

# PENNYRAIL

July 2008

VOLUME 12 NUMBER 7



## Chapter Chatter

**Next Meeting**  
**Monday, July 28**  
**7:00 pm**

**The Center**  
**(Former L&N Depot)**  
**Madisonville, KY**

**Program by Greg Utley**  
**"Illinois Central**  
**Steam Finale"**

**Video covers steam and diesel on the**  
**Kentucky Division during the late 50's**  
**PLUS the 1992 Excursion of**  
**Nickel Plate 765.**

**Crofton Picnic!**

**Saturday,**  
**October 4, 2008**



Western Kentucky  
Chapter, NRHS, Inc.

111 Reed Place  
Madisonville, KY 42431

\* \* \* \* \*

President  
Rich Hane

Vice President  
Rick Bivins

Sect. Treas.  
Wally Watts

National Director  
Wallace Henderson

Director at Large  
Bill Thomas

"PENNYRAIL" is the  
official publication of  
the Western Kentucky  
Chapter, NRHS.  
Send news notes,  
historical notes and  
other rail information  
to:

Editor  
Bill Thomas

1025 Lakewood Drive  
Madisonville, KY 42431  
(270) 825-4623 Home  
(270) 339-9482 Cell  
e-mail:  
bill@fbcmadisonville.com

Special Issue

# ACELA

**An Introduction**  
**to Amtrak's**  
**Acela**  
**High-Speed**  
**Equipment**  
By Jeffrey W. Nagy

Many thanks to Ron Stubblefield and his acquaintance with Mr. Nagy, we have been granted permission to print this article in the PennyRail. Due to its scope, I will hold most of this month's submissions for the August Edition. I appreciate your understanding. -editor.

Those of you that attended the June meeting were treated to a very nice program from Wally Watts about steam to Los Angeles which was filmed in 1989 to celebrate the 50th Anniversary of the opening of Los Angeles Union Passenger Terminal in 1939. Bill Thomas and his son provided the refreshments which were well received.

I was looking over the most recent bulletin from the Kentucky Railway Museum, The Station Lamp, and was quite impressed with the scope of these activities and the many projects that they have going. Several new passenger cars, formerly L&N might be coming along with the last surviving General Electric L&N U25B on loan and a GE 44 ton engine in B&O paint which worked at a former military arsenal in Ohio and was obtained as government surplus. The Kentucky Railway Museum does a great job in preserving history, having great train rides, and the museum exhibits are very informative. They even have operating layouts. Those of us that are members even get free train rides and admittance to the museum. Individual and family memberships are available at very reasonable rates and they can be reached at 800-272-0152 or their website at [www.kyrail.org](http://www.kyrail.org).

Bob McCracken is out of the hospital and recuperating quite well he tells me. We hope to see him at the meeting on Monday along with everyone's smiling face to enjoy what should be great program hosted by Greg Utley.

### Historical Perspective

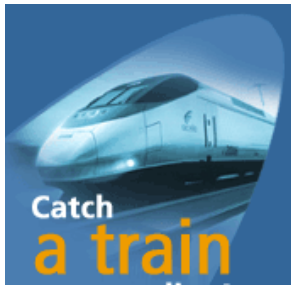
*"The time will come when people will travel in stages moved by steam engines from one city to another, almost as fast as birds can fly, 15 or 20 miles an hour.... will start from Washington in the morning, the passengers will breakfast at Baltimore, dine at Philadelphia, and sup in New York the same day...."* -Oliver Evans – 1800

This was the prediction of Delaware mechanical engineer, inventor, and steam engine pioneer Oliver Evans in 1800, twenty-seven years before the charter of the first railroad in the United States, the Baltimore & Ohio Railroad, and 135 years before the inaugural run of the famous GG1 powered passenger trains between Washington Union Station and New York Penn Station.

From 1800, fast forward 208 years to today and imagine riding a rolling WAN/LAN\* approximately 670 feet long, weighing 610 tons, running at speeds up to 150 miles an hour, in all kinds of weather, 24 hours a day, 365 days a year. What I've just described to you is an Acela high-speed trainset, utilizing technology inconceivable to even a visionary like Oliver Evans.

