



Crude Oil, Ethanol Railroad Shipments Update and Safety Activity



Paul King, PhD
Deputy Director, Office of Rail Safety
Safety and Enforcement Division
California Public Utilities Commission

February 26, 2015





Presentation Overview

- Review/update on oil-train and ethanol-train accidents.
- Rich Bar derailment, November 25, 2014.
- Governor's Interagency Working Group.
- PHMSA/FRA NPRM on crude oil and ethanol train safety.
- First shipments into Plains All American facility west of Bakersfield.





Crude-oil tank car accidents

July 2013, Lac-Mégantic,
Quebec

October 2013, Gainford,
Alberta

November 2013, Aliceville,
Alabama

January 2014, Plaster Rock,
New Brunswick

April 2014, Lynchburg, Virginia

May 2014, La Salle, Colorado



December 2013, Casselton,
North Dakota





Ethanol tank-car accidents

June 2009, Cherry Valley, Illinois

February 2010, Tehachapi, California

February 2011, Arcadia, Ohio

October 2011, Tiskilwa, Illinois

July 2012, Columbus, Ohio



August 2012, near Plevna, Montana





February 4, 2015
near Dubuque, Iowa



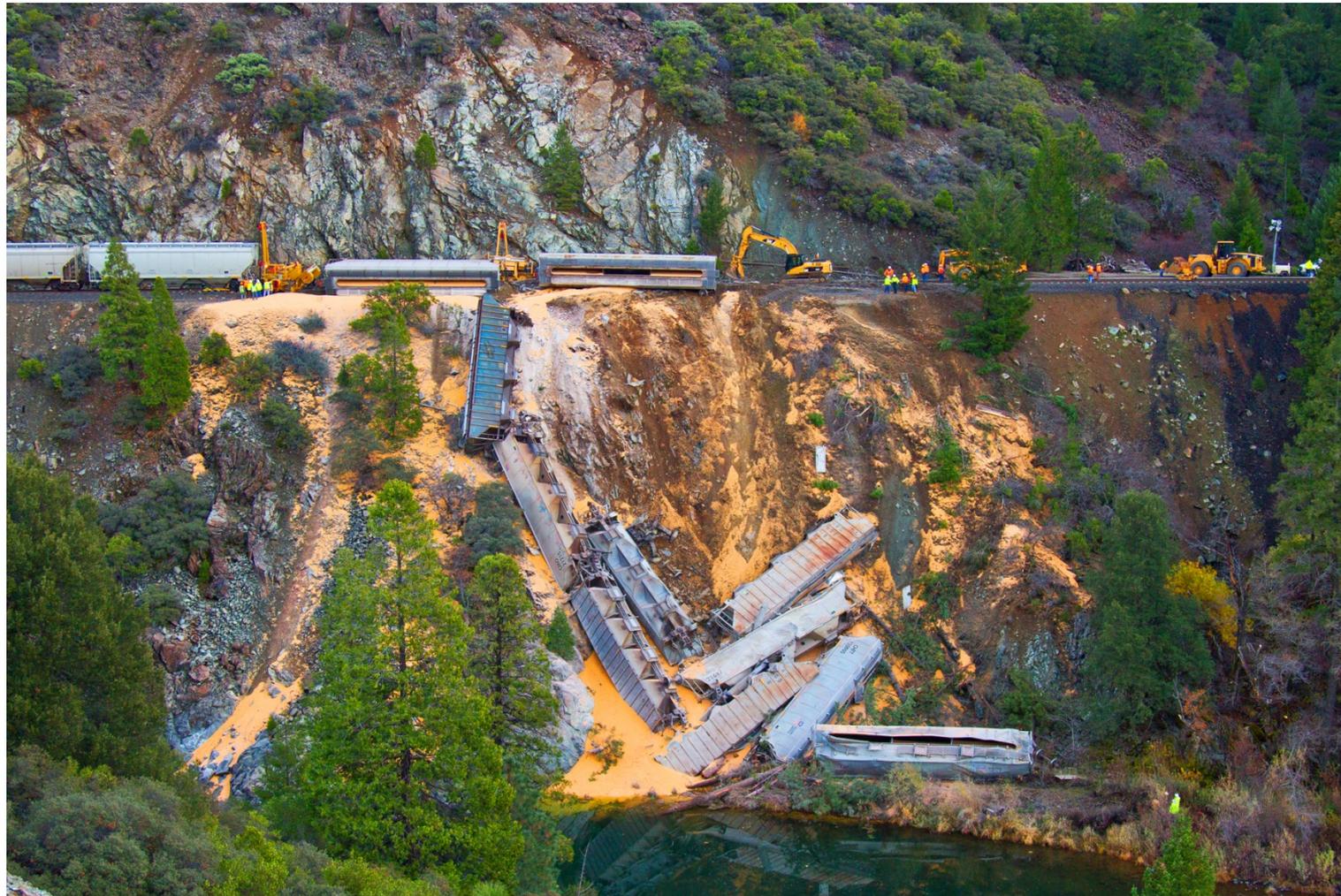
February 14, 2015
near Timmons, Ontario





February 16, 2015
Mount Carbon,
West Virginia





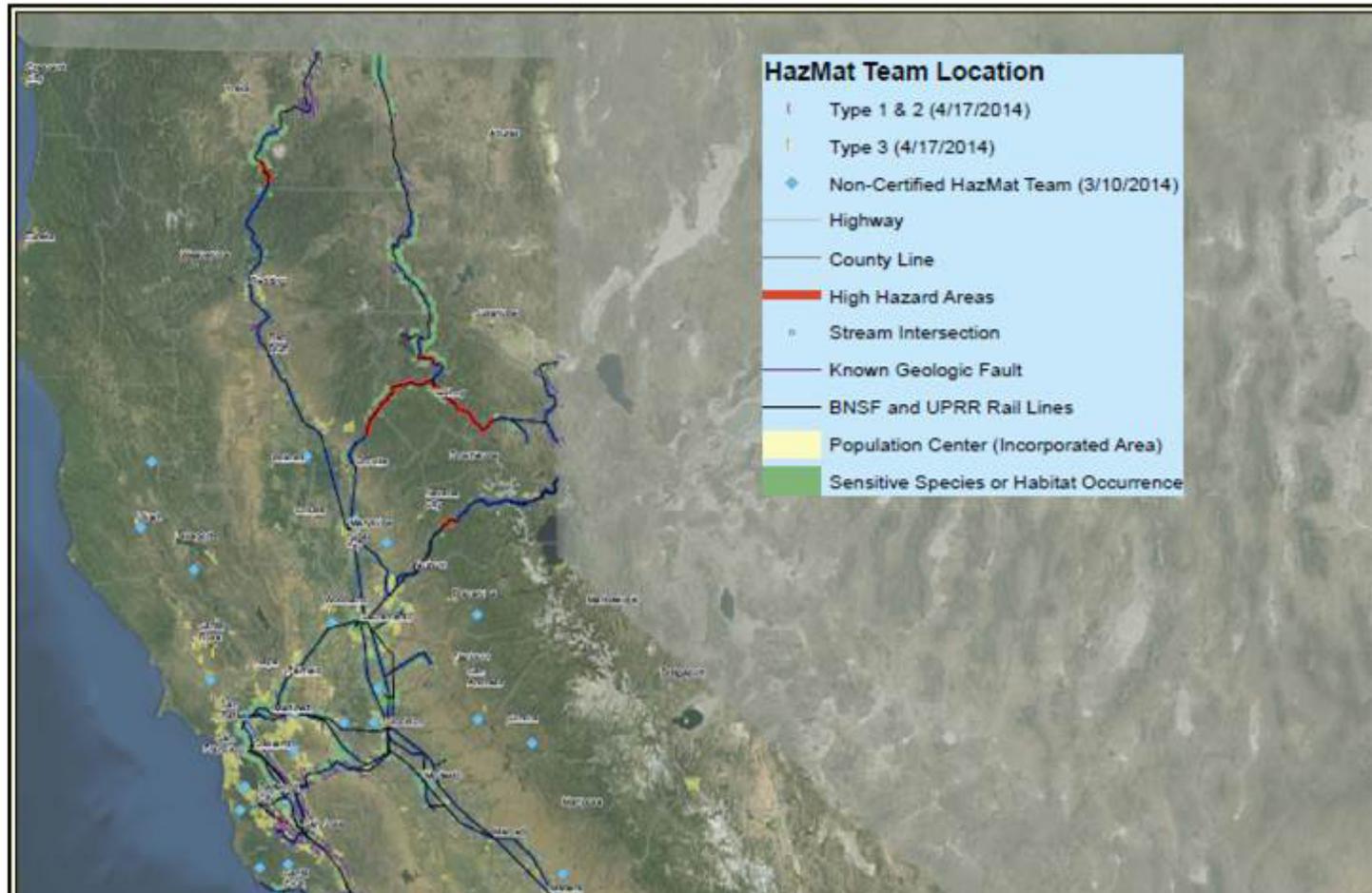
November 25, 2014
Rich Bar, Feather River Canyon





