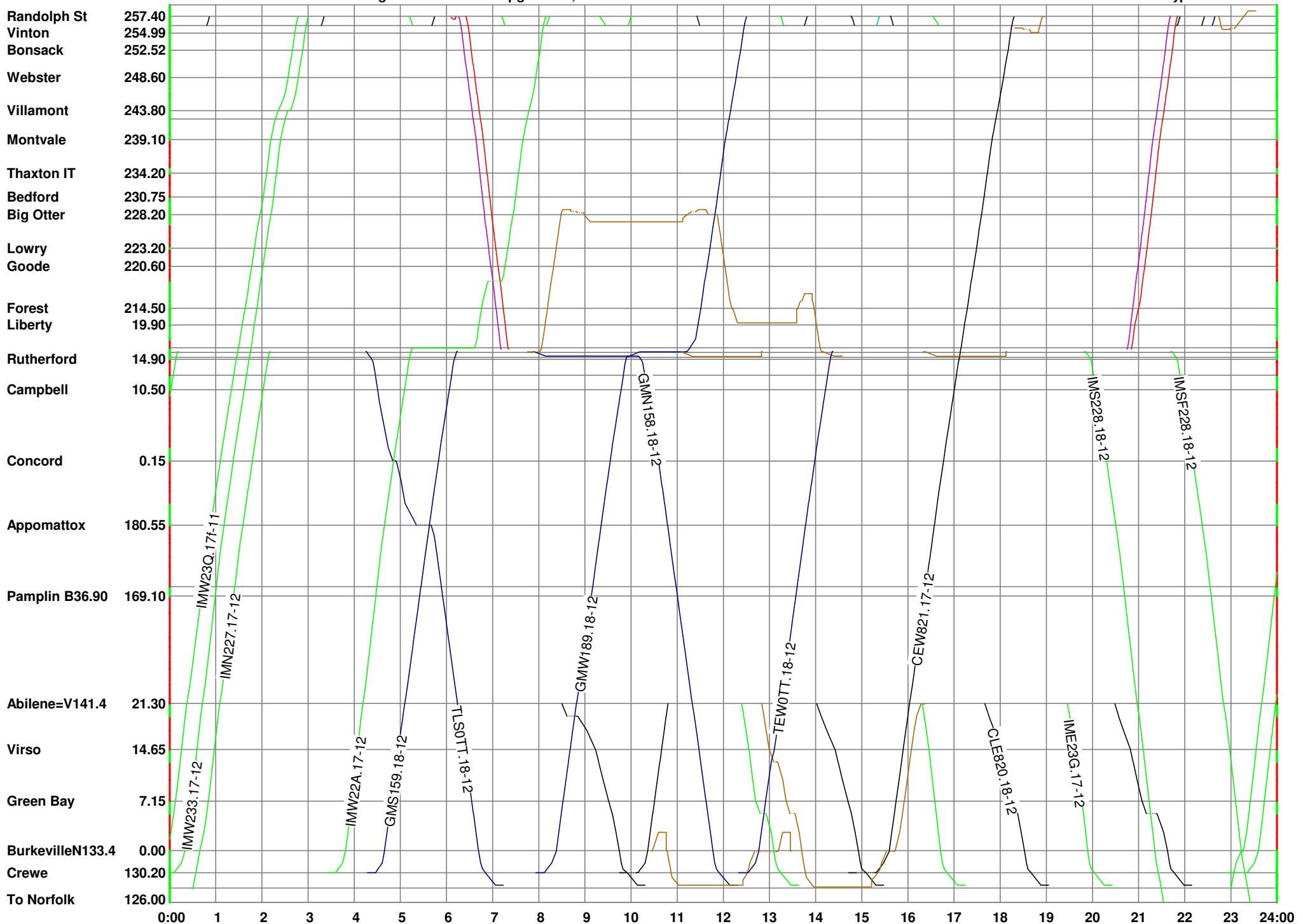


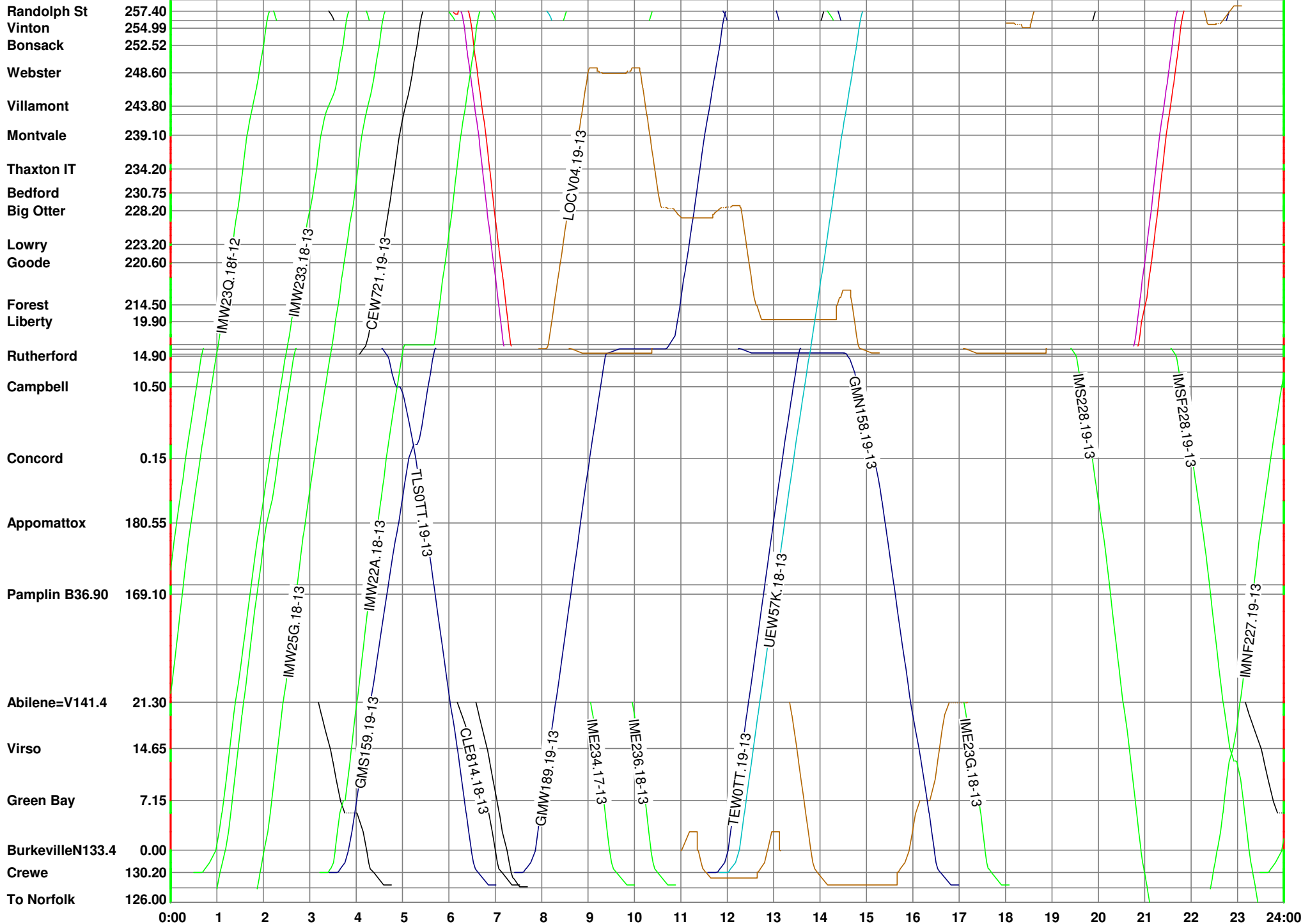


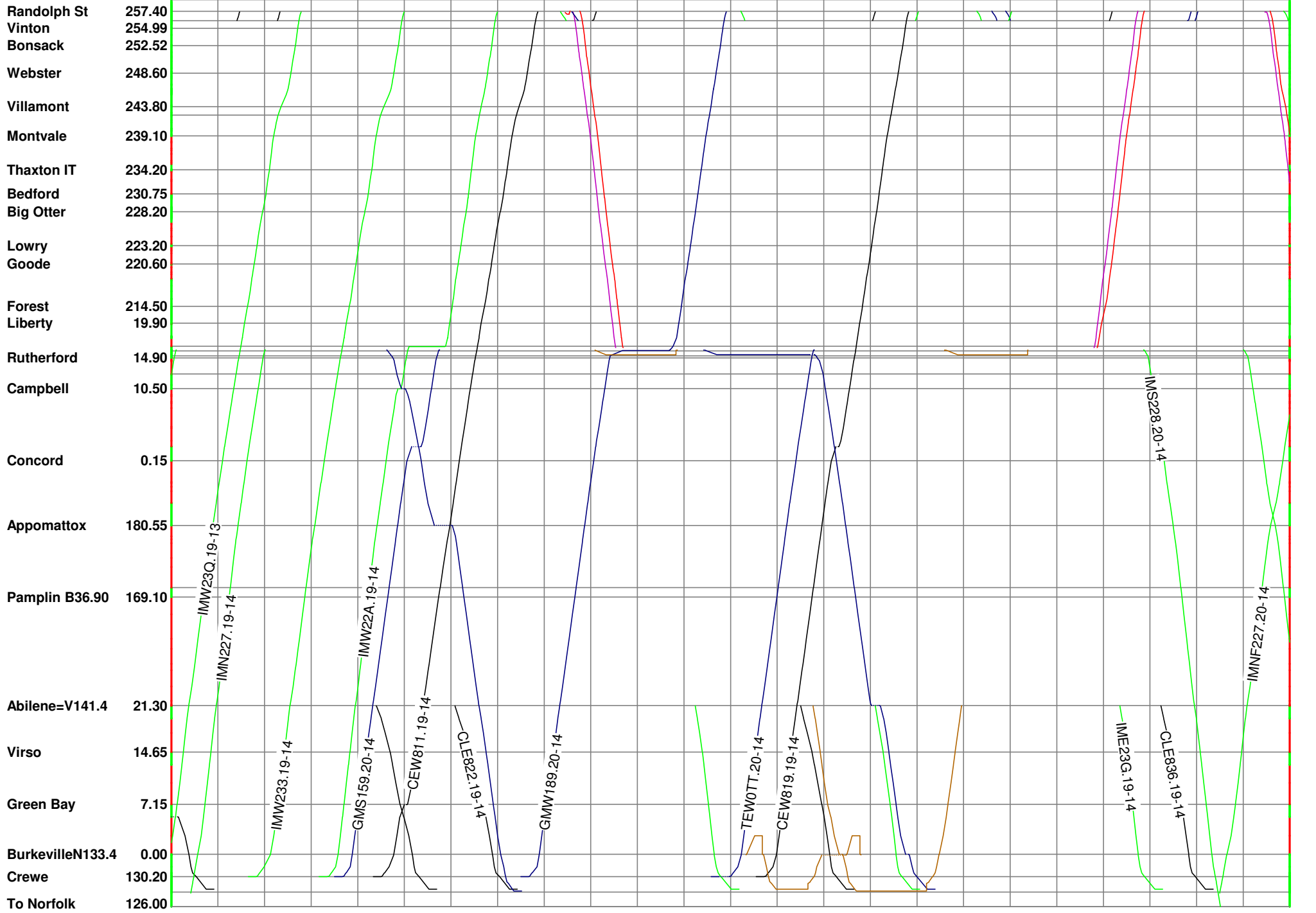


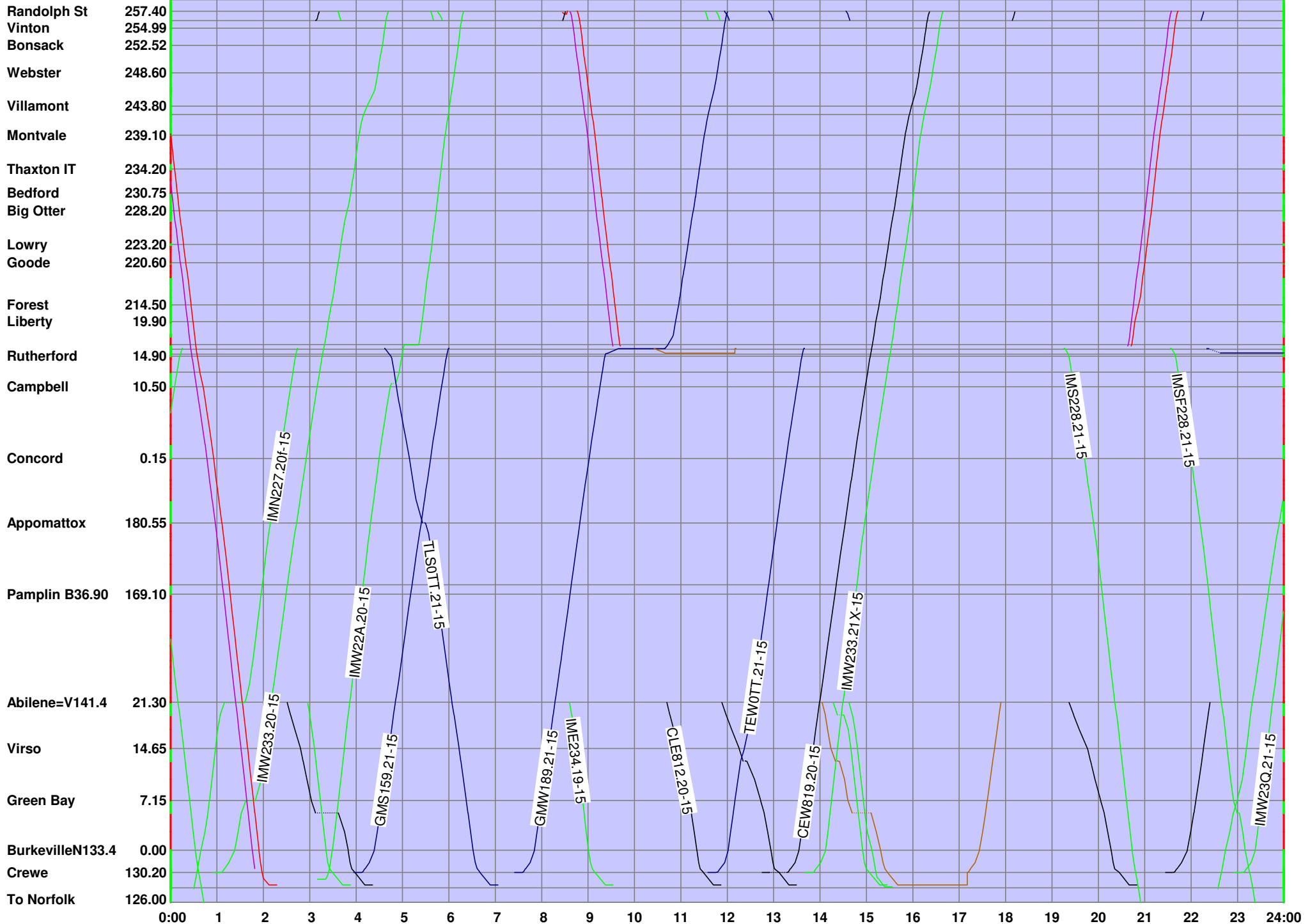


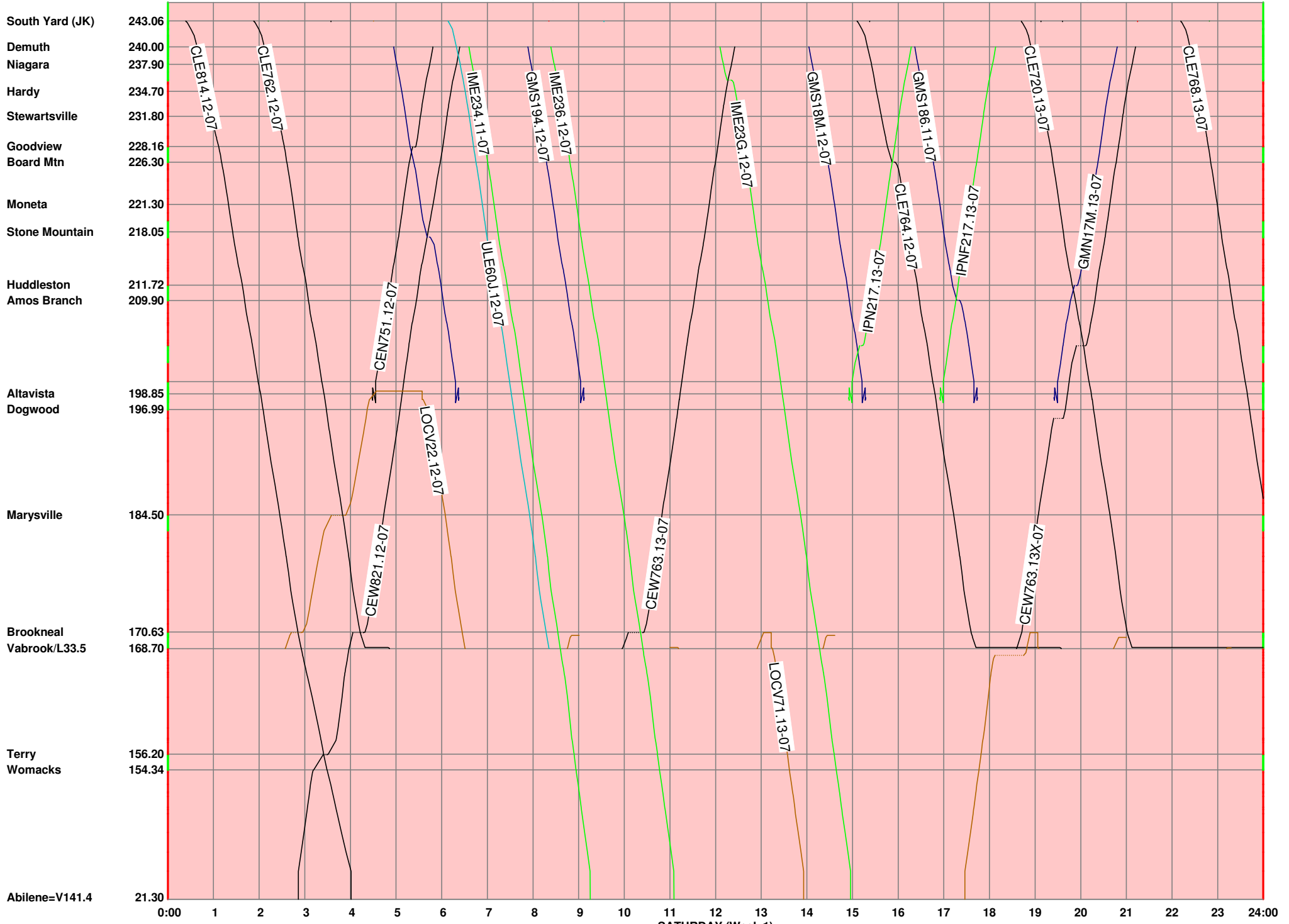
WEDNESDAY (Week 2)