For over one hundred years, increased speed, passenger comfort, and reliability have been the goals of all the companies who have operated in the Northeast Corridor. It can be said that real "world class" service began in the corridor on January 16, 1969, when Metroliner service began making the run from New York to Washington at 120 mph. When Amtrak assumed operations on May 1, 1971 this service continued and by 1991, due to infrastructure improvements under the 4-R Act, speeds between New York and Washington were up to 125 mph. In contrast, the average speed between New York and Boston was a paltry 49 mph, due mostly to non-electrification and track speed. This decrease in speed meant increased travel time, which directly accounted for the disparity between these two legs of the corridor in the amount of passengers carried. In 1991, 41% of all non-highway travelers between Washington and New York used Amtrak. For intermediate destinations such as Trenton, Philadelphia, and Baltimore, the figure was closer to 70%. In contrast, ridership for non-highway travelers between New York and Boston was only 11%.

In the years leading up to the 1990's, Amtrak saw the need to increase its market share of the Northeast Corridor. Through funding of the 4-R act (Railroad Revitalization and Regulatory Reform Act) initiated in 1976 (and subsequent Amtrak improvement acts), and continuing through the 1980's, Amtrak spent considerable amounts of time and money upgrading track and roadbed to accommodate higher speeds and increase passenger safety and comfort, which lead directly to the consideration of acquiring new high-speed equipment for the corridor. In 1993, to test the waters, the American public had its first taste of what Europeans had enjoyed for many years when Amtrak brought the ICE train from Germany and the X2000 from Sweden for exhibition runs in the Northeast Corridor. Passenger response was positive for both trains. During the first four months of 1994 plans moved ahead for development of specifications for new equipment, a North American version of a high-speed trainset, initially named the



Last month I informed you that Angela and I would be traveling to New Orleans via The City of New Orleans. I'm here to report that we had an excellent experience aboard one of Amtrak's finest.

Our trip began at Carbondale, IL, 1:25 AM. The college town bar across the street from the station was still going strong, but my attention was on getting set for my first real passenger train trip at the age of 45. Our train arrived just a few minutes early. Angela, myself and a dozen others hopped on. I believe we were the only "sleepers" boarding. Our attendant helped us up the stair where she had our beds ready.

Needless to say, I slept very little. My face was pressed to the window glass all the way... at least through Wickliffe, KY. I was still awake when we were on the approaches to the Ohio River Bridge. Soon after Wickliffe, I slept until the stop at Fulton, KY. Amazing what you can see at night.

My wife has taught me to limit the details of my stories so I'll highlight from this point. I awoke to the sunrise at Memphis where we had run around the city, then backed into the main to pick up passengers at a large grade crossing. This all due to the sink hole, at Memphis station. Breakfast (3-egg omelet) and all the other meals were fantastic. I highly recommend the flat iron steak for dinner (on return trip). Somewhere in north Mississippi we lost an air hose, but the crew had us going in 20 minutes.

We arrived at New Orleans Union Station just a few minutes behind schedule - but who cares! Friends, also attending the same conference, picked us up at the 1954 structure, and returned us there three days later for our trip home.

Our Amtrak experience was very positive. What a relaxed way to travel! We spent a little time in the diner after dinner, conversing with other folks on the train. The staff was friendly, professional, and courteous. Except for a few seats in the three coach cars, the train was full - a good sign. My hat is also off to CN's track personnel (100s of them) who were out keeping things smooth. Even Angela said, "I'd do it again."

"American Flyer."

In May 1994 the Federal Railroad Administration (FRA) expressed concern over the safety of the proposed equipment and the impact that higher speeds would have on the corridor overall. In response, Amtrak commissioned a risk assessment, with participation of the FRA, which concluded that higher speed was not the major safety issue, but that the expected increase of commuter and freight services on the corridor was. It was also concluded that the investment Amtrak had already made in upgrades to signaling was the mitigating reason in this conclusion. Additionally, in an Amtrak/FRA combined effort, a comprehensive passenger safety investigation was carried out, ensuring that state-of-art safety technology was being incorporated into the trainset design, including: 1) *Crash energy management for energy dissipation*; 2) *Modified structural strength*; 3) *On Board diagnostics and monitoring*; 4) *Increased window glazing strength and bullet impact absorption (CFR49, Part 238.421, (C) (3) (i), specifies that an exterior window must withstand the impact of a 9mm projectile, moving at a speed of 900 Fps, without penetration or spall)*; 5) *Braking systems*; 6) *Strength of seat attachment points*. These and other safety considerations make the trainset as safe (or safer) than any existing trainsets operating in Europe today.