June 5, 2014
Rich Bar, Feather River Canyon





Northern California High Hazard Areas

Defined by 1) the statistical analysis of historic derailment locations, and 2) operating rule restrictions.





Southern California High Hazard Areas
Defined by 1) the statistical analysis of historic
derailment locations, and 2) operating rule restrictions.





Governor's Interagency Working Group on Oil-by-Rail

 **Oil by Rail Safety in California**
Preliminary Findings and Recommendations



A crude oil train travels across the Clear Creek Trestle in Plumas County, California and through the Feather River Canyon on June 5, 2014.

State of California
INTERAGENCY RAIL SAFETY WORKING GROUP | June 10, 2014

- To examine safety issues relating to the increased transport of crude oil by rail into California.
- To explore what actions the state can and should take.
- To enhance inter-agency communication and cooperation.
- Consists of California State agencies that might take action.
- Report issued June 10, 2014





PHMSA Notice of Proposed Rulemaking Hazardous Materials: Enhanced Tank Car Standards and Operational Controls for High-Hazard Flammable Trains

Joint CPUC – CalOES Comments Supporting Regulations for:

- Classification of mined gas and liquids.
- Risk-based rail routing.
- Notification of crude-by-rail shipments to State Emergency Response Commissions.
- Speed restrictions.
- Electronically controlled pneumatic brakes and the PHMSA-FRA designed car.
- Phase out DOT-111 cars according to the proposed schedule or sooner.





Joint CPUC – CalOES Comments: Benefits of Electronically-Controlled Pneumatic (ECP) Brakes

- Shorter stopping distances - reduced by up to 70 percent.
- Brake signal transmission rate is increased.
- Brake application rate increased.
- In a derailment, brake application stops other cars faster, reducing the potential for them to derail.
- Graduated brake release - instead of full release with and potential loss of braking air pressure.
- Constant charging of reservoirs to prevent depletion of braking air pressure and loss of brakes.
- Reduction of undesired emergency brake applications.





Comments: Benefits of ECP Brakes (cont.)

- Improved train handling.
- Reduction of excessive in-train forces and the resultant derailment forces.
- Less brake shoe and wheel wear.
- Reduced fuel consumption.
- Information on the condition of the braking system is continuously available.
- Reduction of delays on steep grades, since brake cylinder air pressure retaining valves on cars would no longer need to be set and reset.





