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AUGUST 1996

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Passenger operation on the Chesapeake System



**How to Model: A brick roundhouse
N scale cabooses Tall prairie grass**



Planning meets and connections that will add to the session's fun

Passenger train operations



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PHOTOS BY JOHN BURROUGHS

Twentieth Century Limited, Super Chief, Broadway Limited — the list goes on, and even those who have never ridden a passenger train catch an echo of adventure. So why does passenger operation on model railroads sometimes seem like a dull afterthought? It doesn't have to. Drama, nostalgia, and lots of operating interest can be found in the passenger train (and its relatives, the mail and milk trains), but it takes planning.

On the Chesapeake System, the HO railroad operated by our North Shore Model Railroad Club in Wakefield, Mass., creative use of "the varnish" lays the foundation for realism, excitement, and fun in operating sessions — plus a dash of prototypical frustration!

The Chesapeake System's eastbound *Pacesetter*, powered by a PA-1, roars out of the tunnel at Ayers, W. Va., while train no. 52, the Charleston-Elkton local, waits patiently in the hole. The local will follow the *Pacesetter* up the hill at a much more leisurely pace.

(Our track plan is not needed to follow this article, but one was included in an article in the May 1986 MR.)

To generate interesting passenger train operations we use a writer's methods: creating interesting "characters" and situations. Frank Ellison was an early proponent of treating the layout as a stage and planning a schedule as an unfolding drama capturing the "feel" of your chosen type of railroading. Ellison's approach is still good fifty years later. The script for our railroad drama was developed in several steps:

- Choosing the actors — the trains we would run.
- Developing a "real world" schedule for each train, including appropriate arrival, departure, and running times.

- Fitting that real world schedule to the modeled part of our overall system.

- Plotting the interaction of all of our actors on the stage (the layout) using a string graph.

- Testing the schedule (putting the show through a dress rehearsal).

Choosing the actors

Writing our script actually started with planning both the passenger and the freight trains, but this article concentrates on the passenger trains.

Since most crews like to do more than run a train against the clock, we tried to incorporate some switching operations in almost all of our passenger train schedules. These were some of the possibilities:

on the Chesapeake System



Train no. 16, the eastbound *Chesapeake Limited*, briefly shatters the stillness of a remote mountain valley on its daily run to tidewater.

• **Sections:** The splitting or merging of multicar sections of a passenger train can be one of the most complex switching operations if we want to maintain the normal groupings of head-end cars followed by coaches followed by sleepers.

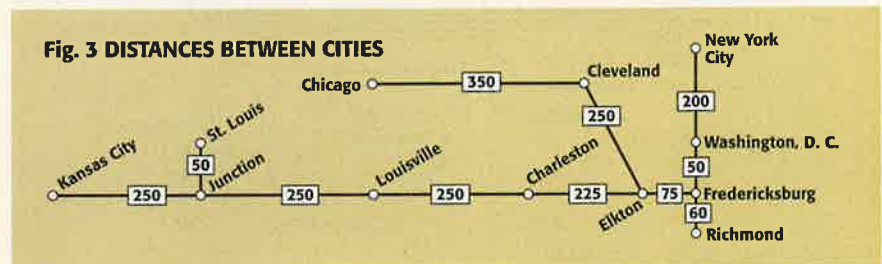
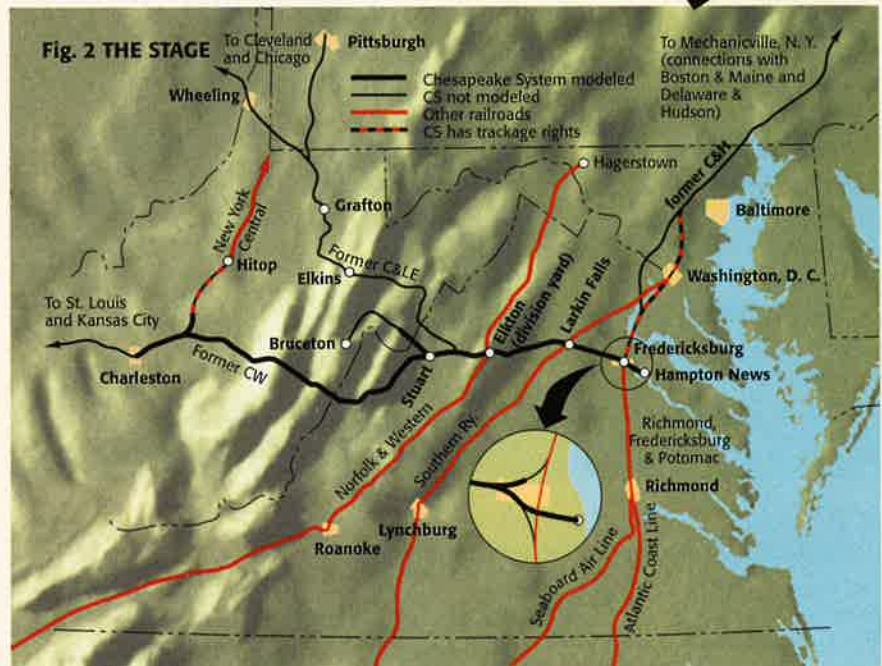
You can also keep it fairly simple. Real railroads did things in a lot of different ways, including putting sleepers for one section at the front of the combined train and those for the other section at the back, with all the coaches in the middle. Then cutting the train in two was all that was needed.

