Slide 1

L E A D E R

Locomotive Engineer Assist Display and Event Recorder

Coleman Lawrence
Senior Director Operations Planning and Locomotive Control
June 3, 2009

Slide 2

Investor Day LEADER Review

- What is LEADER and what can it do for Norfolk Southern
- Current NS LEADER deployment and observed results to date
- Broadening deployment of LEADER in the next six to twelve months

Slide 3

Q: What is the LEADER System?

Eliminate unnecessary braking and throttle use → Conserve Energy → Achieve Golden Run

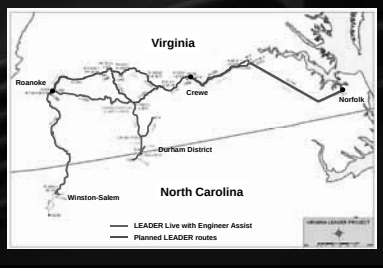
Slide 4

Railroad Benefits

- Better train handling
- Reduced emissions
- Lower in-train forces
- Enhanced reporting capability
- **Fuel Savings**

Slide 5

LEADER Snapshot (June 2009)



Slide 6

LEADER Pilot Corridor – Winston Salem District

- Began in 2004 with pilot partnership with New York Air Brake and FRA office of R&D
- Operating with engineer assist prompting since 2006
- Unit coal trains only, with pusher engines
- Most extreme operating territory on NS System

Performance To Date:

Golden Run Fuel Savings Estimate	25.1%
Average Fuel Savings (436 loaded moves, with LEADER)	17.5%

Source: NYAB Analysis Report 4/30/09

Slide 7

LEADER Pilot Corridor: Durham District

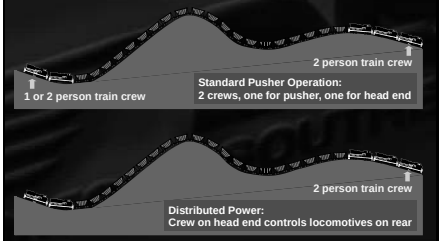
- Live with driver assist effective March 2009
- Unit coal trains only
- Less aggressive topology / operating territory than first pilot corridor
- Actual fuel savings data on loaded run not yet available

Fuel Savings Performance (loaded moves only):	Golden Run	Actual
Altavista Line (flat topology)	8.3%	xxx
Durham District	26.1%	xxx

Source: NYAB Analysis Report 4/30/09

Slide 8

What is Distributed Power?



Slide 9

LEADER with Distributed Power

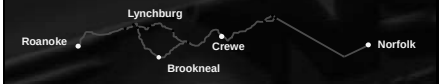
- Operated over Winston-Salem District pilot corridor
- Two (2) test trains – not in regular service
- Unit Coal train, 3 head end, 2 pushers
- Lead and controlling pusher both equipped with DP and LEADER
- In-train forces displayed by LEADER used to advise train handling
- Two brake applications made over entire run
- FRA observed test II, fulfilling grant criteria

Preliminary Fuel Savings (SB loaded move):	
Using LEADER (average over 436 runs)	17.5%
Test I (LEADER + DP)	30.9%
Test II (LEADER + DP)	28.8%

Source: NYAB analysis report 4/30/09

Slide 10

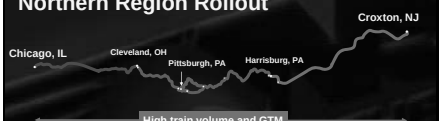
Expanded Virginia Division Lines



- Further release contingent on two primary drivers:
  - Track profile database validation
  - Engineer training at Crewe, VA
- Serves as testing ground for Northern Region expansion:
  - 500 LEADER locomotive installations
  - Three Divisions
- Further development in concert with PTC

Slide 11

Northern Region Rollout



Dearborn Division
- Rolling hill topology
- Double track mainline
- Target end 3rd Qtr. release

Pittsburgh Division
- Mountainous territory
- Three alternate routes
- 2-4 track mainline
- Target rollout end 2009

Harrisburg Division
- Rolling hill topology
- Double track mainline
- Four alternate routes
- Target rollout end 1st Qtr. 2010

Slide 12

LEADER

Locomotive Engineer Assist Display and Event Recorder

END
June 3, 2009