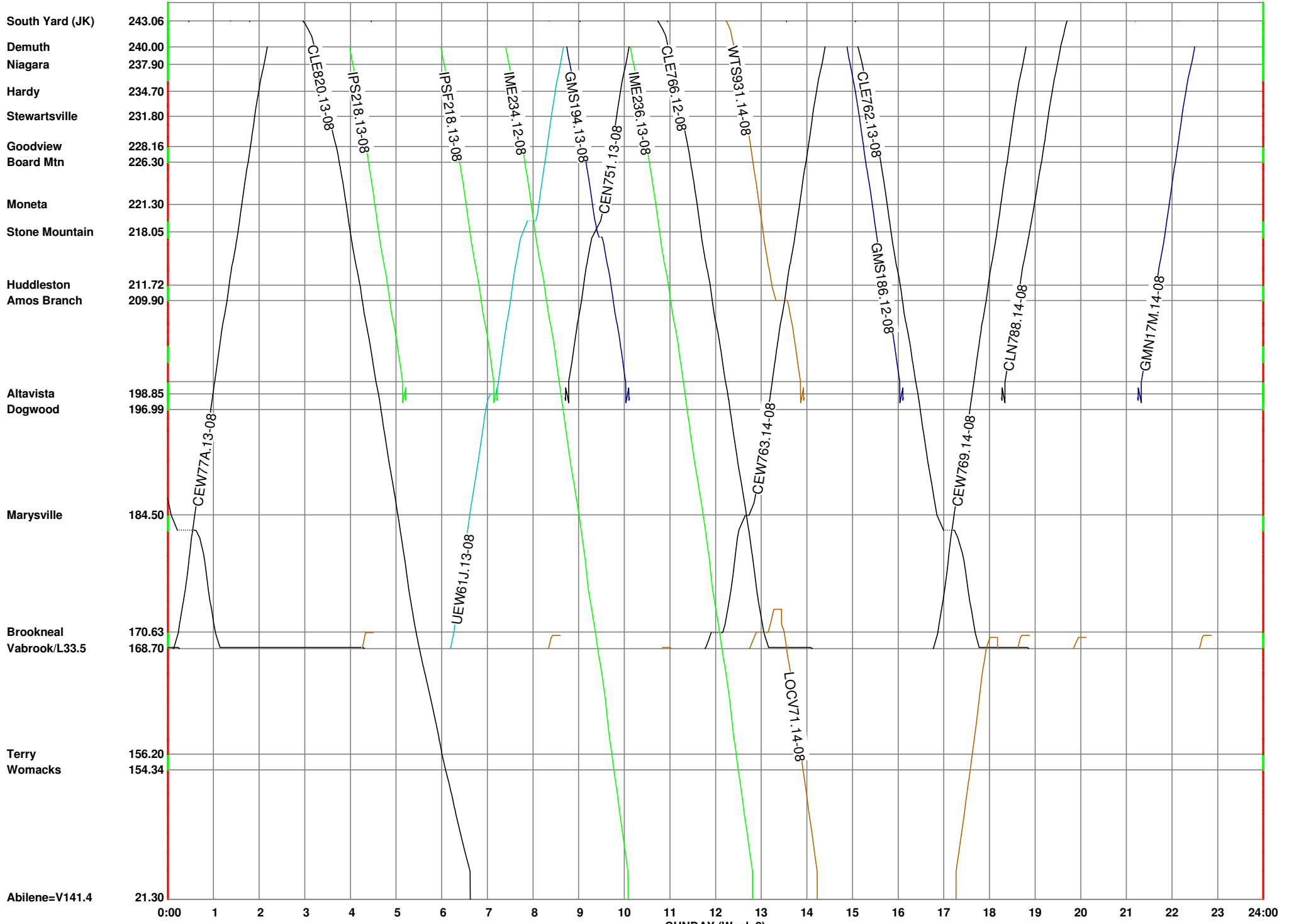






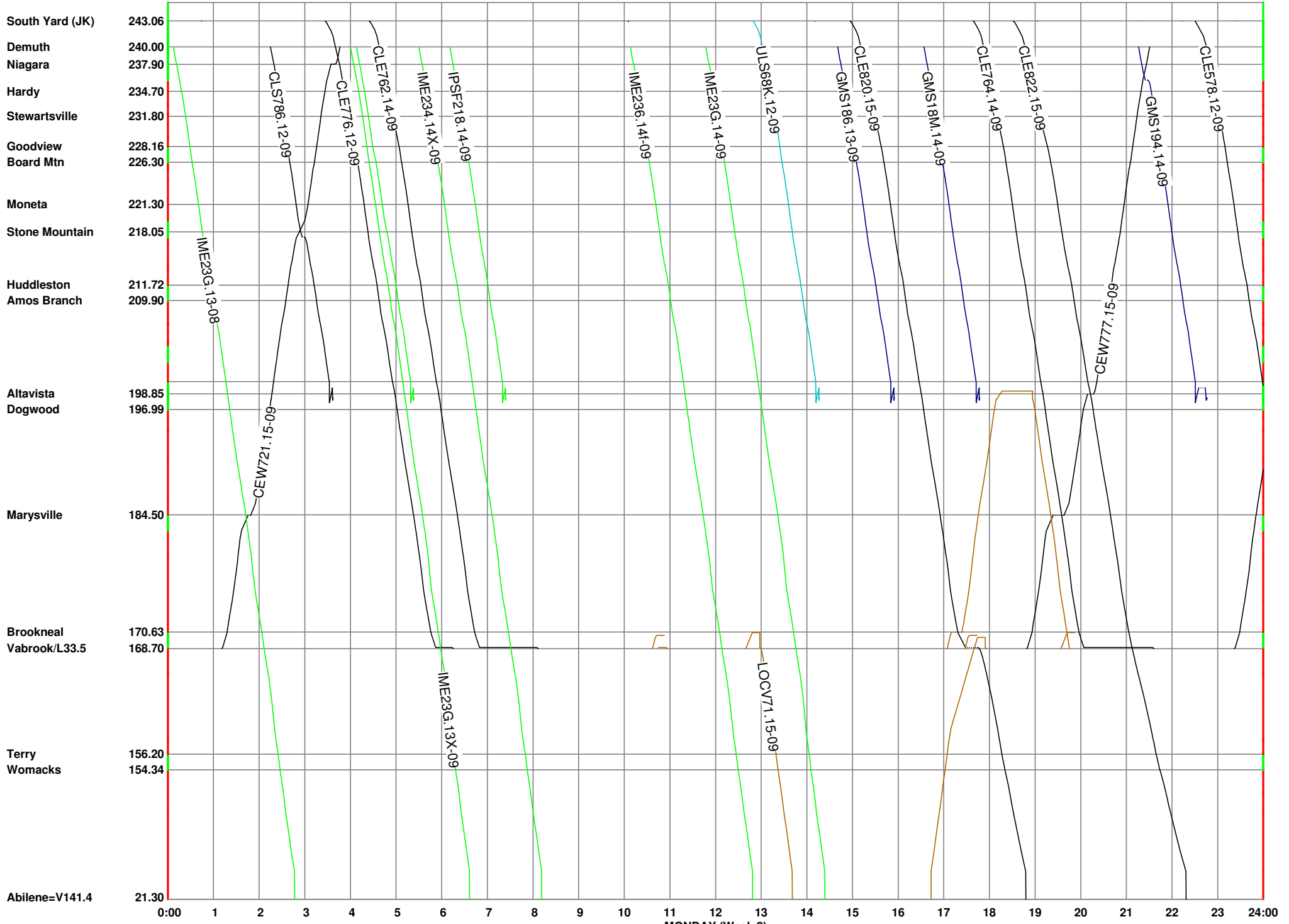


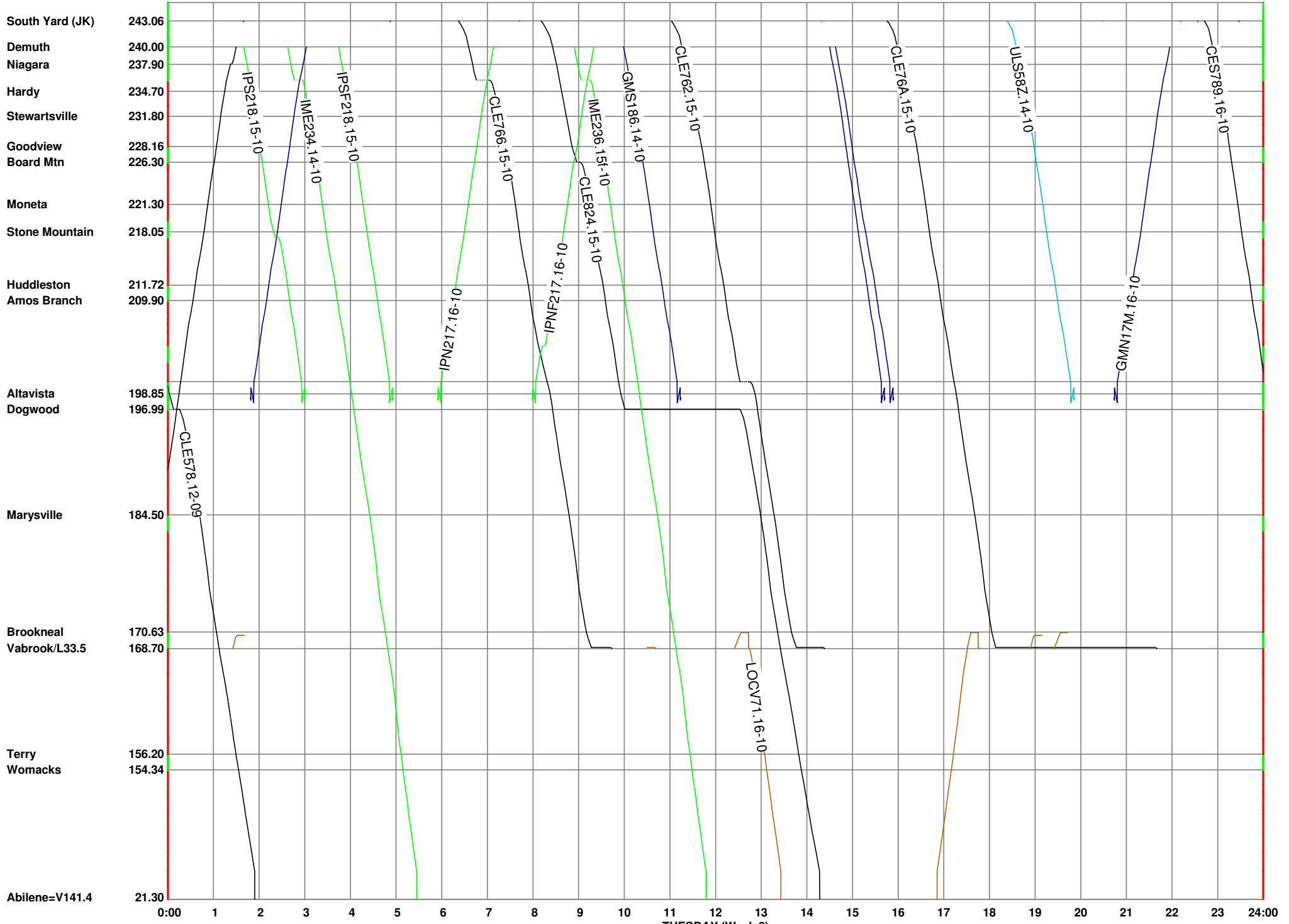


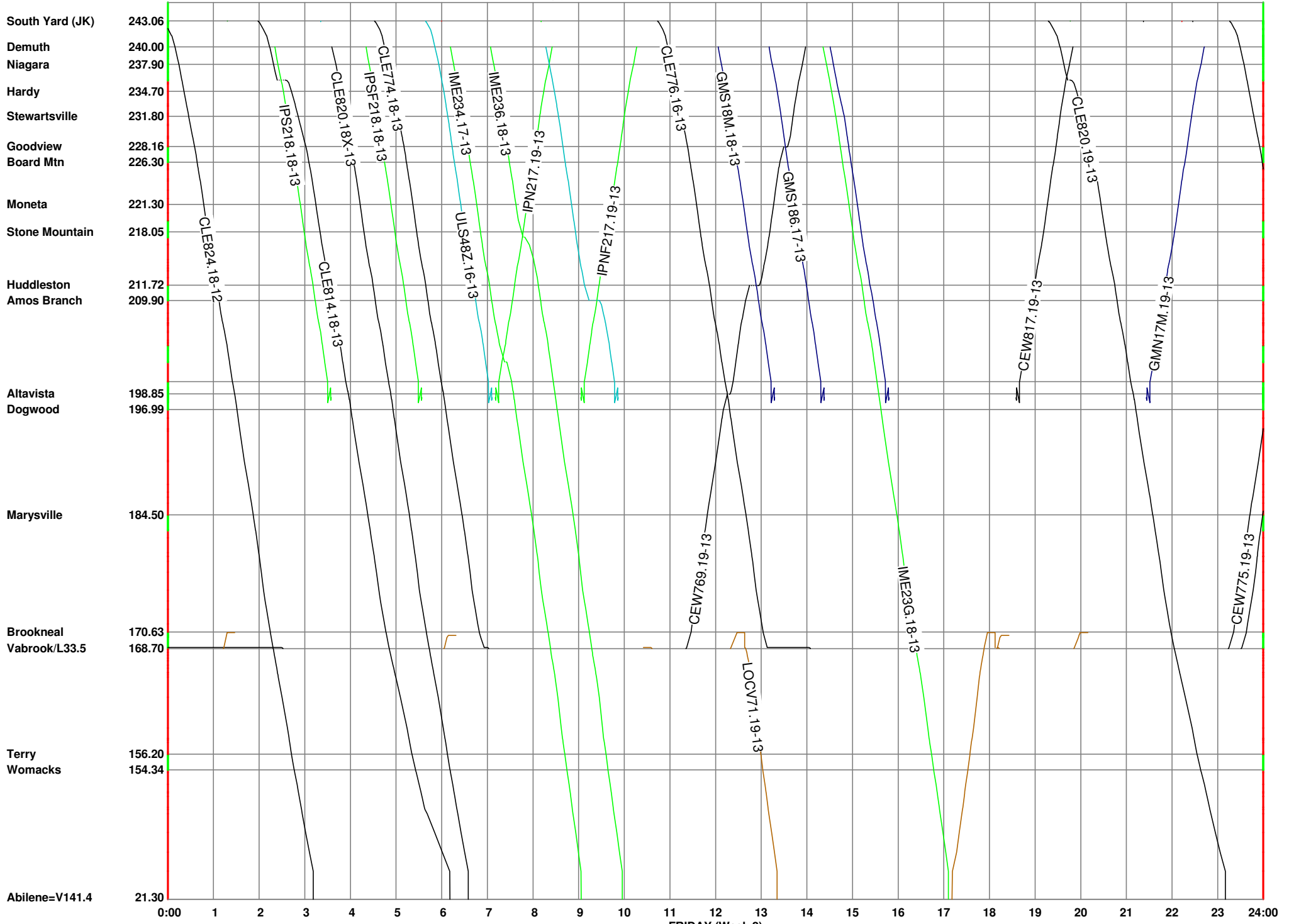


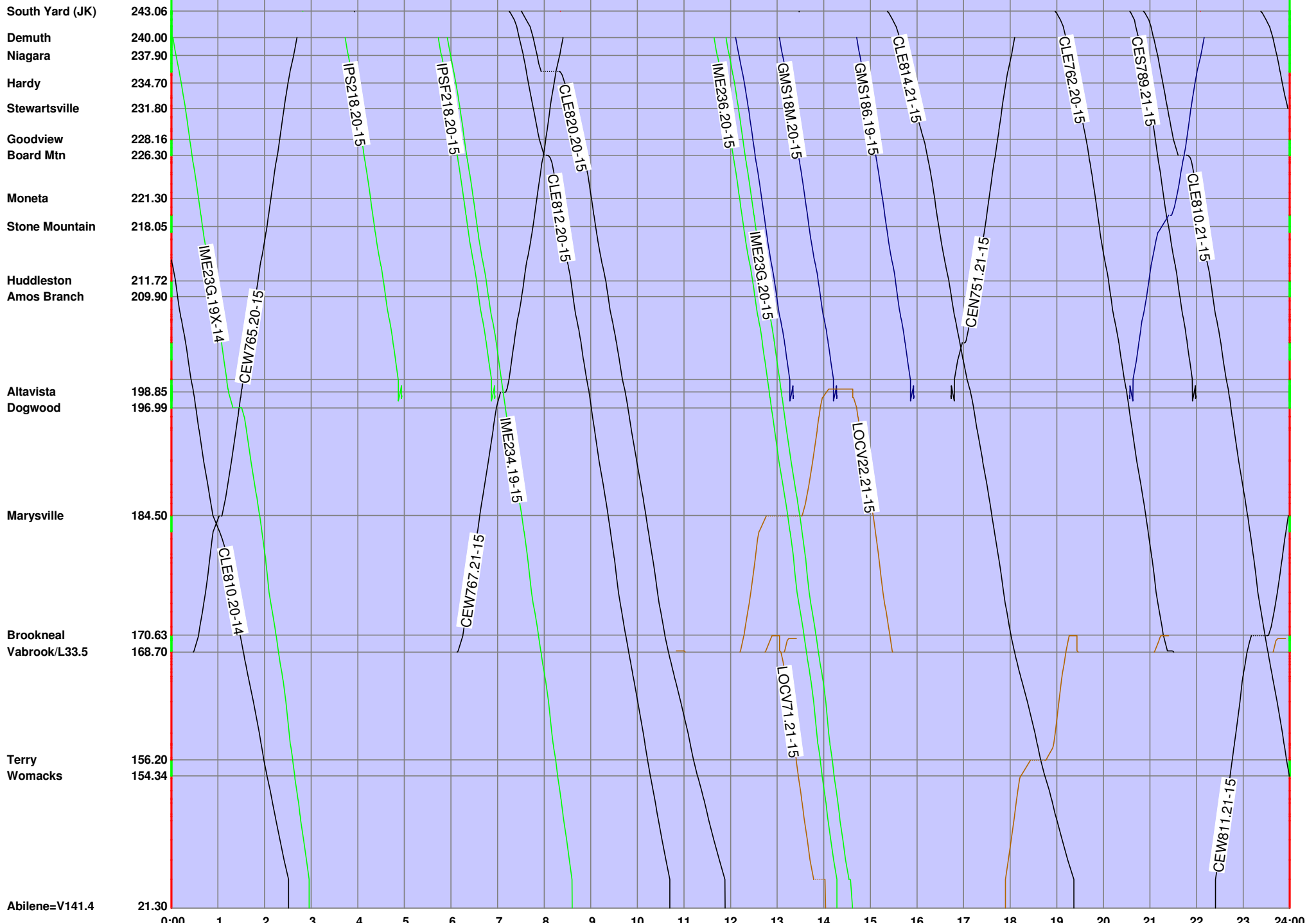
South Yard (JK) 243.06
 Demuth 240.00
 Niagara 237.90
 Hardy 234.70
 Stewartville 231.80
 Goodview 228.16
 Board Mtn 226.30
 Moneta 221.30
 Stone Mountain 218.05
 Huddleston 211.72
 Amos Branch 209.90
 Altavista 198.85
 Dogwood 196.99
 Marysville 184.50
 Brookneal 170.63
 Vabrook/L33.5 168.70
 Terry 156.20
 Womacks 154.34
 Abilene=V141.4 21.30

0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00









Case: VA17D 2017MitigInf VA 2017 New pgr trains; Frt Trn Shifts and New Infrastructure Elapsed execution time: 0:48 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,109 (593M + 516P) Gross conflicts = 1,202 (625M + 577P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 8 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	31	42.460	2.39	0:10:02	0:01:48	0	0:01:45	3:13:27	0	3:15:13	3703.5	8669.9	-----
E Premium Intermodal	95	32.453	5.87	1:08:34	0	0	0:12:43	10:09:19	0	10:22:02	8504.1	59385.4	-----
E Intermodal	77	34.102	4.84	1:01:37	0	0	0:12:00	11:09:45	0:00:12	11:21:39	9741.4	55992.9	-----
F Multi-level	17	29.663	14.40	0:04:40	0	0	0:05:03	1:15:50	0	1:20:54	1332.3	6422.4	-----
F General Merchandise	114	24.627	8.84	4:00:23	0	0:00:31	1:02:38	16:13:34	0:00:11	17:16:11	10446.8	86402.4	-----
F coal	103	21.988	13.30	1:21:41	0	0	1:10:42	12:18:44	0:02:55	14:05:25	7507.1	76815.6	-----
F Unit	19	22.799	18.60	0:05:10	0	0	0:07:03	1:19:09	0:00:38	2:02:13	1145.1	9318.3	-----
F Local	77	11.971	11.90	5:17:45	0	0:06:06	0:13:27	10:10:48	0:00:32	11:00:13	3162.8	9974.2	-----
F Work Train	6	26.983	15.22	0:03:30	0	0	0:02:27	0:19:36	0:00:31	0:22:03	595.3	3845.8	-----
F Yard	19	3.063	5.50	1:11:30	0	0:00:16	0:00:49	2:02:42	0	2:03:18	157.2	134.6	-----
All train types	558	25.253	8.85	16:12:52	0:01:48	0:06:54	4:20:41	71:13:00	0:05:01	76:09:16	46295.7	316961.4	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	True* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	31	42.460	2.39	0:10:02	0:01:48	0	0:01:45	3:13:27	0	3:15:13	3703.5	8669.9	2.86	-----
