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Railroad Weighing Issues

by: Steven Cook

The following is a brief summary of the American Railway Engineering and Maintenance-of-Way Association Committee 34 – Scales (AREMA Committee-34) meeting held on October 21, 2001.

Freight railroads move just about everything -- from lumber to vegetables, from coal to orange juice, from grain to automobiles, from chemicals to scrap iron -- and connect businesses with each other across the country and with markets overseas. America's Freight Railroads Carry more than 40 percent of the nation's intercity freight; 70 percent of vehicles from domestic manufacturers; 64 percent of the nation's coal, which generates 36 percent of the nation's electricity; and 40 percent of the nation's grain. Railroad freight volume in 1998 was 1.38 trillion tons. (Source: www.aar.org)

Rotary-Dump Scales: Rotary-dump scales are railroad track scales that rotate on a longitudinal axis and dump the contents of a rail car and are an option to rotary dumping mechanisms. Typical applications include coal and grain. Recently, there have been two installations of these devices that have replaced existing rotary-dump scales that were no longer suitable for repair. It was reported that there are no NTEP Certificates of Conformance for the devices. The scales they replaced were likely installed prior to the NTEP program. One state jurisdiction waved NTEP requirements but required the use NTEP load cells and indicating elements. The other was submitted to NTEP for evaluation. It appears that some rotary-dump manufactures may be selling the scale option without checking if NTEP evaluation is required.

Stored tare weights for railroad cars: This discussion was brought up relative to the NCWM L&R Agenda Item. In spite of recent transponder identification and data storage, stenciled tares are still predominately used on railroad cars and may or may not match the railroad database. Rail cars are required to “re-tare” every 5-years or after a “heavy repair” (wheels, brakes, structural). It was reported that most cars agree with the stenciled are within 200-300 lb. A smaller percentage of rail cars agree to within 500 lb. Rarely does a tare disagree more than 700 lb. Most railroad customers of higher price commodities want actual gross and tare weights instead of using the stenciled tare. Additionally, the majority of the railroad contracts are set at a fixed contract price based on the size and number of rail cars. The stenciled tares are only used for safety/overload detection. Testing and monitoring of controlled test cars indicated that rail cars lose 5 to 10 lb annually due to wheel, brake, and other wear.

Coupled-in-Motion (CIM) Test Procedures: AREMA Committee-34 is developing draft CIM test procedures that are based on NIST Handbook 44.

High-Speed, In-Motion Scales for Overload Detection: As part of the Association of American Railroads' research program, the Transportation Technology Center, Inc. is conducting tests on a system capable of measuring rail car weights at normal railroad track speeds. Static, single draft scales are accurate and suitable for commercial purposes and detect overloaded cars, but they cannot detect overloaded trucks (axles) or determine if freight has shifted front to back or right to left of the rail car during transportation. Overloaded rail cars can increase the rate of degradation of track components, and unbalanced loads may increase the risk of derailment. The system may eventually detect worn rail trucks and wheels prior to an unexpected failure.