• **Sleepers:** Dropping sleeping cars along the way or providing for through sleeper service to some distant point not only adds switching interest but

THE CHESAPEAKE SYSTEM

The North Shore Club's passenger trains perform on this stage, the fictional Chesapeake System. It's set in the '50s, just after the Chesapeake & Hudson, Cumberland Western, and Chesapeake & Lake Erie merged, so CS trains still wear the colors of the predecessor lines.

The long-distance passenger routes are Richmond-Chicago, Richmond-Kansas City, and New York-Kansas City. The CS doesn't try to compete with the Pennsylvania and New York Central for New York-Chicago traffic.



Illustrations by Rick Johnson

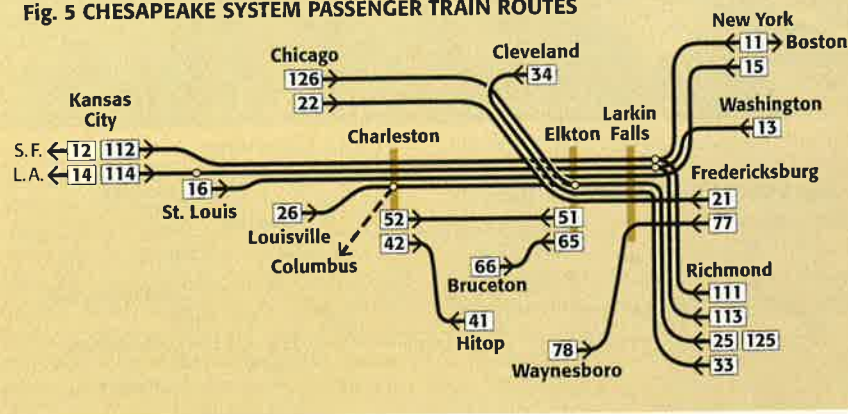


The small town of Stuart in the Kehoe River valley sees a lot of railroad action. In the distance no. 15 soars across the high bridge towards St. Louis. Meanwhile the westbound *Pacesetter*, soon to follow it over the mountains, makes a flag stop while a hotshot reefer block speeding produce from California to eastern markets is just entering town, left. Behind the row of stores we can spot a string of hoppers moving up a branch to one of the many area coal mines.

Fig. 4 PRELIMINARY TIME CHART FOR TRAIN NO. 25

City	Timetable elapsed time in hours			
	Train no. 25	125	26	126
Richmond	1.2	1.2	1.2	1.2
Fredericksburg	1.5	1.5	1.5	1.5
Elkton (merge/split)	4.5	4.5	4.5	4.5
Charleston (cross time zone)	3.5	5.5		
Louisville				
Elkton (merge/split)		4.5		4.5
Cleveland (cross time zone)		5.5		7.5
Chicago				
Total run	10.7	12.7	12.7	14.7

Fig. 5 CHESAPEAKE SYSTEM PASSENGER TRAIN ROUTES



also gives a logical reason for running cars from other railroads.

Our "through service" to Seattle, Los Angeles, and San Francisco lets us run great Northern, Northern Pacific, Southern Pacific, Union Pacific, and other Western cars in our trains.

• **Head-end cars:** Baggage, express, express refrigerator, mail, and milk cars can be set out or picked up almost anywhere by almost any type of train. For example, we serve a large printing plant in Charleston that regularly sends express boxcars to Cleveland and Fredericksburg.