Expedited	172	33.313	5.32	2:10:11	0	0	1:00:43	21:19:04	0:00:12	22:19:42	18245.5	115378.3	8.13	-----
Freight	355	20.317	11.57	13:16:39	0	0:06:54	3:18:12	46:04:27	0:04:48	49:22:21	24346.6	192913.2	22.23	-----
All groups	558	25.253	8.85	16:12:52	0:01:48	0:06:54	4:20:41	71:13:00	0:05:01	76:09:16	46295.7	316961.4	15.12	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017C

Case: VA17D 2017MitigInf VA 2017 New pgr trains; Frt Trn Shifts and New Infrastructure

Elapsed execution time: 0:48 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,109 (593M + 516P) Gross conflicts = 1,202 (625M + 577P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 8 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	30	44.627	0.10	0:06:26	0:01:48	0	0:00:03	2:10:35	0	2:14:17	2780.2	6490.4	-----
E	Premium Intermodal	71	34.420	3.48	1:04:34	0	0	0:05:58	8:00:26	0	8:14:00	7091.0	52866.5	-----
E	Intermodal	30	33.888	3.03	0:05:50	0	0	0:01:30	2:06:29	0:00:12	2:09:10	1937.4	10974.4	-----
F	Multi-level	10	31.799	12.32	0:03:30	0	0	0:04:00	1:11:05	0	1:16:06	1275.6	5840.2	-----
F	General Merchandise	77	23.349	6.68	2:20:03	0	0:00:01	0:10:35	8:19:31	0:00:11	9:21:09	5537.5	47969.5	-----
F	Coal	11	29.213	7.82	0:02:50	0	0	0:00:53	0:12:32	0	0:15:13	444.8	4034.9	-----
F	Unit	5	21.911	7.22	0:02:20	0	0	0:00:31	0:08:31	0	0:10:09	222.6	2460.6	-----
F	Local	16	25.749	6.36	0:10:22	0	0:00:12	0:02:06	1:19:18	0	1:21:29	1171.3	3150.9	-----
F	Work Train	6	27.198	8.38	0:03:30	0	0	0:01:04	0:15:58	0:00:31	0:17:22	472.6	3458.1	-----
F	Yard	19	2.994	8.74	0:16:00	0	0:00:00	0:00:46	1:01:06	0	1:01:37	76.7	78.9	-----
All train types		275	29.317	5.10	6:03:25	0:01:48	0:00:15	1:03:31	27:09:37	0:00:55	29:20:37	21009.7	137324.4	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	30	44.627	0.10	0:06:26	0:01:48	0	0:00:03	2:10:35	0	2:14:17	2780.2	6490.4	0.12	-----
Expedited	101	34.305	3.38	1:10:24	0	0	0:07:29	10:06:56	0:00:12	10:23:10	9028.3	63840.9	4.97	-----
Freight	144	23.523	7.55	4:10:35	0	0:00:15	0:19:58	14:16:05	0:00:42	16:07:09	9201.2	66993.1	13.03	-----
All groups	275	29.317	5.10	6:03:25	0:01:48	0:00:15	1:03:31	27:09:37	0:00:55	29:20:37	21009.7	137324.4	7.86	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late.

All others are on time.

Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017C

Case: VA17D 2017MitigInf VA 2017 New pgr trains; Frt Trn Shifts and New Infrastructure

Elapsed execution time: 0:48 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,109 (593M + 516P) Gross conflicts = 1,202 (625M + 577P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 8 (scale 0-100)

G R P	Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P	Amtrak	16	41.354	0.00	0:03:21	0	0	0	0:18:07	0	0:21:23	884.3	2116.1	-----
E	Premium Intermodal	31	4.105	23.92	0:05:10	0	0	0:00:22	0:01:27	0	0:07:08	29.3	101.7	-----
E	Intermodal	77	35.955	2.56	0:19:47	0	0	0:03:18	5:17:26	0	6:08:10	5471.6	31877.5	-----
F	Multi-level	7	0.120	0.00	0:01:10	0	0	0	0	0	0:01:10	0.1	0.0	-----
F	General Merchandise	76	25.221	3.93	1:10:50	0	0:00:29	0:03:24	4:15:05	0	5:04:56	3151.2	24763.1	-----
F	Coal	83	20.164	8.64	0:19:20	0	0	0:04:02	2:04:24	0	2:22:05	1413.4	14437.7	-----
F	Unit	15	24.861	2.73	0:03:10	0	0	0:00:15	0:09:02	0	0:13:10	327.5	2247.2	-----
F	Local	36	9.778	7.99	2:03:24	0	0:03:38	0:02:37	3:02:22	0	3:14:55	850.0	2803.2	-----
F	Work Train	1	34.795	4.48	0:00:10	0	0	0:00:05	0:02:00	0	0:02:13	77.5	277.7	-----
F	Yard	13	1.958	0.00	0:23:50	0	0:00:16	0	0:23:35	0	1:03:46	54.4	17.2	-----
All train types		355	24.180	4.27	6:18:12	0	0:04:23	0:14:06	17:21:32	0	21:03:00	12259.3	78641.3	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	41.354	0.00	0:03:21	0	0	0	0:18:07	0	0:21:23	884.3	2116.1	0.00	-----
Expedited	108	34.528	2.82	1:00:57	0	0	0:03:41	5:18:54	0	6:15:18	5500.9	31979.2	4.02	-----
Freight	231	18.002	5.73	5:13:54	0	0:04:23	0:10:25	11:08:30	0	13:14:18	5874.1	44546.0	10.65	-----
All groups	355	24.180	4.27	6:18:12	0	0:04:23	0:14:06	17:21:32	0	21:03:00	12259.3	78641.3	6.91	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

Case 2017C

Case: VA17D 2017MitigInf VA 2017 New pgr trains; Frt Trn Shifts and New Infrastructure

Elapsed execution time: 0:48 (HH:MM:SS)

Simulation start time: Sa:00:00 Duration: 9:00:00 (DD:HH:MM) Warm-up exclusion: 1:00:00 (DD:HH:MM) Cool-down period: 1:00:00 (DD:HH:MM)

Net conflicts = 1,109 (593M + 516P) Gross conflicts = 1,202 (625M + 577P) Dispatched trains = 743 (0 failed) Dispatch difficulty = 8 (scale 0-100)

G R P Train type	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	OTP*
P Amtrak	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	-----
E Premium Intermodal	22	29.043	2.09	0:03:40	0	0	0:00:34	1:02:52	0	1:07:44	921.8	2824.1	-----
E Intermodal	77	28.383	1.59	0:15:15	0	0	0:00:56	2:10:53	0	3:03:50	2152.5	12140.7	-----
F Multi-level	7	0.340	0.00	0:01:10	0	0	0	0:00:02	0	0:01:14	0.4	3.0	-----
F General Merchandise	64	24.356	2.61	0:11:50	0	0	0:00:55	1:10:36	0	2:00:12	1174.1	7384.9	-----
F Coal	101	22.208	6.08	1:21:21	0	0	0:10:36	7:18:42	0	9:14:35	5120.9	47318.0	-----
F Unit	18	23.047	12.49	0:04:00	0	0	0:01:56	0:14:53	0	0:21:29	495.3	3001.1	-----
F Local	31	16.782	11.72	0:14:40	0	0	0:02:10	1:04:19	0:00:29	1:11:22	593.5	2164.0	-----
F Work Train	2	20.274	15.33	0:00:30	0	0	0:00:13	0:01:23	0	0:02:13	45.0	109.0	-----
All train types	338	23.355	5.23	4:03:26	0	0	0:17:24	14:15:47	0:00:29	18:17:46	10504.4	74945.7	-----

Train Group	Run-time Train Count	Average Speed with Dwell	Delay* %	Total* Dwell DD:HH:MM	Wait on Schedule DD:HH:MM	Switch Delay DD:HH:MM	Stop* Delay DD:HH:MM	Ideal Run time DD:HH:MM	Entry* Delay DD:HH:MM	Total Elapsed DD:HH:MM	Train Miles	Fuel Gallons	Delay per 100 Train Miles	OTP*
Passenger	16	0.291	0.00	0:03:00	0	0	0	0:00:02	0	0:03:05	0.9	0.9	0.00	-----
Expedited	99	28.578	1.75	0:18:55	0	0	0:01:31	3:13:46	0	4:11:34	3074.3	14964.8	2.97	-----
Freight	223	21.908	6.46	3:05:31	0	0	0:15:52	11:01:57	0:00:29	14:03:06	7429.1	59979.9	12.83	-----
All groups	338	23.355	5.23	4:03:26	0	0	0:17:24	14:15:47	0:00:29	18:17:46	10504.4	74945.7	9.94	-----

* Dwell times include time spent at initial and final terminals.

Entry delay (time held out of network as opposed to origin delay and dwell) included in delay times.

True delay = Total elapsed run time - Ideal (seed or run-time) elapsed run time.

True delay includes the acceleration and deceleration associated with conflict resolutions.

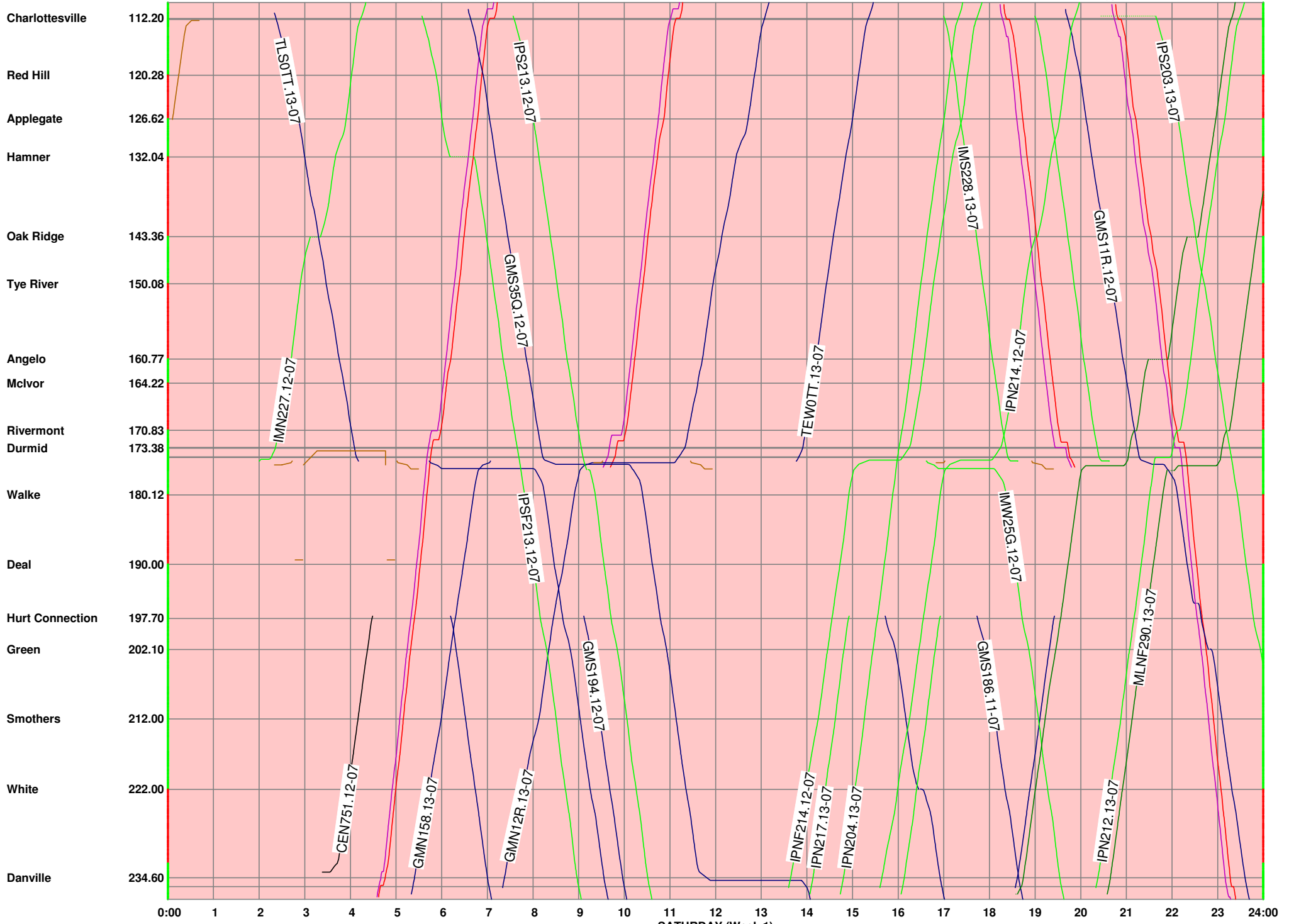
Stop delay does not have acceleration and deceleration time; it is only the time spent holding at speed 0 related to conflict resolutions.

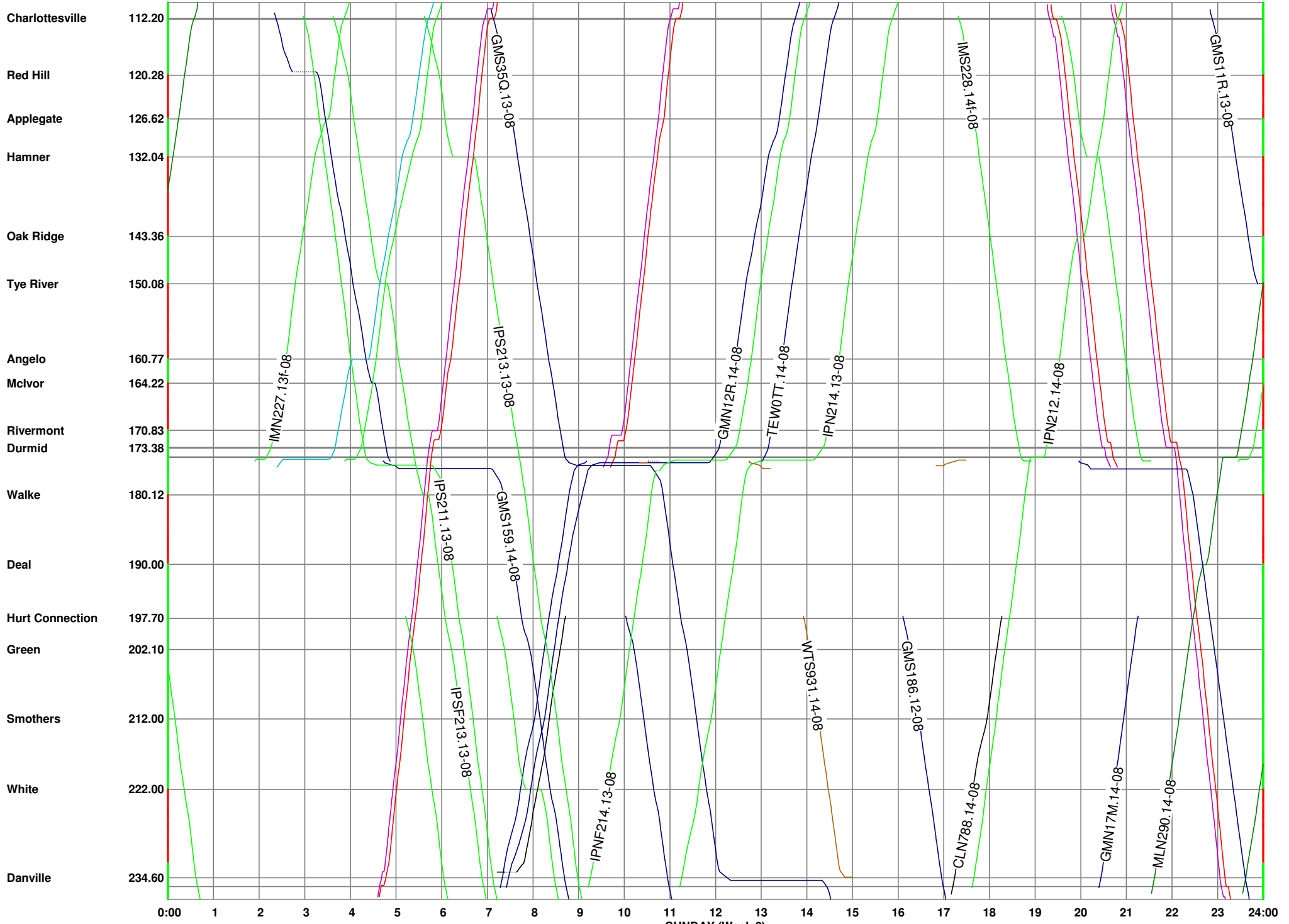
Delay % = 100 * True delay / (Total elapsed - True delay - Total dwell - wait on schedule)

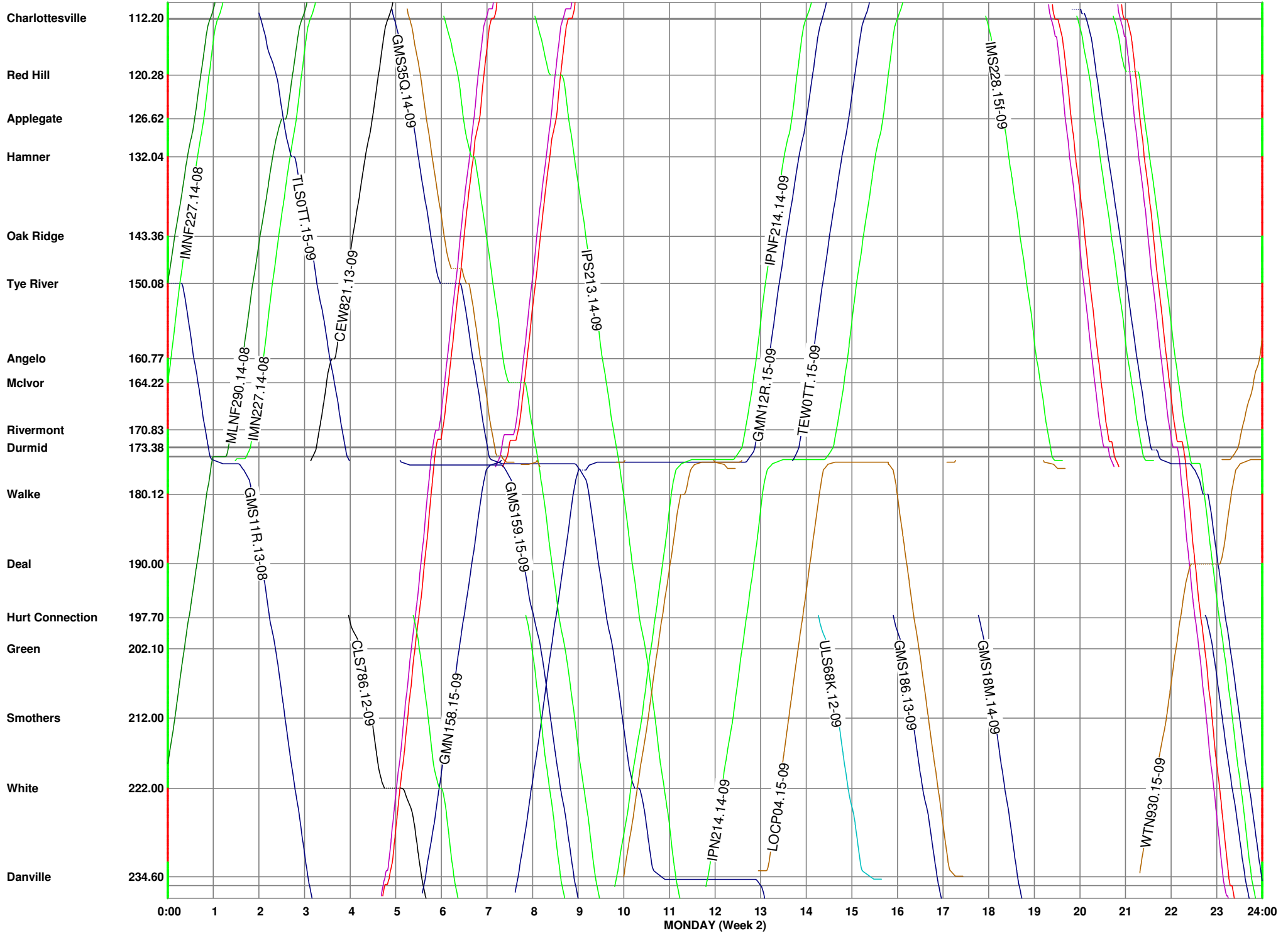
OTP = On-time performance. Trains arriving later than their requested arrival time less a type-specific threshold time are considered late. All others are on time.