In December 1995, Amtrak signed a \$321 million dollar contract with two large electrical contractors in the northeast for the design and building of an electrification system (catenary) between New Haven, Connecticut, and Boston, Massachusetts, kicking-off the Northeast Corridor High Speed Rail Program. Along with the catenary, bridges, inter-lockings, and signaling systems were upgraded. Four years, 25 power stations, 1,550 miles of wire, and 12,200 catenary poles later, all -electric service \*\* from Washington to Boston was a reality. On January 31, 2000 Acela Regional service was launched. Overall, nearly 3 billion dollars in improvements addressed the low track speed and translated into an increase in passenger percentages.

May 1, 1996, saw the awarding and signing of a contract between Amtrak and the consortium (consisting of Bombardier and Alstom) for the construction and delivery of 12 high-speed trainsets (with an option for another 6 sets, later increased to 8 sets) in addition to the building of three new facilities, one each, in Queens, New York, Boston, Massachusetts, and Washington, DC. That same month a notice-to-proceed was issued

(Continued on page 4)

for construction to begin on the Washington, New York, and Boston Facilities.

In September 1996 a notice-to-proceed was issued for the management services contract and in September 1998 the Northeast Corridor Maintenance Services Company, LLC (NEC/MSC) was formed by the consortium to oversee the repair and maintenance of the equipment, coupled with warranty and service guarantees. At the time it was felt that, through this arrangement, the consortium would pay even closer than usual attention to the repair and maintenance of the equipment and the integration of the equipment with each facility. Amtrak's trained and qualified mechanical personnel\*\*\* formed the main work force. Amtrak's management role would be one of oversight of the contract. In October 2006 Amtrak formally took over management of maintenance and oversight of the mechanical training program from the consortium.



First HSR Class conducted entirely by Amtrak - August, 2006 - Washington, DC. - Ivy City Maintenance Facility

Two prototype trainsets were delivered for extensive testing: 1) October 1998 - To the NTSB test center in Pueblo, Colorado; 2) March 1999 - To Penn Coach Yard, Philadelphia for testing under actual road conditions along the corridor.

During these tests wheel problems and other mechanical difficulties were encountered, which delayed the introduction of scheduled service in the corridor for about a year. Other service interruptions and delays occurred due to mechanical problems, concerns over components, and other design concerns

By December 6, 2000 the first two trainsets had been delivered: 1) Trainset #5 - Accepted on October 17, 2000; 2) Trainset #6 - Accepted on December 6, 2000

December 11, 2000, saw the beginning of revenue service, with the balance of trainsets delivered as they were finished in the factory and commissioned, making a total of 20 trainsets. The last trainset, trainset #4, was accepted for service in June 2004.

**Equipment Overview**

The equipment design incorporates some characteristics and technology found in other countries trainsets, such as the X2000 (Sweden), ICE (Germany), LRC (Canada), with the bulk of the design as a hybrid of the TGV (France). It is built to structural standards that exceed standard passenger rail specifications. The design incorporates crash energy components, strategically located throughout the trainset (such as in the nose of the trainset) to help dissipate the energy generated during an accident, increasing customer and crew safety. These new standards and technologies meant that a commitment from the carrier (Amtrak) and the consortium to provide continuing up-to-date training would now be necessary. It is a process that started with the development of the training material and curriculum in 1998, continuing into the first

(Continued on page 5)

## Links of Interest

**National Railway Historical Society**

[www.nrhs.com](http://www.nrhs.com)

**Railway Preservation News**

[www.rypn.org/](http://www.rypn.org/)

**Kentucky Railway Museum**

[www.kyrail.org/](http://www.kyrail.org/)