• **Food and beverage service:** It's not good business to haul a diner or lounge car and its crew around when no one is using it, so railroads often added these cars to a train for only part of a run. However, these can be tricky cars to switch because they usually go in the middle of the train.

By thinking about the real services passenger trains performed, you can find all kinds of ideas for adding operating interest. Use your imagination. Even a meandering mixed train can increase variety by making an occasional flag stop, perhaps at a rural grade crossing.

The *Pacesetter's* role

To see how we developed our trains, let's take a look at the *Pacesetter* (train no. 25), serving Richmond and Louisville with lots of stops in between.

After studying the map of our system (fig. 1), we decided to use one train for both Richmond-Chicago and Richmond-Louisville traffic east of Elkton. This let us split and merge sections, challenging even the most experienced operators.

To make the *Pacesetter* even more interesting we decided to have it drop and add sleepers. One section serves our resort area at White Crystal Springs, and the other carries a through car for a connection at Charleston, W. Va.

Having decided the kind of role train no. 25 would play, we next had to work out its entrances and exits - when it would run. We first estimated travel times between major points and then developed a rough schedule. Only part of the CS is actually represented by the layout, as shown in fig. 2, so the train would originate and terminate in staging yards "beyond the layout."

If you are modeling a specific prototype, you may be able to use real timetables to determine distances and running times. In our case, we used timetables from nearby prototype railroads as well as maps of our area and highway mileage charts to get a good working distance estimate. See fig. 3.

We chose an average speed of 50 mph for the *Pacesetter*, and a little long division soon gave us running times between cities. Our preliminary time chart is shown in fig. 4. Figure 5 shows all the other passenger trains we'll need to plan for similarly.

Next we developed a rough schedule, taking into consideration the competition's service (if any) and passenger convenience.

If we pulled out of Richmond at 5:00 p.m., the Chicago section would arrive at 7:40 a.m. (an acceptable time), but the Louisville section would arrive at 3:40 a.m.! Also, a 5:00 p.m. departure from Richmond made for a 9:00 p.m. arrival at White Crystal Springs, not late enough to require the sleeper drop we wanted.

Changing to a 7:00 p.m. departure gave us an 11:00 p.m. arrival at the Springs, late enough to let passengers sleep on the siding until morning.

By working backwards from that 11:00 p.m. sleeper drop at the resort to an 8:00 p.m. departure time at Fredericksburg (on the layout), we arrived at a 6:50 p.m. departure from Richmond (off the layout). We followed the same process for the other actors in our drama. Figure 6 lists the completed passenger train cast.

Writing the plot

Then we were ready for the next stage in developing our script – the plot. Here we tried to add the right amount of complexity to increase operator interest (the prototype would try to eliminate it) without causing too much frustration.

Having the crack eastbound *Chesapeake Limited* intrude on the *Pacesetter's* switching at Elkon would introduce a dramatic moment, even though the railroad is double-tracked there.

Next we envisioned meets between the westbound *Limited* and *Pacesetter* and an eastbound reefer block, all this on a single-track section. Leapfrogging these three trains through the mountains would give the dispatcher and crews a real feeling of accomplishment!

Another trick would be to send our passenger local (no. 52) from Charleston to Elkon out ahead of two through trains, nos. 16 and 26. If all went well, the local would make its stops and enter the siding at Campanella Ridge just in time to let the faster trains pass. If it didn't, we'd have some irate passengers!

Even the placement of structures could add to the fun. By giving some of our passenger stations platforms on only one track, we could force trains to cross over and run "wrong iron," keeping the dispatcher alert.