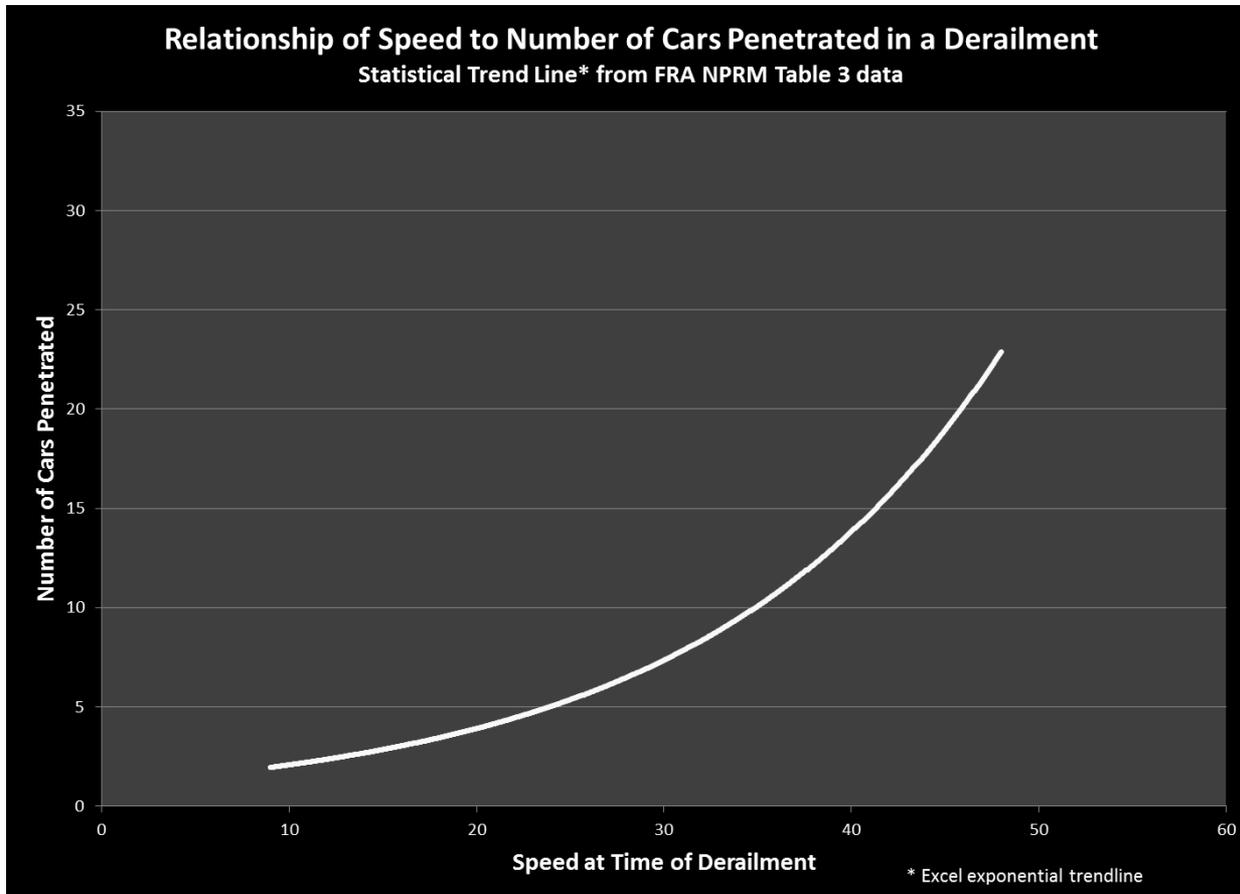
Comments: Tank car wall thickness

- “Old car,” DOT-111 wall thickness = 7/16”
- “New car,” CPC-1232 wall thickness = 7/16”
- PHMSA/FRA design car wall thickness = 9/16”
- Increase was seen as part of the remedy for LPG tank car explosions in the 70’s.
- Increase can provide protection greater than the proportional increase.





Comments: Train speed





Crude-Oil Recon Team

- Dating back to the Lac-Megantic tragedy.
- Railroad Operations and Safety Branch created a team to monitor shipments and seek new crude-oil facilities.
- Oversaw the rehabilitation of the old Buttonwillow/Sunset Branch line from Bakersfield to near Taft, now San Joaquin Valley Railroad.
- Upgrades included changing from circa 1895-1897 75-80 lb. rail to new 2013 136 lb. rail.
- Ensured compliance with CPUC regulations.
- Spent Thanksgiving Day shadowing the first crude-oil trains to the new facility.





