TITLE:

Derailment at Brentwood Yard

PRESENTATION SUMMARY:

To present to the Safety and Security Committee the pertinent information regarding the derailment occurred on April 6th at Brentwood Yard

PURPOSE:

To provide a report to the Board Safety and Security Committee on the conclusions of management’s investigation into the Brentwood Yard incident.

DESCRIPTION:

Train ID 765 was being transported to Glenmont Yard non-revenue operation when it derailed while attempting to leave Brentwood Yard. Train was being operated in Manual Mode.

Train 765 headed southbound from the Brentwood Yard storage track onto the receiving and dispatching track and cleared the B99-64 signal. After reversing ends, the train began to move northbound toward the B99-22 signal (interlock that enters mainline track 1). After making a safety stop at the road crossing, train 765 continued to move up to a location prior to the B99-22 signal where it stopped to await permission to enter mainline. After receiving permission to enter mainline, train 765 proceeded northbound out onto track 1.

Before the full consist could enter mainline, the operator received a report of smoke emanating from his train. The train was stopped and a walk-around inspection of the train was conducted that discovered the rear truck of car 4000 (fifth car back) had derailed.

At the moment that train 765 was stopped prior to the B99-22 signal, the rear truck of car 4000 (the truck that was about to derail) was sitting in the curved section of track just after the B99-64 signal. This curve has a 300-foot radius. Once the train started to move out onto mainline, the rear truck of car 4000 (lead car of last married pair) experienced a low speed wheel climb derailment. Based upon marks on the high rail and cuts in the wooden ties, it appears that both axles derailed.

Low speed wheel climb derailments are usually not the result of any single cause. Rather they are due to concurrent action of multiple casual factors.
Key Highlights:

- Train ID 765 derailed in Brentwood Yard as it was entering mainline for non-revenue transport to Glenmont Yard
- Multiple factors combined to create a condition where a low speed wheel climb derailment became increasingly likely

Background and History:

Incident occurred on April 6th at 18:47 hours.

Discussion:

Performed inspections and results:

- Profile of running rails at point of derailment
- Wheel Profiles of the Derailed truck

FUNDING IMPACT:

None

TIMELINE:

None

RECOMMENDATION:

Information Item
Derailment at Brentwood Yard

Safety and Security Committee

May 9, 2013
Incident Description

- Train ID 765 derailed in Brentwood Yard as it was entering mainline for non-revenue transport to Glenmont Yard
- Multiple factors combined to create a condition where a low speed wheel climb derailment became increasingly likely
Location of Derailment

- Location of car 4000 rear truck with lead car waiting prior to B99-22 signal.
- Trains typically stop 20-30 feet prior to a red signal.
- Path of Train to Mainline Northbound.
Performed Inspections

• Profile of running rails at point of derailment:
Performed Inspections

- Wheel Profiles of the Derailed truck:
Wheel to Rail Interface
The Nadal criterion is based on the balance of the lateral (L) and vertical (V) forces between the wheel and rail.

The Nadal criterion is only dependent on the wheel flange’s angle (δ) of contact with rail and the amount of friction (μ) between them. When actual wheel L/V ratio exceeds criterion, derailment risk is high.

\[
\frac{L}{V} = \frac{\tan(\delta) - \mu}{1 + \mu \tan(\delta)}
\]

Nadal Criterion – Balance of Forces