FIG. 6
CHESAPEAKE SYSTEM PASSENGER TRAINS

Train	Description	Car Type	Routing	Road
11 12	<i>Jayhawk</i> Service between New York and Kansas City, with a section to Richmond (111/112). Stops at only the large cities along the route. Carries through San Francisco sleepers and a Boston sleeper to the resort at Crystal Springs. Train 12 carries milk cars to Fredericksburg.	RPO/Baggage RPO/Bagg., Coach Coach Coach, Diner, Sleeper Sleeper Sleeper Sleeper Observation/Lounge	N.Y.-K.C. Richmond-K.C. N.Y.-K.C. N.Y.-K.C. N.Y.-S.F. Richmond-S.F. Boston-Springs N.Y.-K.C.	C&H C&E C&H CW UP/SP UP/SP NH/PRR CW
13 14	<i>Cumberland Express</i> Service between Washington, D. C., and St. Louis or Kansas City, with a Richmond section (113/114). Stops at most cities along the route and carries through Los Angeles sleepers.	RPO/Bagg. Baggage RPO/Bagg., Coach Coach Coach, Diner Dome Coach Coach, Lounge, Diner Sleeper Sleeper Sleeper Sleeper	Wash.-K.C. Wash.-St. Louis Rich.-St. Louis Wash.-St. Louis Wash.-St. Louis Wash.-K.C. Richmond-K.C. Richmond-L.A. Wash.-L.A. Wash.-St. Louis Rich.-St. Louis	CW C&H C&E C&H CW CW C&E UP UP CW C&E
15 16	<i>Chesapeake Limited</i> All-Pullman extra fare service between New York and St. Louis. Stops at only the larger cities along the route. Carries through mail and express and has dedicated equipment with a special paint scheme.	RPO Baggage Dorm./Lounge Sleepers (5) Diner Obs./Lounge	N.Y.- St. Louis " " " "	Ltd. " " " "
21 22	<i>Chicagoan</i> Service between Chicago and Fredericksburg. This is a chair-car train, stopping at most cities, with parlor car service. A connection with 51/52 at Elkon provides Fredericksburg-Charleston express service.	RPO/Bagg. RPO/Bagg. Parlor Coaches (2) Diner Dome Coach	Fred.-Charleston Fred.-Chicago " " " "	CW C&E " " " "
25/ 125 26/ 126	<i>Pacesetter</i> Service between Richmond and Louisville (25/26) or Chicago (125/126). Stops at most cities along the route, and carries a Richmond-Crystal Springs sleeper for resort traffic, plus a Richmond Columbus sleeper transferred to the NYC at Charleston, W. V.	RPO/Bagg. RPO Bagg./Coach Coach Coaches (2) Diner Sleeper Sleeper Sleeper Sleeper	Rich.-Chicago Rich.-Louisville " " Rich.-Chicago " " Rich.-Springs Rich.-Louisville Rich.-Columbus	C&E CW CW CW C&E C&E C&E C&E CW CW
33 34	<i>Lake Erie</i> Service between Richmond and Cleveland. This is a day train stopping at most cities. It carries a Charleston-Cleveland express car from a connection at Elkon. It uses Erie (or EL) track to enter Cleveland Union Terminal and sometimes carries pooled equipment.	RPO/Bagg. RPO/Bagg. Coaches (3) Diner/Lounge	Cleve.-Charleston Cleveland-Rich. " "	CW C&E " "
41	<i>Hitop Local</i> Service from Charleston along the branch to Hitop, W. V. This local passenger or mixed train stops at all towns and mines along the route. This is a joint Chesapeake/NYC train, using older equipment.	RPO/Bagg. Coach	Charleston-Hitop "	CW CW
51	<i>Hitop Local</i> Service between Charleston and Elkon. This local passenger stops at all towns and mines along the route. It connects at Elkon with 21/22 for service to Fredericksburg.	RPO/Bagg. RPO/Bagg. Baggage RPO Coaches (2)	Charleston-Fred. Charleston-Cleve. Charleston-Elkon " "	CW CW CW CW CW

Chesapeake system freight trains

Through freights:

CAE: California perishables to eastern seaboard. Exchanges with SOC2 at Elkton.

CAW: Empty reefers, some eastern perishables (fish).

KCE: Fast freight. Exchanges with CHM2 and CHM4.

KCW: Fast freight. Exchanges with CHM1 and CHM3.

SOC1: Florida perishables

SOC2: Perishables from Chicago

CHM1/CHM3: Fast freight

CHM2/CHM4: Fast freight

GXE: Unit grain train, merges with PDP2 at Elkton

GXW: Empty grain cars

PDP2: Unit grain train from Chicago

PDP1: Empty grain cars

NJE: Unit coal train to New Jersey power company

NJW: Empty hoppers

Local freights:

X101/X102: Port/Elkton

X#E/X#W (# represents engine numbers): Charleston/Elkton

ELDC/DCEL: Elkton/Washington

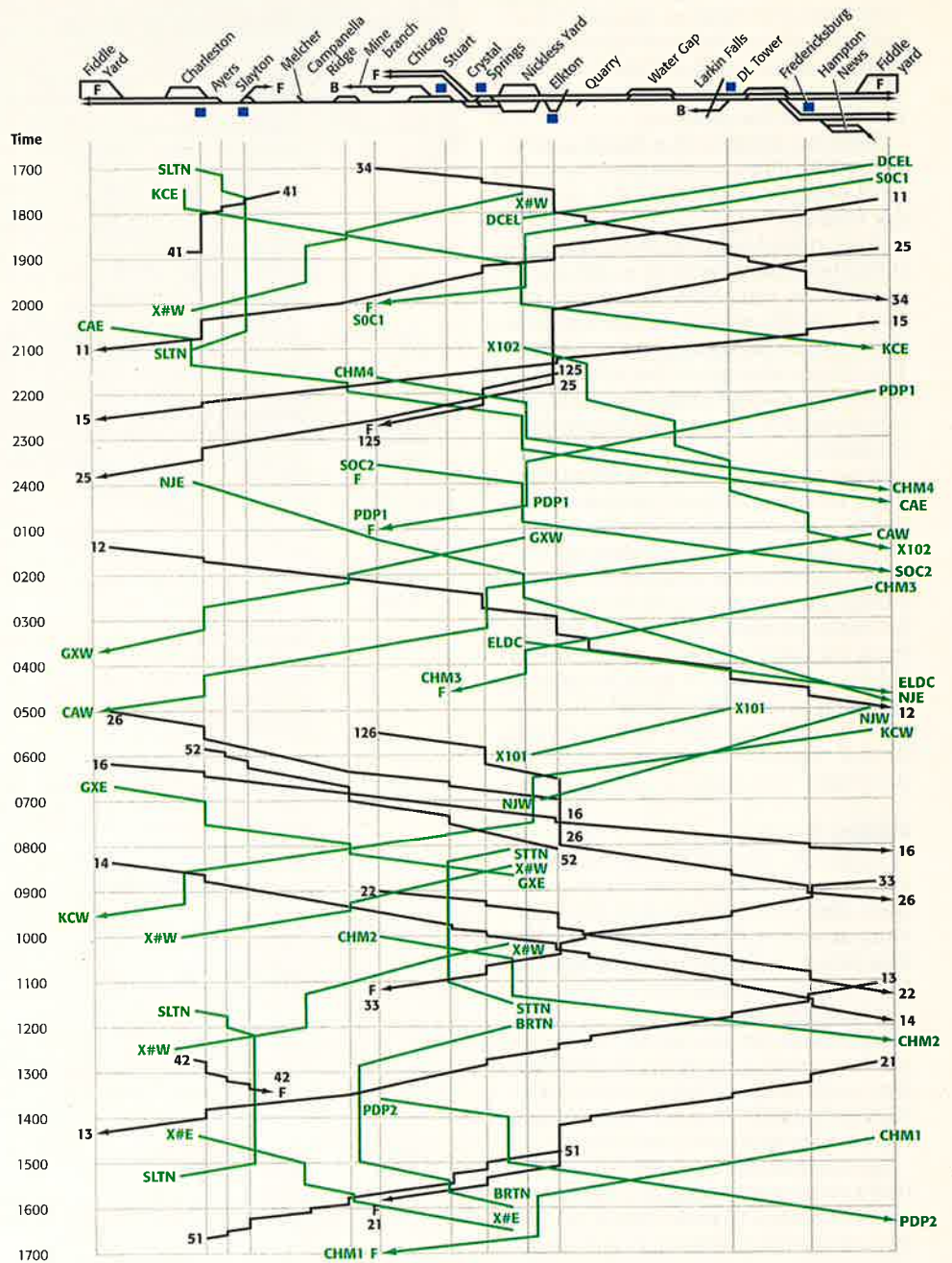
BRTN: Bruceton Turn

STTN: Stuart Turn

SLTN: Slayton Turn

Fig. 7 TIMETABLE GRAPH

— = Passenger trains
 — = Freight trains
 B = Branch
 F = Fiddle yard



Space is tight in the West Virginia mountains, forcing the unusual sight of passenger train no. 13 flying through the heart of the Melcher Mining & Minerals Co. main tipple.

Graphing the action

A graph like that shown in fig. 7 was a big help in formulating our plot because it gave an overall view of what was happening on the layout. We used it to develop a good fit among the trains (both freight and passenger), track plan, and our control system (which limits the number of trains that can be running at one time).