Warm-up train count = 79 Cool-down train count = 67 Total number of candidate run-time trains excluded from statistics = 146

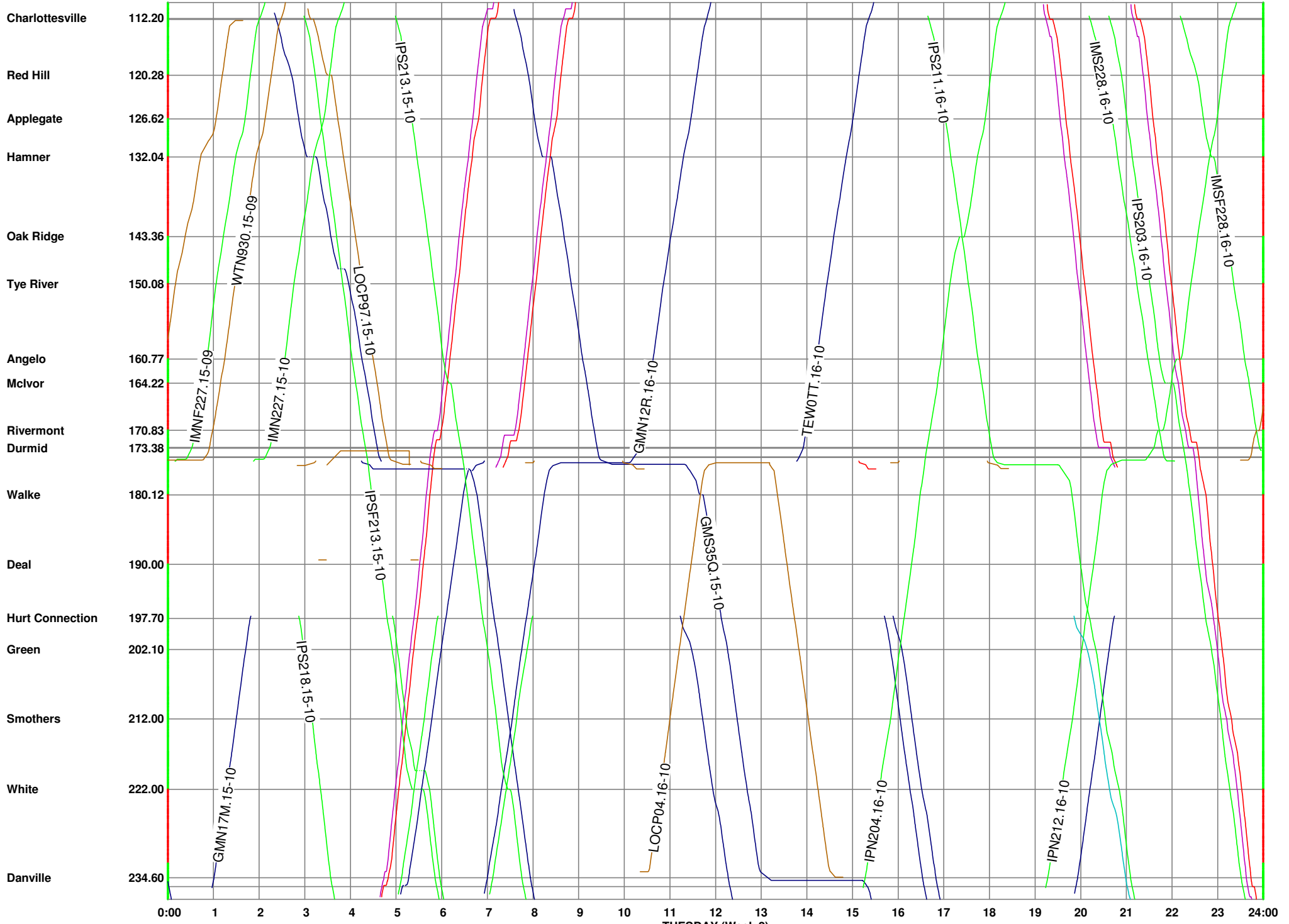
Case 2017C

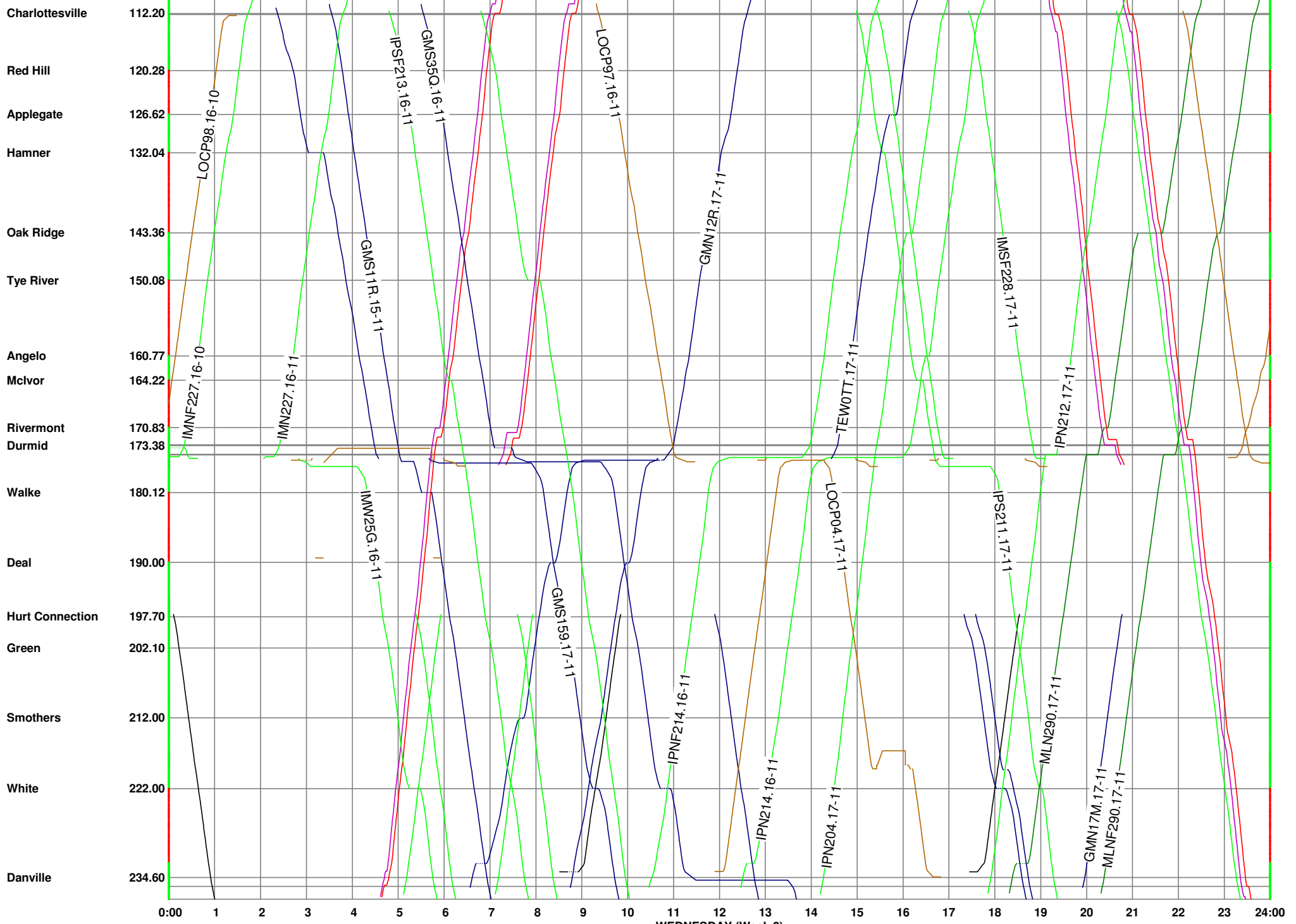


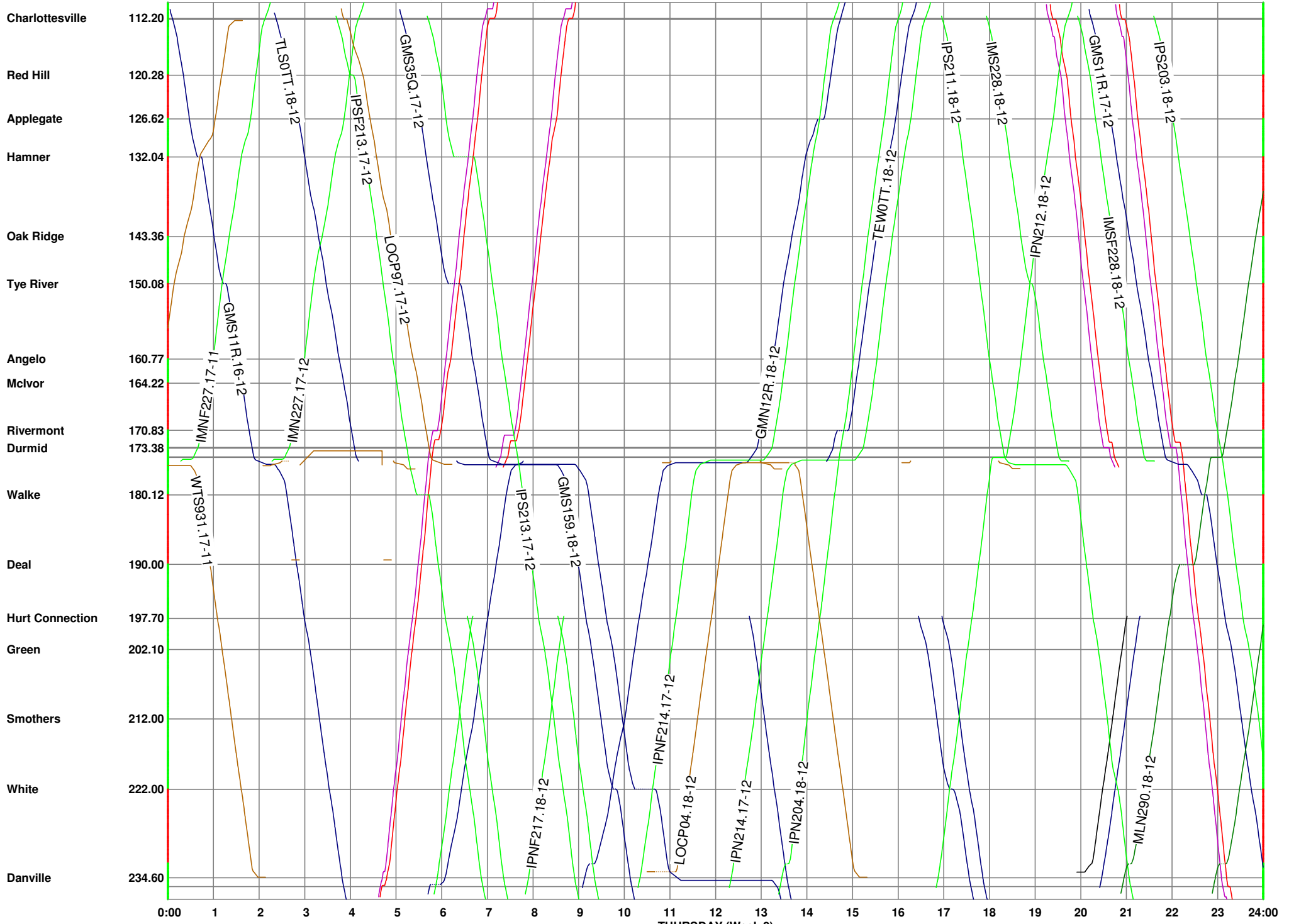


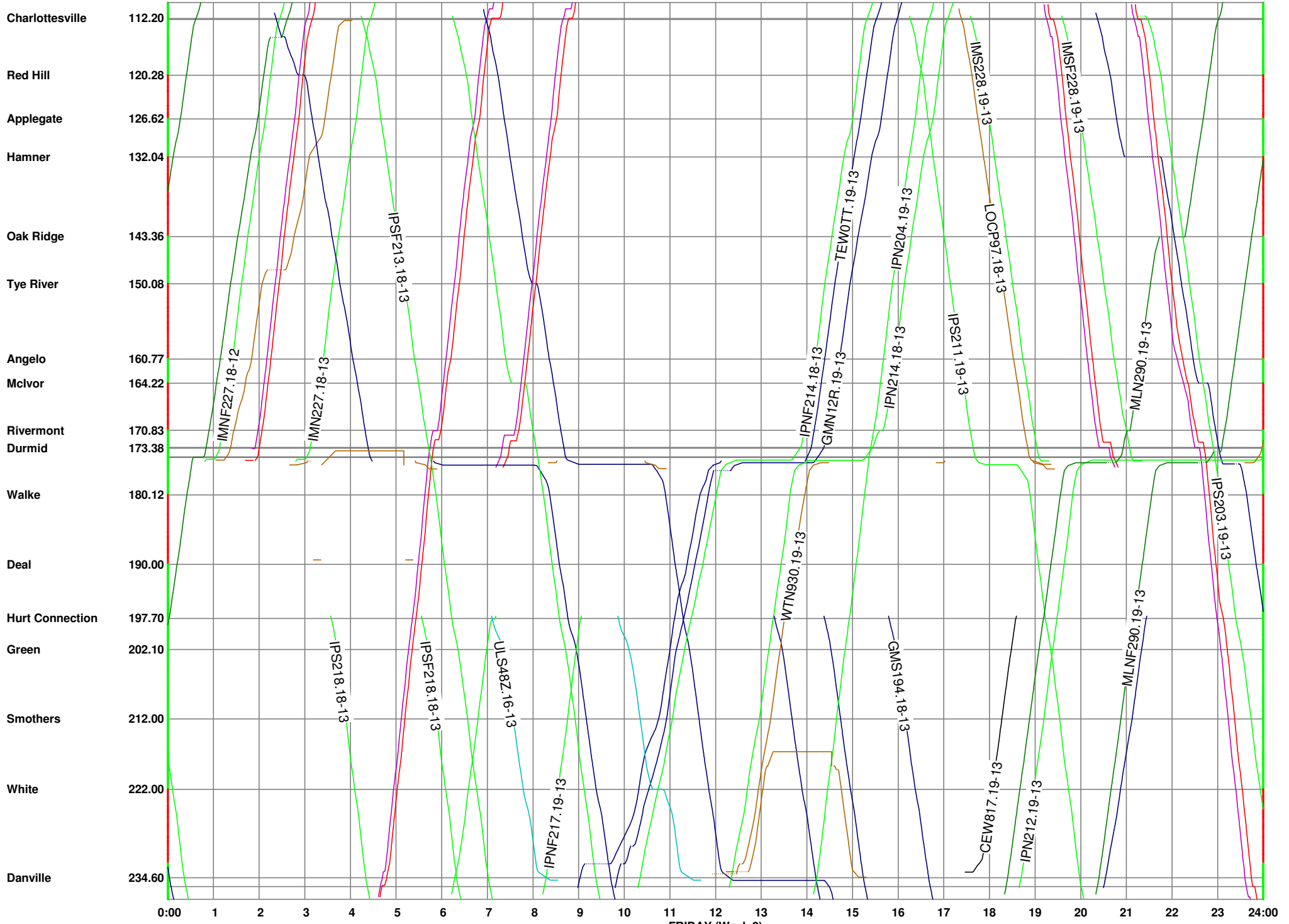


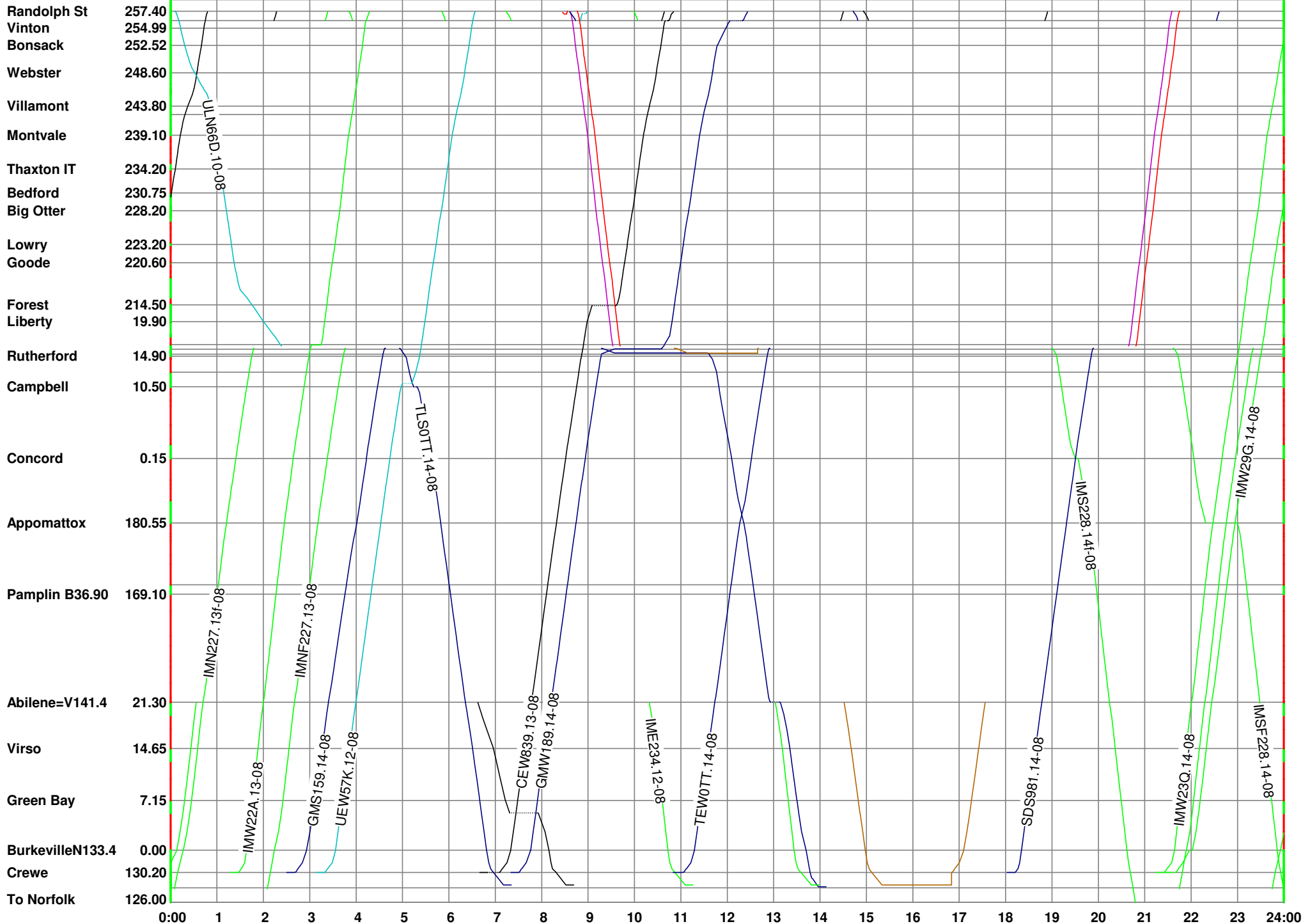
MONDAY (Week 2)