**Indiana Railway Museum and French Lick Scenic Railway**

[www.indianarailwaymuseum.org](http://www.indianarailwaymuseum.org)

/

**Indiana Transportation Museum**

[www.itm.org/](http://www.itm.org/)

**Illinois Railway Museum**

[www.irm.org/](http://www.irm.org/)

**Tennessee Central Railway Museum**

[www.tcry.org/](http://www.tcry.org/)

**PENNYRAIL™** is your publication. If you have photographs or other material of current or historical interest that you would like to share with Chapter members, your editor would appreciate hearing from you. Your material will receive the best of care while being readied for publication. Your help is appreciated. *Bill Thomas, editor*  
[bill@fbcmadisonville.com](mailto:bill@fbcmadisonville.com)

**SUBSCRIPTION RATES**  
**PENNYRAIL**

11 issues  
**\$12 PER YEAR**

AS RAILFANS WE ARE OFTEN AT TRACKSIDE AND IN POSITION TO OBSERVE EMERGENCY CONDITIONS THAT COULD AFFECT RAILROAD SAFETY OR SECURITY. KEEP THESE NUMBERS HANDY TO REPORT INCIDENTS.

BNSF	800-832-5452
CN/IC	800-465-9239
CSX	800-232-0144
NS	800-453-2530
UP	888-877-7267
Amtrak	800-331-0008

# ACELA

Amtrak's new Acela Express  
**Faster is better**  
 Amtrak will begin its high-speed train service Dec. 11. The trains will reach 150 mph, cutting travel time. Here is a look at the new service.

**Conventional coaches**  
 As a train takes a curve, the lateral force causes it to lean to one side and the train must slow down.

**Lateral force**

**Acela's advantage**  
 A computer on board reads the track's curves. Its bottom "truck" responds by rocking from side to side, resulting in one side of the train tilting up, alleviating much of the lateral force. This allows the train to hold its speed around curves.

**Truck**

Rating the ride	Washington to New York		New York to Boston	
	Hours : minutes	Ticket price	Hours : minutes	Ticket price
Current Amtrak	2:59	\$122	4:07	\$57
Acela Express	2:28 non-stop	\$149	3:23	\$120
Dellia/USAirways shuttle	1:05	\$202.50 / \$63.50*	1:15	\$202.50 / \$63.50*

\* Three-day advance-purchase weekend travel. All other prices are walk-up, one-way.

(AP, GRAPHIC)

training class that commenced on August 2, 1999 (a class comprised of ARASA Foremen and IBEW electricians from Boston, New York, and Washington, DC) and is a process that continues now to this day.

On a typical Acela high speed trainset (2 powercars, 6 coaches) each car's systems are monitored and controlled over a LonWorks® based network platform. LonWorks is a commonly used platform for controlling, monitoring, and diagnosing a wide variety of systems and can be found in applications world-wide; from commercial buildings, private homes, and a variety of transportation modes, to data collection and monitoring of millions of homes for energy consumption studies. Each system on each car (tilting, brakes, etc) comprises a node. Each node sends and receives information requests via LonWorks. Each node connects to the Car Monitoring Unit (CMU), where the information is processed and translated into an inter-car protocol. The CMU then sends this data over the Bombardier inter-car communication network that connects all the trainset CMU's. Information is then processed by the other CMU's and distributed throughout the car to the appropriate nodes or for display on monitors located in the head-end of the locomotive. In the unlikely event of a complete collapse of the network(s), the fail-

safe design of the system will still allow operation of the trainset in a safe condition.

The powercar propulsion is an AC system with water cooled GTO's and asynchronous inverter drive. Each trainset runs in a push-pull configuration, with the trailing powercar pushing, while the lead powercar pulls, in a coordinated utilization of the over 12,000 HP generated in aggregate by the powercars. The voltage on the catenary is harnessed and distributed for not only propulsion but also the delivery of 480 volt, 3 phase power to each powercar and coach in the trainset, where it is further broken down in voltages needed by the various systems, ranging from 208 Vac to 5 Vdc. Electrical power is also used to supply the charging voltages for the 50 NiCad batteries found on each coach and powercar, which provide emergency back-up power.