The graph gives a visual picture of track use, making it easy to see opportunities for meets or passes. In reading the graph, a vertical line indicates a stopped train, and each line slopes downward in the direction the train is moving. The steeper the slope, the slower the train.

We made our graph in pencil, and an eraser came in very handy! After a lot of trial-and-error, the graph was completed. (Later we put the graph on a computer, but that's another story.)

To translate the graph into operating instructions for our crews, we created a single-page timetable "extract" for each train. Figure 8 shows one for the *Pacesetter*. This extract includes the name and number of the train, a brief description of it to help a new crew understand its "role," and the timetable for the run over the layout, including routing instructions.

Also there's a consist sheet for each passenger train that includes switching instructions. See fig. 9. This sheet is placed inside a clear plastic pouch secured by a clip so an operator can hang it up and have both hands free for the controls.

During an operating session, each person works with a part of the script. Road crews use the timetable pages and train orders from the dispatcher, yard crews have a special set of instructions, and the dispatcher uses both the graphic overview and the Centralized Traffic Control (CTC) board to keep track of what's happening.

The system usually lets us keep lots of traffic moving without having to tie up the radio with lengthy instructions. Scheduled meets, passes, and car transfers can occur without conversation, and verbal "train orders" can handle the unplanned or unexpected. (We never expect to have an operating session where everything follows the script!)

The Chesapeake's cast of passenger trains, moving on realistic schedules, contributes to the sense of running a purposeful railroad, and challenges the creativity, teamwork, and efficiency of the operating crews in moving the railroad's big moneymaker - freight. We hope some of these ideas can help you increase your own enjoyment in the adventure of railroading. 🚂

Fig. 8 SAMPLE TIMETABLE EXTRACT

The <i>Pacesetter</i>	Train 25	General speed restriction 60 mph. Coaches and sleepers from Richmond to Louisville, with local service. Has an Elkton-Chicago section (125).	
<i>Schedule:</i>			
Fiddle Yard A	Lv. 18:50	Track 1. Take first crossover to eastbound main.	
Fredericksburg	Ar. 19:00 Lv. 19:05		
DL Tower Larkin Falls	- Ar. 19:28 Lv. 19:30	Take right-hand main.	
Water Gap East Water Gap West Limestone Elkton	- Ar. 19:50 - Ar. 20:10	Split train into no. 25 (CW) and no. 125 (C&LE); set out extra diner on service spur.	
	Lv. 21:50		
Nickless Cross Crystal Springs Schuyler Jct. Stuart	- Ar. 22:02 - Ar. 22:10	Cross over to left-hand main. No stop.	
	Ar. 22:10	Stops on flag to receive or discharge passengers.	
Campanella Rdg. Slayton Ayers Charleston	Ar. 22:40 Ar. 22:58 - Ar. 23:05	Take left-hand main. Drop sleeper on station siding for Columbus (via NC).	
	Lv. 23:25		
Fiddle Yard B	Ar. 23:50	Track 5	

Fig. 9 TYPICAL PASSENGER TRAIN SWITCHLIST

Train no. 25 - The <i>Pacesetter</i>		Setup track: FYA-1		
Type/train/routing	Type	Road	Number	
* Locomotive (pair) (25) Richmond-Elkton	E8	CLE	9800	
@ Locomotive (25) Elkton-Louisville	PA-1	CW	9100	
* Baggage-Railway Post Office (125) Rich.-Chicago	Baggage-RPO	CLE	100	
RPO	RPO	CW	172	
(25) Rich.-Louisville			175	
Baggage/Coach (25) Rich.-Louisville	Coach	CW	452	
Coach (25) Rich.-Louisville	Dome	CW	600	
* Coach (125) Rich.-Chicago	Coach	CLE	457	
* Coach (125) Rich.-Chicago	Coach	CLE	455	
* Diner (125) Rich.-Chicago	Hvywght. diner	CLE	<i>No Name</i> (actual name)	
* Sleeper (125) Rich.-Chicago	10-roomette, 6-double bdrm.	CLE	<i>Mary Rose</i>	
* Sleeper (125) Rich.-Springs	10-6	CLE	<i>Andrea Doria</i>	
* Sleeper (25) Rich.-Louisville	24 roomette	CW	<i>R. E. Foley</i>	
* Sleeper (25) Rich.-Col. via Charleston	10-6	CW	<i>White Pine</i>	

* - dropped en route

@ - added en route; don't include in set-up train