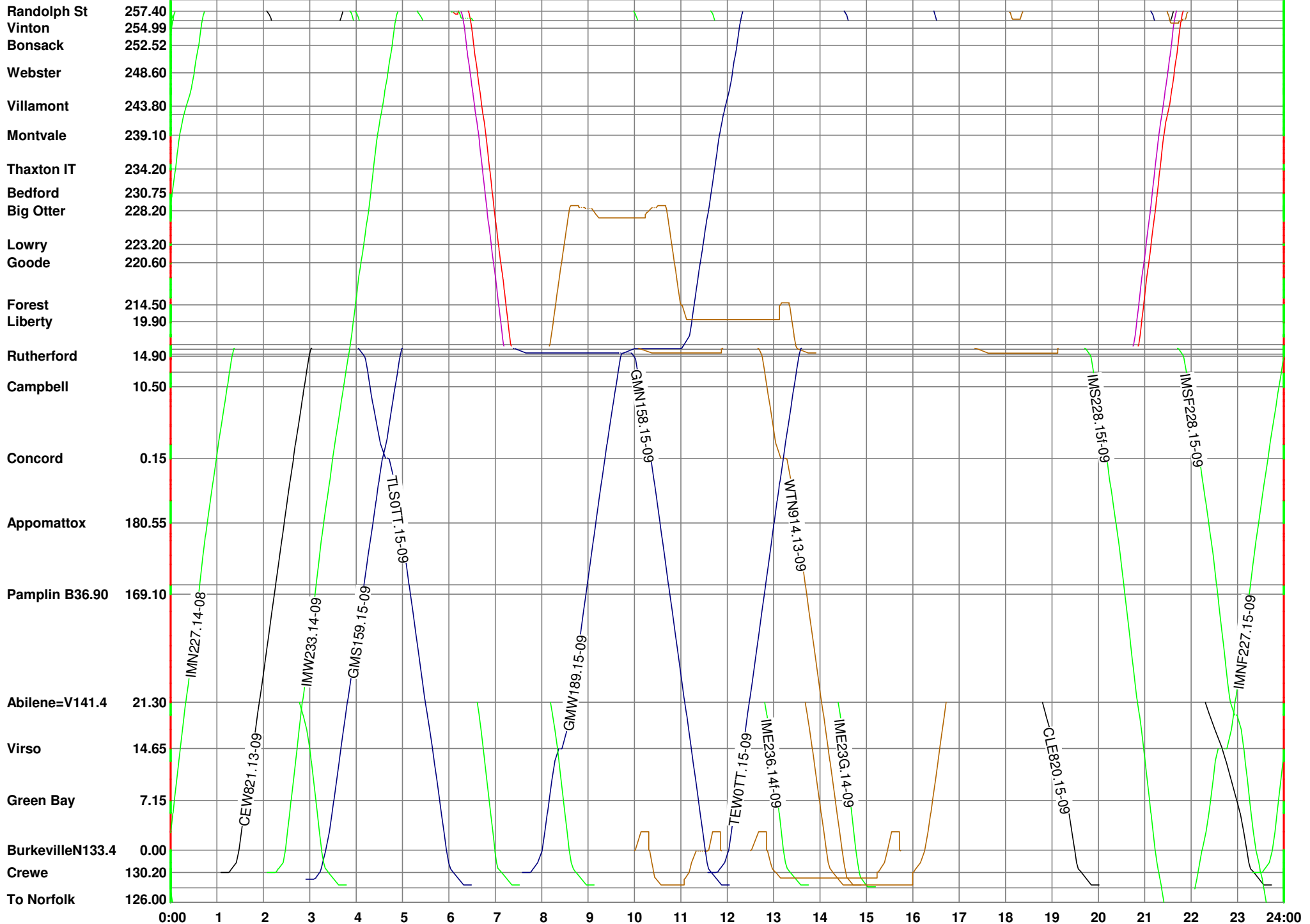




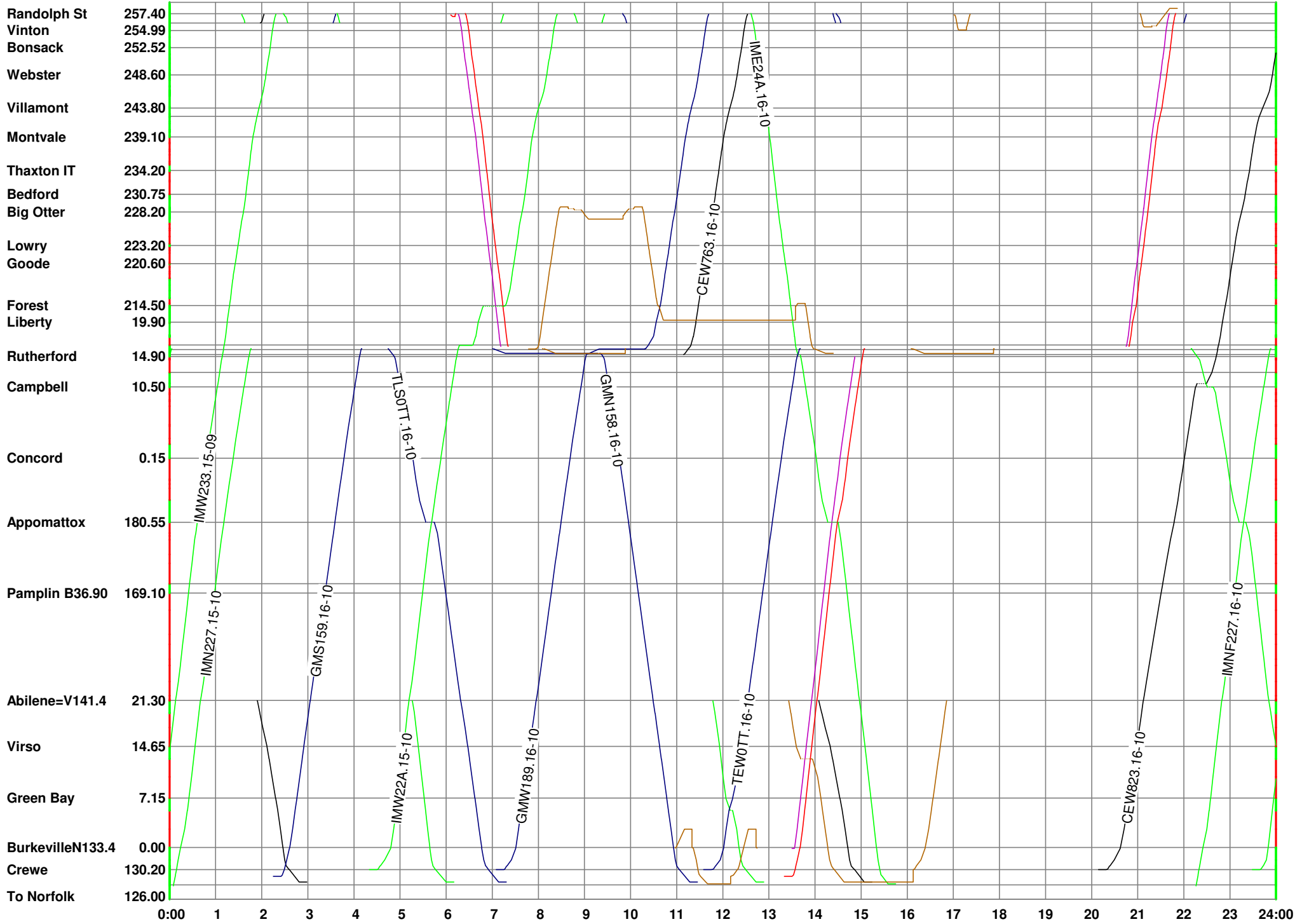


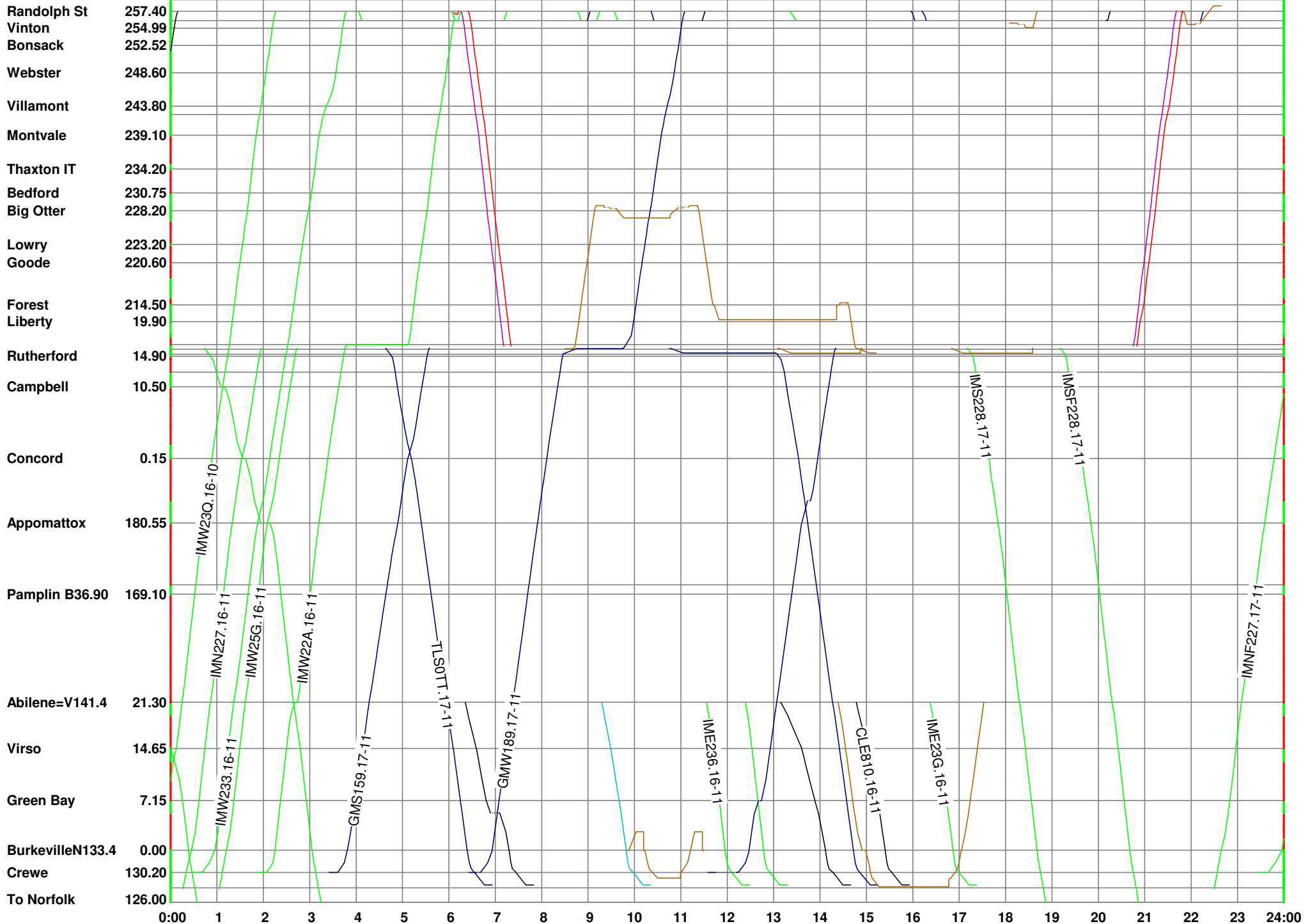




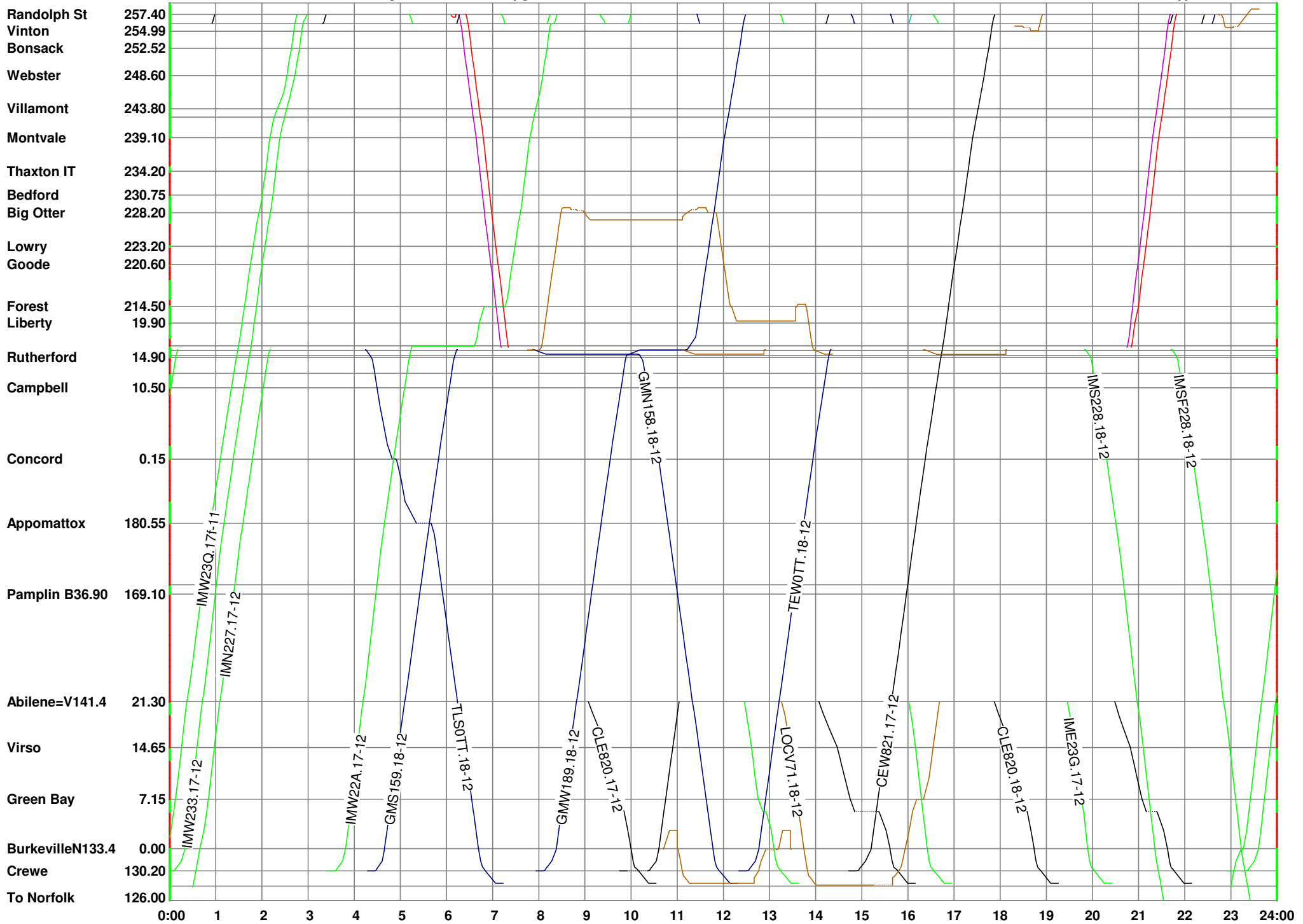


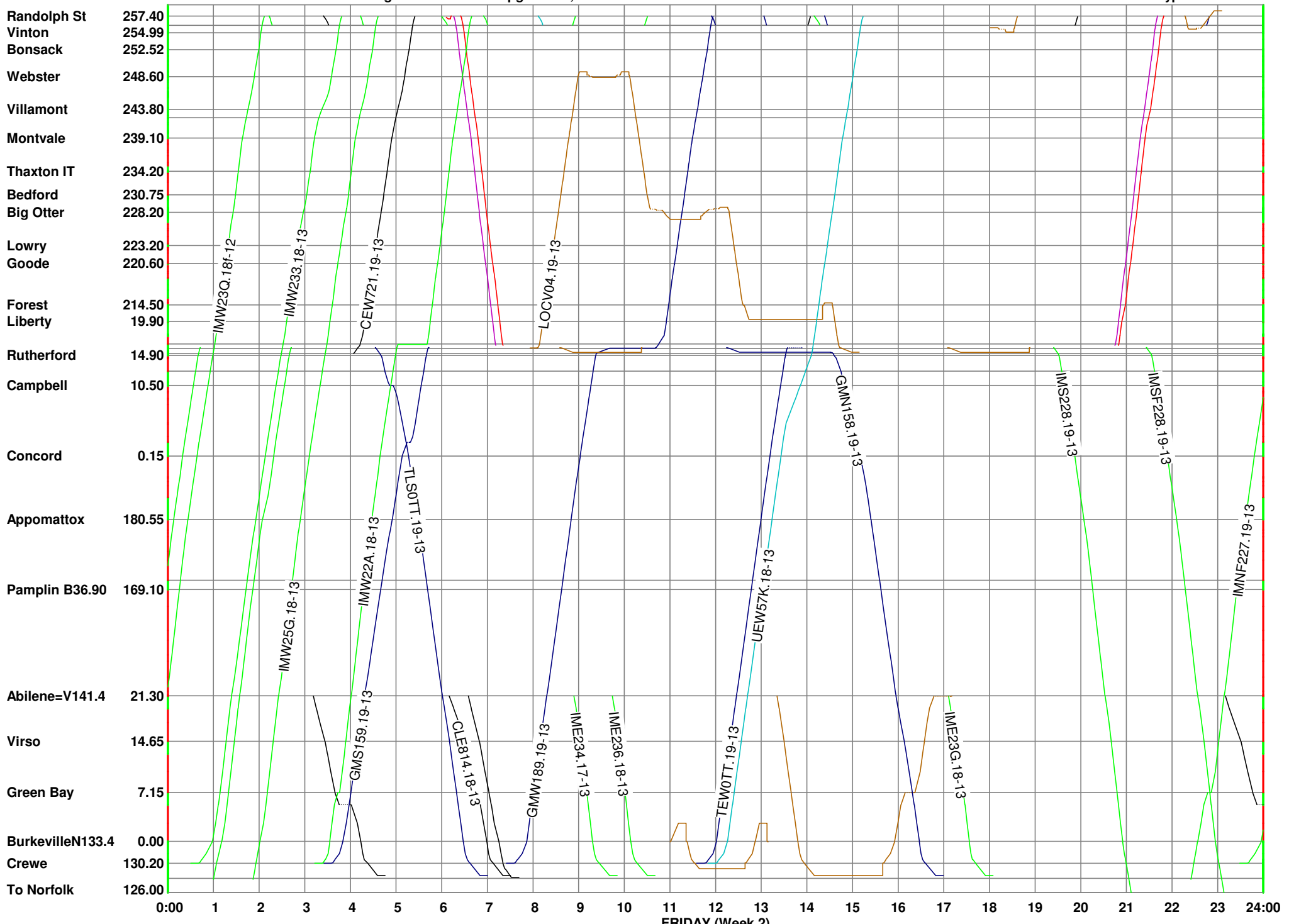
MONDAY (Week 2)

