

**General Chairmen's Meeting  
Norfolk 03/04/08**

Wireless  
Event  
Recorder  
Information  
System



# TERMS

- WiLIS – Wireless Locomotive Information System.
- WERIS – Wireless Event Recorder Information System.
- LEADER – Locomotive Engineer Assist Display Event Recorder.
- Dashboard – Interface for WERIS/LEADER
- CMU – Communications Management Unit

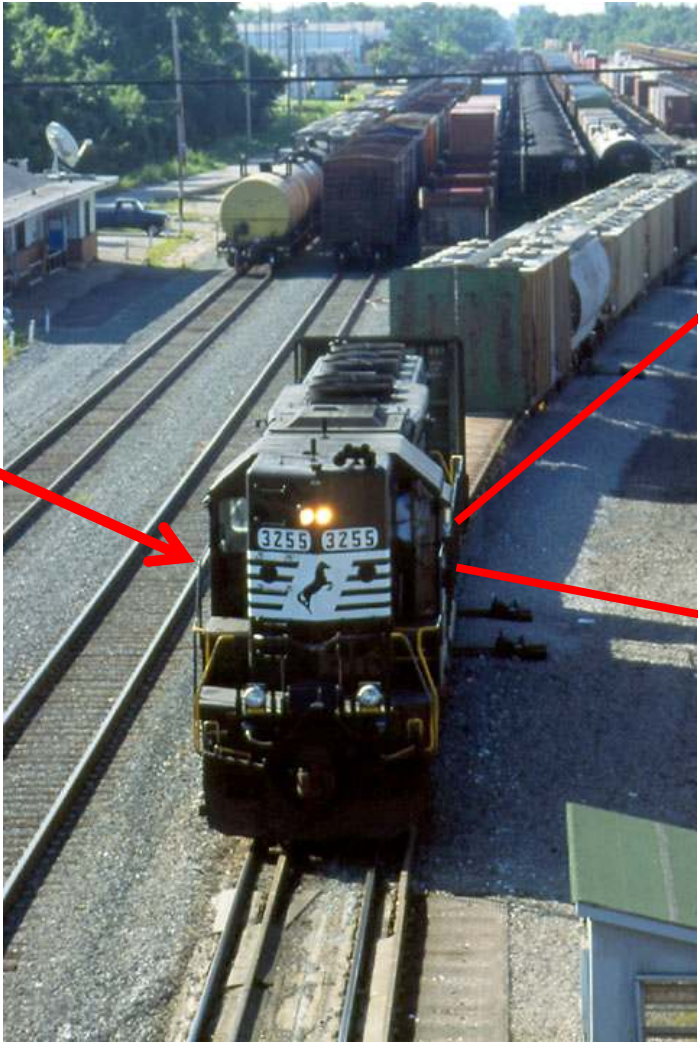


## Equipment

- 1077 active locomotives WERIS ready – 96.5% Reporting. (Quantum CMU)
- Asset Tracking Devices (Quantum switch engine locomotives) are WLIS only.
- 1616 Total Devices both WERIS/WiLIS

# WERIS

## Wireless Event Recorder Information System



**Wireless  
Access  
Point**



**Onboard Computer**



**Event Recorder**

# WERIS



- Access Points
  - Industrial Version of Home Wireless – 802.11
  - One or More at Most Terminals.
  - 62 Planned AP's
  - Range (500 ft – 2500 ft)

# WERIS



WERIS Access Points Usually at Fuel Racks



# WERIS

## Typical 802.11 Access Point Hardware



# WERIS



- How Often Does the Quantum CMU Upload Event Recorder Data?
  - Every 100 Hours
  - Any Time a File Equals 512 K
  - Dependent on How Often CMU “Sees” an Access Point



# WERIS



- How Much Data Can the Quantum CMU Retain?
  - 255 Files of 512 K
  - 512 K ~ 110 Hours
  - 1168 Days or 3.2 Years

# WERIS



- Core IT Functionality
  - Automatically Downloads Data
  - Moves Data to Central Servers
  - Associates Data with Specific Trains by District
  - Enhances with Crew Data.



# WERIS Applications

- Auto Query Function
  - Software by Quantum
  - Scans Recorder Data
  - Looks at Pre-defined Exception Lists
  - Generates “Operational Alerts”



# WERIS Applications

- Examples of “Operational Alerts”
  - Excessive Speed
  - Power Braking
  - Independent Brake Use
  - Short Time Ratings, etc.

# WERIS Applications



- Yard & Local Fleet Sizing Tool
  - Playback Software Creates Notch Duty Cycle Information- Horse Power Sizing
  - Event Recorder Data Captures Traction Motor Current Levels - GP or SD?



## WERIS Applications

- Fuel Consumption Data for Costing
  - Train ID Specific Costing Possible
  - Sums Notch Duty Time
  - Each Loco Type has Published Fuel Consumption for per Notch
  - GPS Stamp Anchors Start and Finish



# WERIS Applications

WERIS Includes a Railview “Health Check”





## WERIS

- Wireless Event Recorder Down Load:
  - Promotes Competition
  - Drives Professionalism
  - Improves Train Handling
  - Promises to Reduces Costs...





## WERIS-Reduced Costs

- Reduced Traction Motor Failures
  - Traction Motor Over Current
  - Traction Motor Plugging
- Reduced Flat Spots
- Reduced Rail Burn
- Reduced Train Separations
- Reduced Derailments



## WERIS-Reduced Costs

- Reduced Fuel Consumption
- Enhanced Locomotive Troubleshooting
- Back Up Data for Grade Crossing Accidents
- Streamlined Engineer Qualification Process/Training

## In Summary



- The Major Advantages of Wireless E.R. Download and WERIS
  - Methodical, Automatic Data Retrieval
  - “Auto Query” Quickly Scans Reams of Data and Spotlights Exceptional Events
  - Data Associated with specific trains by district.
  - Data has “GPS Stamp” Anchoring Location



## Where Are We Now?

- AP's Accepting Locomotive Data Now.
- Raw Functionality By End Of - 1<sup>st</sup> Quarter (Brio Type Queries)
- WERIS Desk Being Established – 1<sup>st</sup> Quarter
- Dashboard Functionality – 4<sup>th</sup> Quarter
- Overall 75% complete with infrastructure with testing phase to begin in October



WERIS

Questions?