Braking of the trainset is accomplished through an electric/pneumatic system and controlled by the Brake Control Unit or BCC in each coach and powercar, from a minimum application to emergency braking. Under normal operating conditions braking is initiated by use of an electrical impulse sent to each braking computer on each coach and powercar. This results in a much faster (and safer) brake application since the braking signal moves over the network at nearly the speed of light. This system, too, falls back to a "fail-safe" mode if the overlying electro-control fails, operating in a strictly pneumatic mode. In this situation the brakes are still 100% functional and safe, although for obvious reasons they will not respond as fast to brake commands.

The wheels and associated parts make-up what is known as a "truck assembly" and are monitored by the "Integrated Truck Surveillance System." This system is comprised of: 1) Integrated Truck Surveillance Unit or ITSU for short – The central controller for monitoring in each car and powercar; 2) Truck Hunting Accelerometers (one per truck) – Truck instability is monitored by measuring the lateral acceleration of each truck; 3) Hot Bearing Sensors (4 per truck) – Monitored through the ITSU, detects abnormal bearing temperature (212 degrees); 4) Air Bag Pressure Monitoring Function – Monitors bag pressure for failure and for over-inflation.

In each of these systems, when a problem is detected, the appropriate ITSU light is turned on and

(Continued on page 6)

## June 2008 Minutes Summary

## ACELA

### Western Kentucky Chapter, NRHS

The Center (Former L&N Depot),  
Madisonville, KY

#### May Treasurer's Report:

Beginning Balance	\$2,066.98
<b>Income</b>	
Nat. Dues	\$00.00
Ch. Dues	\$00.00
Donations	\$00.00
Raffle	\$00.00
Video	\$00.00
Other	\$00.00
TOTAL	\$00.00
Adjusted Balance	\$2,066.98
<b>Expenses</b>	
Nat. Dues	\$00.00
Postage	\$16.80
Printing	\$49.93
Video	\$00.00
Supplies	\$00.00
Other	\$00.00
TOTAL	\$66.73
Ending Balance	\$2,000.25

#### MEMBERSHIP Total - 63

**DIRECTORS REPORT:** No report - Wallace out of town.

**OLD BUSINESS:** No old business.

**NEW BUSINESS:** No new business.

**SHOW AND TELL:** Dave Millen brought a C&EI cream pitcher from a dining car that was involved in a wreck at Guthrie in 1957. Several were killed. His father was engineer on one of the locomotives involved.

**ACTIVITIES:** All is a go for the October 4 meeting/picnic at Crofton, KY. The October 11, Fall Excursion on the Nashville & Eastern is shaping up nicely as well. Wally noted the annual Adams, TN Steam show, July 18-19, at which there will be many exhibits of steam traction engines and antique tractors, etc. Wally plans to have many of his miniature engines there, joined by Steve and Matt Gentry.

**OTHER:** Our next meeting is Monday, July 28, 7 pm, at The Center, with Greg Utley bringing the program. At this writing, refreshments are open. Hopefully some one will come forth. If not, a fast in order.

**ATTENDANCE:** Wally Watts, Rich Hane, Steve Miller, Chuck Hinrichs, Greg Utley, Dennis Carnal, Keith Kittinger, D.A. Fraser, Dave Millen, Bill Heaton, Bill Thomas, Tim Moore.



the “On Board Failure” trainline is energized, which in turn generates an Onboard Failure alarm indication in the operating cab. The engineer/crew then follows established practice, acknowledging the alarm and following Amtrak procedures.

Many of the systems in the network are inter-locked, where a failure in one system may affect another. One example of this is the door control and signaling system. The coach exterior side doors are electrically controlled and pneumatically operated, being operated and monitored within the train control and operating system. If an “All Doors Closed and Locked” signal is not sent across the network, by all cars, the powercars will not apply traction effort. With special instruction, permission can be given to override this safety feature through the use of a sealed bypass switch located in the operating cab. In almost all circumstances, this feature is not used. Rather, the malfunctioning door(s) are identified, located, and isolated, leaving this safety feature active.

