



High-Level Radioactive Waste Committee Position Paper

Rail Route Safety: Track, Grade Crossings, Bridges, and Switches Number 2017-4

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Statement of Policy

The U.S. Department of Transportation Federal Railroad Administration (FRA) Rail Safety Program and revised Safety Compliance Oversight Plan (SCOP) should be fully implemented to help ensure the safe transport of spent nuclear fuel and high-level radioactive waste (SNF/HLW).

Background and Context

1. Though the railroads have done much to reduce the accident rate, rail accidents are not rare.

According to FRA statistics for 2013-2015, about 1,850 railroad accidents occur each year. Many cause no injuries and are cleared within one day. Some accidents involve hazardous materials and result in evacuations, injuries, and deaths.

2. Rail accidents have several causes.

Steel wheels on steel rail provide low “rolling friction” on high-quality track and enable efficient transport of very heavy loads. But the system is sensitive to curves, speed, and track geometry. Many derailments involve defects in track such as broken rails or poor track geometry, or weather conditions in combination with track deficiencies. Accidents are also caused by problems in rail equipment, like bearing failure or broken wheels, or problems in train handling, like inadequate signaling.

3. Train collisions with vehicles are common.

Operation Lifesaver, a non-profit public education program, reports that “about every three hours, a person or vehicle is hit by a train.”¹ Grade crossings of railroads and highways provide plentiful opportunities for such collisions. There are over 46,000 rail-highway crossings in twelve Western states (including Texas and Nebraska), including over 27,500

¹ Operation Lifesaver homepage, <https://oli.org/>.

rail crossings of public highways. The number of rail-highway crossings on routes directly affected by SNF/HLW transport would be much lower, but as yet is unknown.

4. The FRA Rail Safety Program is intended to reduce rail accidents and increase rail transport safety.

The Rail Safety Program involves six key “disciplines”²:

1. Operating practices;
2. Track;
3. Motive power and equipment;
4. Hazardous materials;
5. Highway-rail grade crossings; and
6. Rail infrastructure (e.g., bridges).

The rail safety program applies to the entire U.S. rail network (140,000 track miles), but available resources do not support full implementation. Generally, available resources are allocated according to train-miles, which prioritizes the Class 1 network (about 90,000 track miles), and, within the Class 1 network, the 36,000-mile STRACNET system.³

5. The Rail Safety Program has challenges with increased rail traffic.

Since the early 1980s, U.S. rail freight tonnage has increased by over 50 percent, rail ton-miles have increased by over 70 percent, and rail carloads have increased by over 125 percent. The rail safety program is challenged to keep pace with these increases.

6. States augment the rail safety system.

Under the Federal Railroad Safety Act of 1970 and the Interstate Commerce Commission Termination Act of 1995, state and local regulation of railroad activities is “preempted,”⁴ leaving the federal government almost solely responsible for asserting public interests in railroad construction, operation, and abandonment.⁵

The FRA has, however, established a “state partnership program,” under which state agencies assign appropriately-trained state personnel to work with FRA regional offices (generally using matching state-federal funds) to help implement the FRA Rail Safety Program. With the exception of Colorado and Wyoming, all Western states participate to some degree. However, only in California and Texas can participation be termed “significant.” In 2003, these states had 39 inspectors spread over five disciplines.⁶ Nine

² This policy focuses on the fuller implementation of disciplines #2, #5, and #6 on routes used for SNF/HLW transport in Western states. The implementation of disciplines #1 and #3 is addressed separately.

³ The Strategic Rail Corridor Network, or STRACNET, is an interconnected and continuous rail line network serving over 120 U.S. defense installations.

⁴ I.e., actions that would have the effect of preventing or unreasonably interfering with railroad transportation are preempted.

⁵ Exceptions include voluntary agreements entered into with the railroad, traditional police powers on railroad property (e.g., electrical and fire codes), and zoning of land for non-railroad purposes.

⁶ None in the “grade crossing and signal system” discipline.

other Western states (not including Montana) had just 31 state inspectors spread over six disciplines.

7. The FRA SCOP also augments the rail safety system.

The FRA's 1998 SCOP was developed in anticipation of Foreign Research Reactor Fuel being returned to the United States and shipped to one of two DOE sites. The SCOP adopted safety enhancements in planning, inspection, training, and oversight, and identified tasks to better ensure operational integrity, emergency response, route infrastructure integrity, highway-rail grade crossing safety, and security. The SCOP also anticipated that FRA may apply basic principles and major elements to future rail shipments involving SNF and HLW. States expect the Rail Safety Program to ensure the needs created by shipment of SNF and HLW are met.

Proposed Policy Recommendations

1. Fully implement the FRA rail safety program: disciplines #2, #5 & #6.⁷

Along any rail route affected by prospective SNF/HLW transport in any Western state, the FRA Rail Safety Program *and* the safety enhancements identified in a revised SCOP should be fully implemented.

2. Achieve and maintain FRA rail safety: disciplines #2, #5 & #6.

Five years prior to SNF/HLW shipment in the West, each affected Western state should receive financial and technical support from DOE in order to provide trained inspectors in rail safety disciplines #2, #5, and #6. These state inspectors will focus on the portions of the rail system likely to be used for SNF/HLW transport, with the purpose of bringing these portions into full compliance with the FRA rail safety program before SNF/HLW shipments begin, and to maintain compliance while shipments continue.

In Western states that do not participate in the FRA's Rail Safety Program (Colorado and Wyoming), FRA Regions VI and VIII should provide equivalent levels of inspection and compliance.

3. Require state affirmation of rail safety implementation: disciplines #2, #5, and #6.

Before SNF/HLW rail shipments begin, and annually as long as shipments continue, Western states should express confidence that the rail routes used are in compliance with rail safety disciplines #2, #5, and #6. SNF/HLW shipments should not continue if significant elements are not in place.

⁷ Rail Safety Discipline #2: Track; #5: Highway-rail grade crossings; #6: Rail infrastructure.