Buttonwillow/Sunset Branch, SJVRR rail



75 lb./yard, made 1987



136 lb./yard, made 2013





Plains All-American Crude-Oil Facility, near Taft





First Shipment to Plains All-American Facility
November 27, 2015





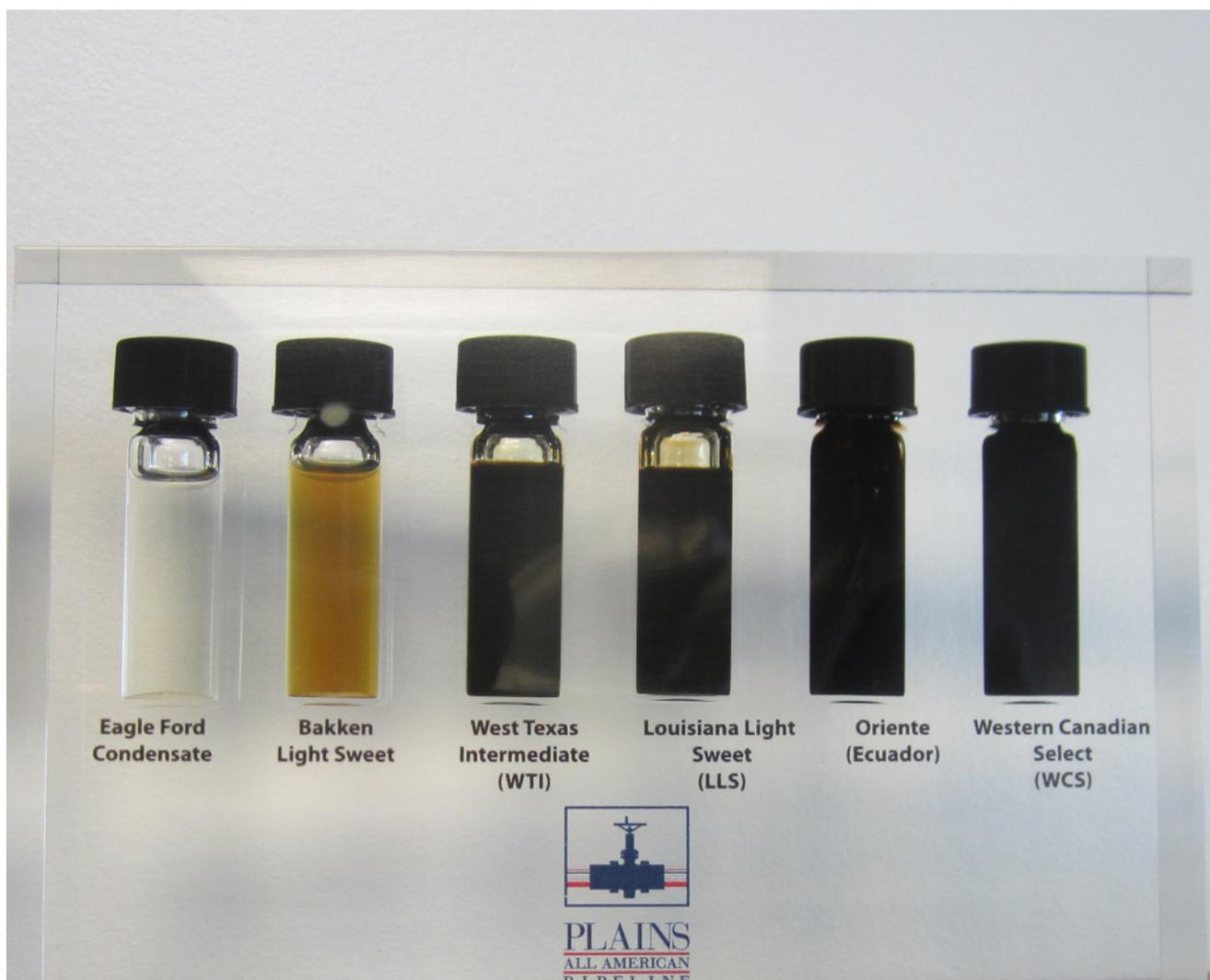
First Shipment to Plains (cont.)





Plains All-American Unloading





Eagle Ford
Condensate

Bakken
Light Sweet

West Texas
Intermediate
(WTI)

Louisiana Light
Sweet
(LLS)

Oriente
(Ecuador)

Western Canadian
Select
(WCS)



Crude oil samples





Tehachapi Loop