The Acela equipment also employs independent safety critical systems, consisting of, but not limited to: 1) *Cab Signal and ATC (Automatic Train Control)* – A nine aspect, two frequency, in-cab system, which replicates the wayside signals. Each aspect corresponds to a speed limit. When a signal to slow is received, the engineer must decelerate at or above a given brake rate or the ATC system cuts propulsion power and forces the brakes into a penalty application. To recover from this application and release the brakes, the engineer must first acknowledge the penalty. These actions and the circumstances leading up to them are all digitally recorded by the railroad version of a “black box,” referred to as the event recorder. 2) *ACSES (Advanced Civil Speed Enforcement System)* – Limits the speed of the trainset through the use of trackside transponders and also is the factor that allows the trainset travel at speeds between 135 and 150 mph in certain sections of the Northeast corridor north of New Haven, Connecticut. 3) *Fire Detection/Suppression* – In the event a fire breaks out in the powercar Auxiliary or Central power-blocks, both an audio and visual alarm is given in the operating cab, via the POD and MFD1. Additionally, an “On Board Failure” light is also activated on the overhead console. The engineer then has two minutes to confirm that the fire does or does not exist. If it does not exist, he can acknowledge the alarm and deactivate the fire suppression system. If no action is taken within the two minute delay, the main circuit breaker opens, propulsion shuts down, and automatic extinguishing begins by the application of FE-13 extinguishing agent.

Among the non-safety critical systems monitored are bathroom waste tank and potable water levels, galley equipment in both the café car and first class coach (for refrigerator, freezer, and chiller temperatures) and the heating and cooling inside the coaches as well as the freeze protection circuits for the watering system.

All of the systems we have covered can be displayed in either powercar, via the monitor on the assistant engineer's side of the cab, or can be seen in the café car, through the use of a monitor in the conductor's office. Most of the on-board systems can also be individually accessed at special ports on each car through the use of a laptop, commonly referred to as a PTE (Portable Test Equipment). Using a PTE loaded with special diagnostic software, a technician can not only watch a system on the trainset in real-time, he can also check a log of events and faults for the system; a feature that greatly assists a technician during the troubleshooting process and helps identify failure trends.

**Conclusion**

Since the first trainset went into service, both Amtrak managers and maintenance personnel (along with consortium employees) have been in a learning curve when it comes to repairing and maintaining the equipment. The trainsets have undergone hundreds of modifications since introduction in 2000; some great, as in suspension modification of dampers and other suspension related hardware, to software changes for signaling, braking, and propulsion. Other changes have been very minor, such as the replacement of plastic striker plates on luggage racks with metal ones. These changes performed by both Alstom and Bombardier have, to date, consumed over 50,000 man hours to perform.

In spite of difficulties and some well publicized setbacks, the trainsets keep running and Amtrak has seen a steady increase in ridership as the trainsets gain in popularity with the public. To date, the Acela High-Speed Service accounts for over 25% of

*(Continued on page 8)*

- 8) In its original form, how long was the Cairo Bridge, including the approach trestles on both sides of the river?  
1 mile 2.5 miles 3.875 miles 4.5 miles
- 9) What year did the IC gain one-third ownership of the Paducah & Illinois Railroad bridge at Metropolis, Illinois?  
1918 1922 1927 1928
- 10) When did the IC buy its last steam locomotive?  
1929 1944 1951 1937
- 11) IC built the Cairo bridge:  
True False
- 12) The Edgewood Cutoff is how long:  
85 miles 95 miles 169 miles 312 miles
- 13) The Land O' Corn passenger train ran between which cities?  
Rockford, IL, and Chicago Waterloo, IA, and Chicago  
Sioux City, IA and Dubuque, IA  
Dubuque, IA, and Chicago
- 14) How many 2-10-2s did the IC own?  
125 132 137 154
- 15) Approximately how many bricks were used during construction of the Paducah shops?  
2.5 million 4.5 million 6.5 million 8.5 million

**BONUS:** How much did it cost to build the Cairo bridge back in the 1880s?

- \$1.6 million \$2.6 million \$3.6 million  
\$4.6 million

**Double Bonus:** How much did it cost to rebuild the Cairo bridge in the early 1950s, and how much of that cost was paid by the GM&O (which used the bridge)?