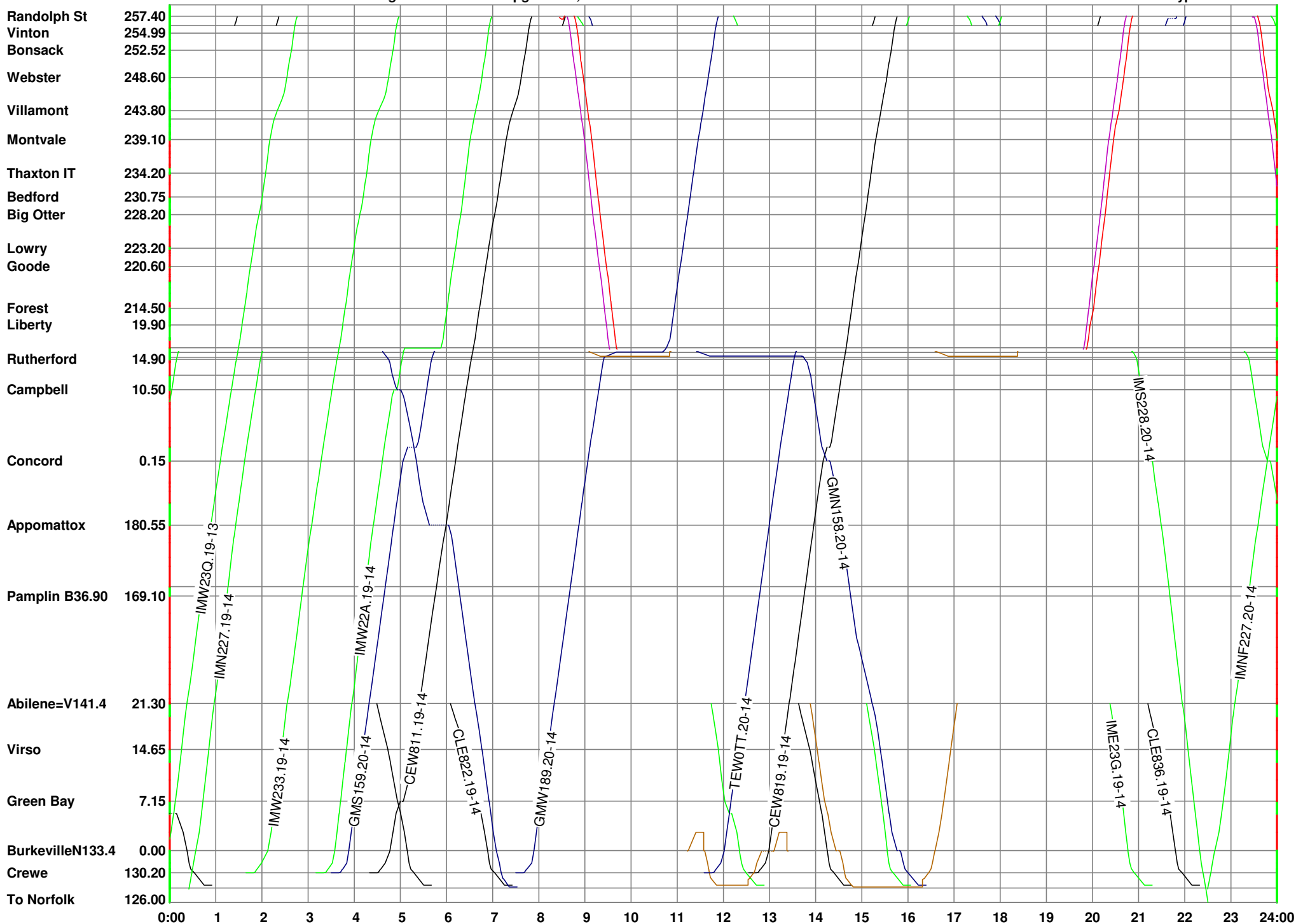




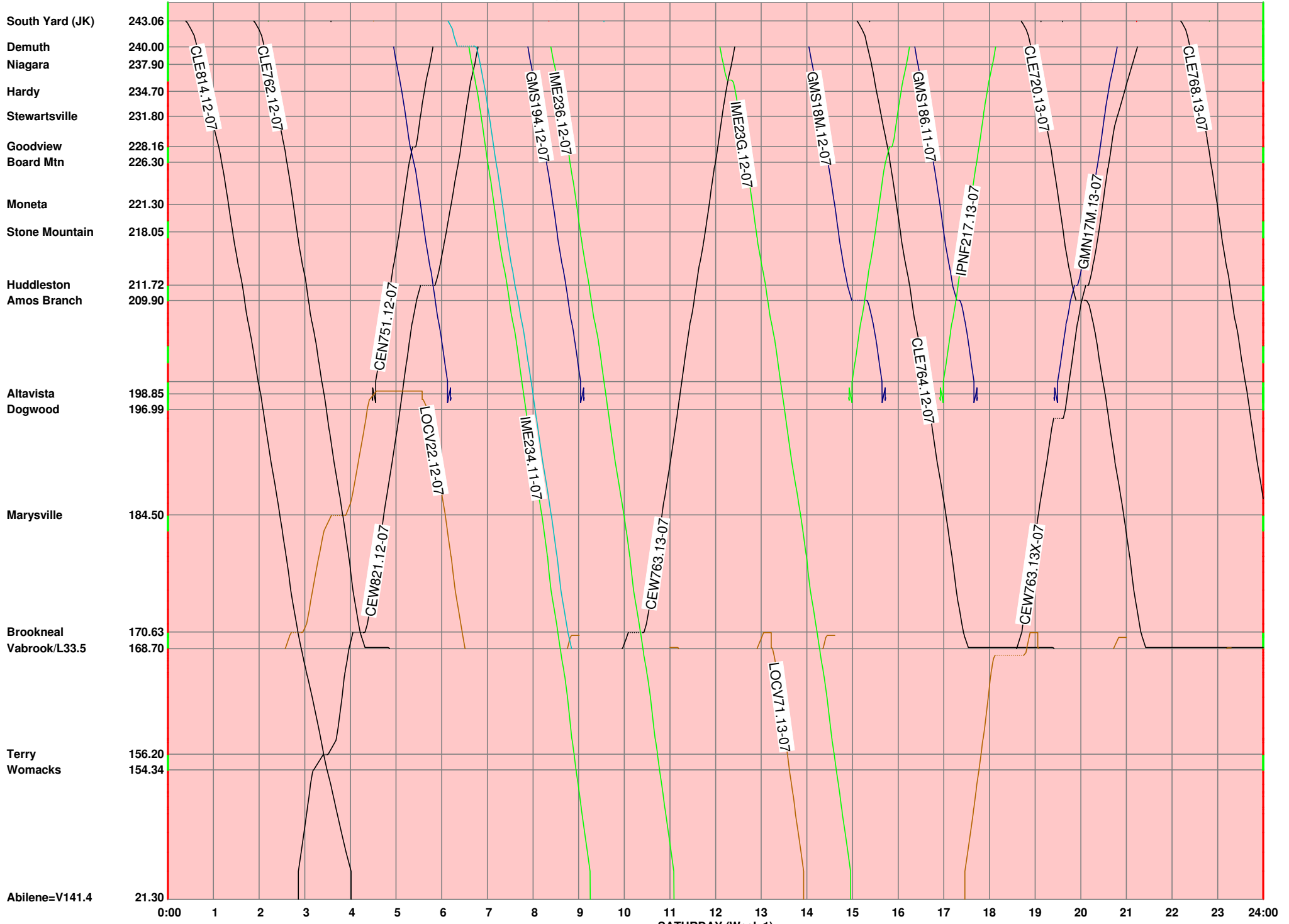
WEDNESDAY (Week 2)

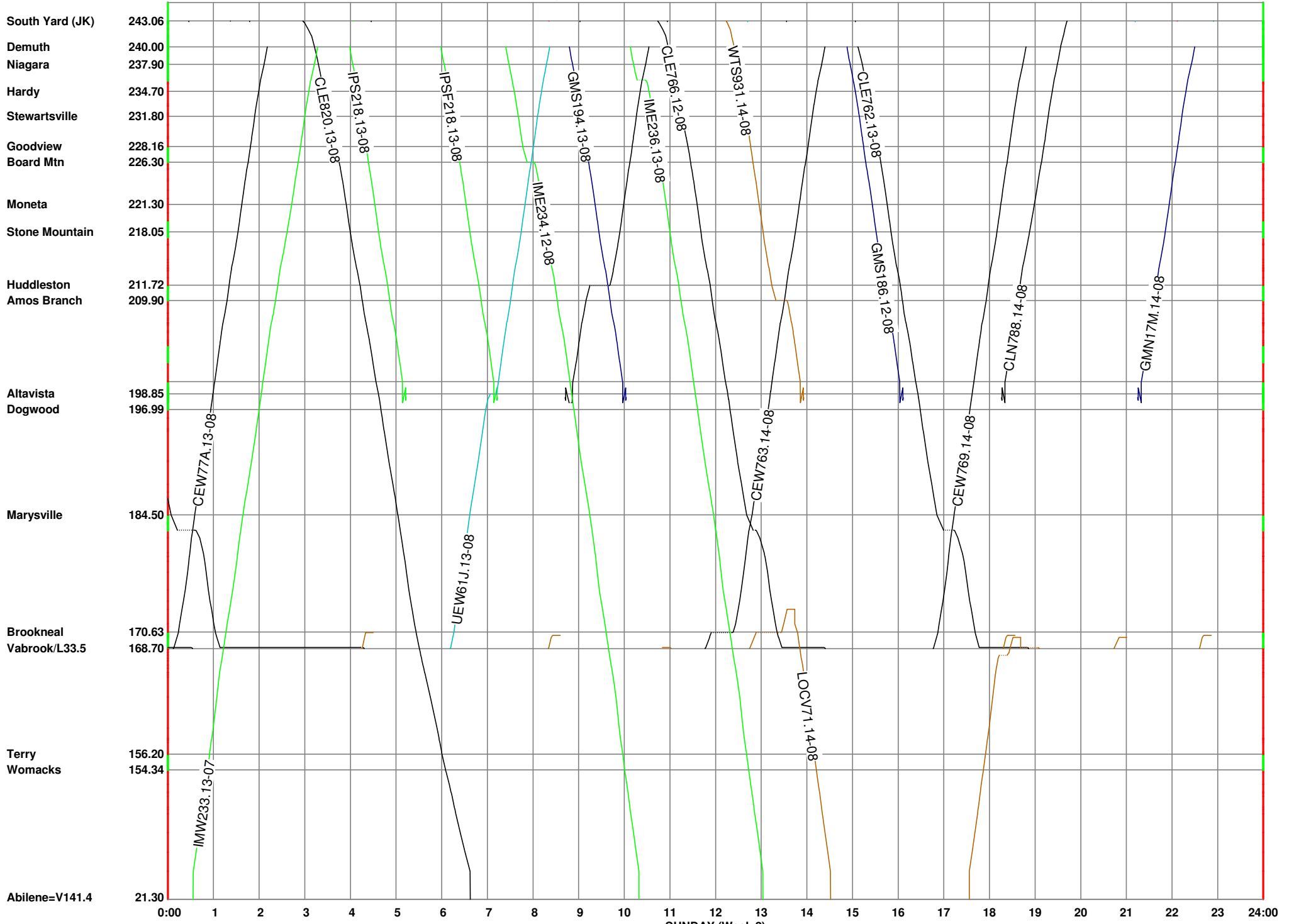


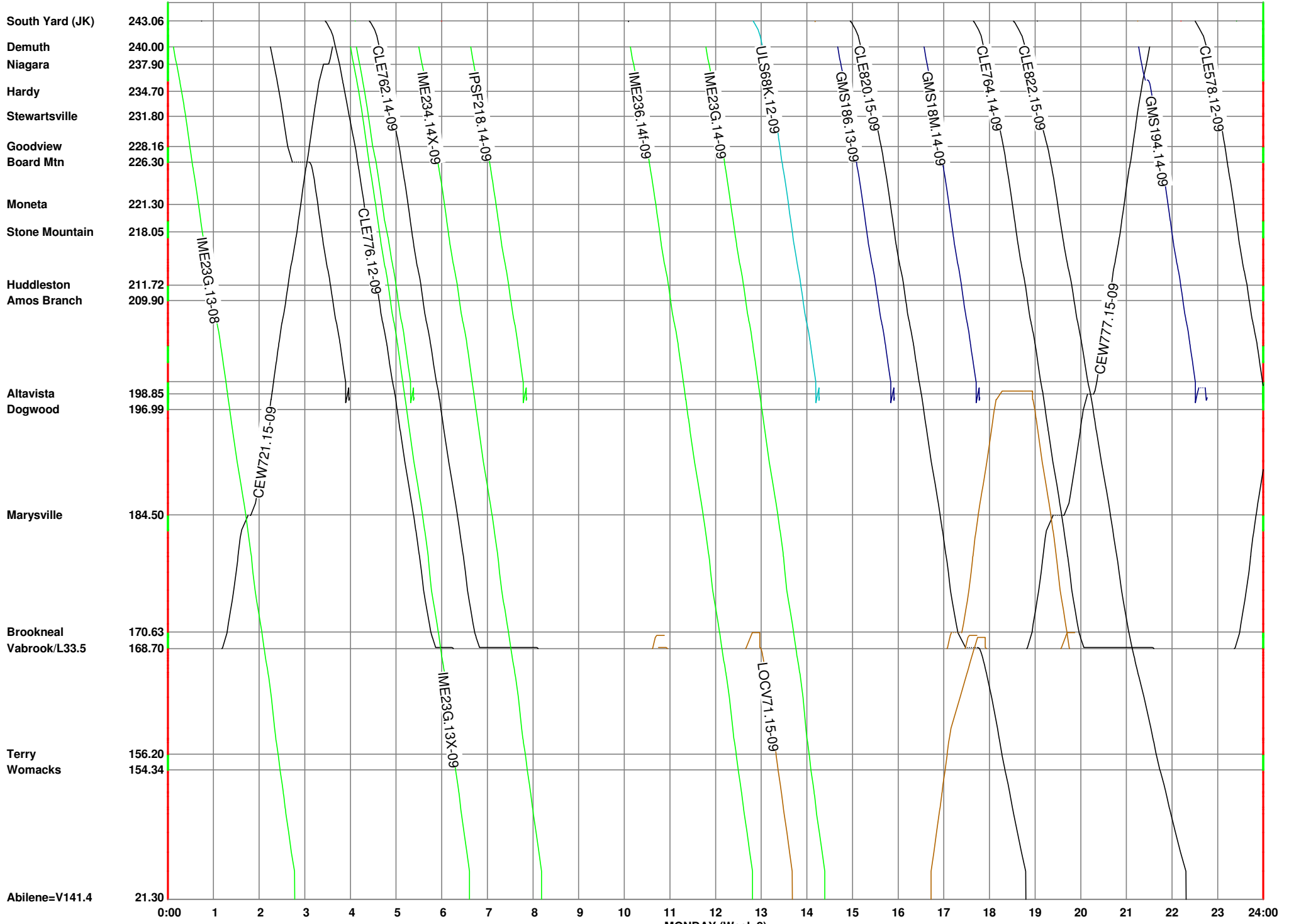


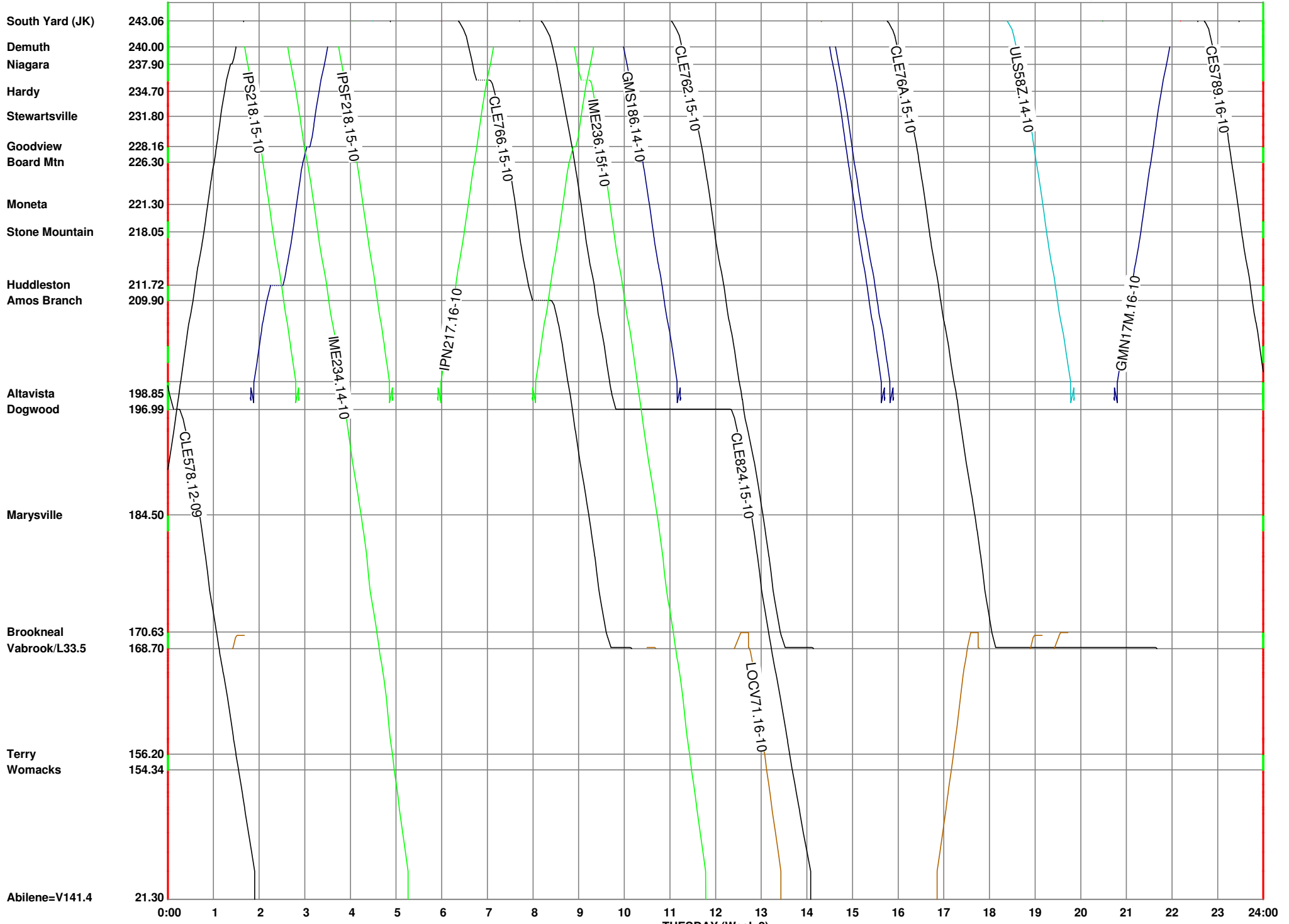


SATURDAY (Week 2)









South Yard (JK) 243.06
 Demuth 240.00
 Niagara 237.90
 Hardy 234.70
 Stewartville 231.80
 Goodview 228.16
 Board Mtn 226.30
 Moneta 221.30
 Stone Mountain 218.05
 Huddleston 211.72
 Amos Branch 209.90
 Altavista 198.85
 Dogwood 196.99
 Marysville 184.50
 Brookneal 170.63
 Vabrook/L33.5 168.70
 Terry 156.20
 Womacks 154.34
 Abilene=V141.4 21.30

0:00 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24:00