- Rebuilding cost approximately \$2 million,  
GM&O paid \$0
- Rebuilding cost approximately \$4 million,  
GM&O paid about \$1 million
- Rebuilding cost approximately \$6.3 million,  
GM&O paid \$1
- Rebuilding cost approximately \$6.3 million,  
GM&O paid about \$822,000

Amtrak's overall annual revenue.

The employees, Amtrak and consortium, who maintain and repair the equipment in all three locations have proven themselves a capable and dedicated workforce. It's through their combined effort and commitment that passengers can safely and comfortably "breakfast in Baltimore", "dine in Philadelphia", or "sup in New York" while riding comfortably in a rolling network that's unique in North America.

**Notes**

- \* WAN/LAN – Wide Area Network / Local Area Network
- \*\* Electrification had been proposed in 1912. The New York to New Haven section was electrified in 1914. The Washington to New York section, a WPA project, was completed in 1934.
- \*\*\* High Speed Rail mechanical personnel are required by CFR238 to be tested (written and hands-on) every three years to maintain their qualifications. They are referred to as "QMP" or Qualified Maintenance Personnel.

**Reference Material**

- 1.) Echelon Corporation - <http://www.echelon.com/solutions/transportation/appstories/Acela.htm>.
- 2.) Robert H. Thurston, A History of the Growth of the Steam-Engine, New York, 1878. 490 pages, 147 illustrations and 15 portraits. (Illustrated portrait of Oliver Evans)
- 3.) <http://www.sehsr.org>, Southeast High Speed Rail Corridor Initiative: Twenty Years of High Speed Rail, Chap. 5
- 4.) Julie R. Green, 1997 Car and Locomotive Cyclopedia, Amtrak's High-Speed Trainset Program, 1997, Simmons/Boardman Publishing
- 5.) Bombardier, High-Speed Trainset Operating Instruction Manual, 2001, Bombardier, Inc.
- 6.) Janice D'Arcy, Acela: Lessons Learned Too Late, Hartford Courant, September, 2003 – <http://apps.nrpc>
- 7.) <http://www.soulofamerica.com>, America's Only High Speed Rail Line Shows Promise, 2005
- 8.) Amtrak Ink, March 2000
- 9.) Amtrak Ink, November 2000
- 10.) Amtrak Ink, January 2001
- 11.) Amtrak, Robert Costello, Director High Speed Rail – Equipment Maintenance, March 30, 2005 – Oral Interview
- 12.) Amtrak, Gerald Wengert, Field Engineer – Locomotives, March 30, 2005 – Oral Interview
- 13.) Congressional Budget Office, The Past and Future of U.S. Passenger Service, Chapter 2, Sept. 2003
- 14.) Connecticut Department of Transportation, The Connecticut Department of Transportation and Changing Times, 1969-1982, Chapter 8, ct.gov
- 15.) <http://www.fra.dot.gov/us/content/643>, Federal Railroad Administration, The Northeast Corridor

**TIMETABLE #110**

FOR THE GOVERNMENT OF RAILFANS ONLY

-**IC Historical Society 2008 Convention** - August 22-24, Paducah, KY, <http://www.icrrhistorical.org/>.

-**L&N Historical Society 2008 Convention** - September 18-20, Vonore, TN (near Etowah). Copper Hill trip.

-**SummerRail** at Cincinnati Union Terminal, Saturday, August 9, 2008

-**Crofton Picnic**, Saturday, October 4, Crofton, KY, lunch time

-**Tennessee Central Excursion**, Saturday, October 11

**Buy, Sell, Swap!**

- **Rick Andrews** has an assortment of nice HO Scale equipment for sale.

(270) 841-7140

- **Two Illinois Central Passenger Cars**—MTH O Scale, 3-Rail wheels and couplers. Contact Bill Thomas, 339-9482

**VISIT THE CHAPTER WEB SITE: <http://www.westkentuckynrhs.org>**

**PENNYRAIL**

% Bill Thomas, Editor  
 1025 Lakewood Drive  
 Madisonville, KY 42431