

**RAI NP-2.2-2:**

Provide the locations of nearby industrial, transportation, military, and nuclear installations. Describe potential hazards to the proposed WCS CISF from activities or materials at those facilities in accordance with the guidance and acceptance criteria provided in NUREG-1567, Section 2.4.2.

During the NRC staff's review, the NRC staff determined that ISP identified nearby facilities, but did not provide potential impact evaluations of these facilities on the proposed WCS CISF. Specifically, ISP identified a railroad, but did not provide details on products/materials transported by rail; the distance of the rail line from the proposed facility; or the potential impacts (if any) on the proposed facility. ISP identified Texas State Highway 176, but not the shortest distance between the highway and the proposed facility. ISP stated oil industry pipelines are located near the facility in WCS CISF SAR Section 12.2.2, but did not provide details as to what materials are transported in the pipelines; the distance of the pipelines from the proposed facility; or the impacts of the pipelines on the proposed facility. Different materials can be transported through these pipelines and these different materials can pose different potential hazards to the site.

Also, in accordance with SRP Section 15.5.2.10, ISP should analyze whether the effects of hazards near the site have been addressed as part of the WCS CISF design basis. When evaluating which external hazards should be considered in the design bases for the WCS CISF, ISP should use a screening criteria of  $10^{-6}$  annual probability of exceeding the applicable dose criteria, not  $1.0E-5$ , as stated in SAR Section 12.2.2. This criteria was established by the Commission for ISFSI's in the Private Fuel Storage proceeding (CLI-01-22) and further elucidated in CLI-05-19.

If the required impact evaluations are performed in some other section of the SAR, the NRC staff requests that these evaluations be cross referenced in SAR Section 2.2, pointing to where the evaluations are performed and conclusions are addressed for clarity. Provide a revised WCS CISF SAR Section 2.2, with details, additional analyses, and conclusions, as appropriate, by cross referencing the impact evaluations that are presented in Chapter 12, "Accidents Analysis," of the WCS CISF SAR.

This information is needed to determine compliance with 10 CFR 72.94.

**Response to RAI NP-2.2-2:**

In accordance with the guidance and acceptance criteria provided in NUREG-1567, Section 2.4.2, facilities within an 8-km (5-mile) radius and all relevant facilities at greater distances should be included in an evaluation of nearby industrial, transportation, and military facilities. In addition to the facilities mentioned in SAR Section 2.2, the section, along with Section 12.3 References, is revised to include New Mexico State Highway 18, the Texas & New Mexico Railway (TXN), a future travel stop, the Waste Control Specialists' rail spur and loop, and the natural gas pipeline that runs parallel to Texas State Highway 176. Figure 2-3 in the WCS CISF SAR is revised to include relevant facilities within an 8-km (5-mile) radius.

In addition to industrial and transportation facilities, gas and oilfield operations are common in west Texas. Regionally, the WCS CISF is located in the Permian Basin of west Texas and southeast New Mexico, which is one of the most important petroleum-producing regions in the United States, containing several thousand oil and gas wells (Dutton et al., 2005 [3]). However, significant petroleum storage is not located within 5 miles of the WCS CISF. Locally within the Waste Control Specialists' property boundaries, oil and gas activity also is very limited. There is no active oilfield activity within the WCS CISF footprint area and only one documented dry hole in the immediate area of the WCS CISF (new SAR Figure 2-36). That dry hole has been cemented to the surface and proper plugging and abandonment protocol was observed. There is no evidence of undocumented or "orphan" wells in the vicinity of the WCS CISF. If any open boreholes indicative of orphan wells are discovered during the construction process, these will be properly assessed and remediated using proper plugging and abandonment procedures in accordance with Texas Regulations. ISP joint venture member Waste Control Specialists also holds 100% of the Operating Rights for producing oil, gas, and other minerals for the area of land where the storage pads for Phase I and the future phases of the WCS CISF would be located. These rights allow ISP joint venture member Waste Control Specialists to prevent any drilling (horizontal or vertical) under WCS CISF footprint area for oil, gas, and other minerals. RAI NP-2.6-1 details why sinkholes associated with wells in the region are not likely at the WCS CISF. In SAR Figure 2-36, a 2014 survey by The Banks Group ([www.banksinfo.com](http://www.banksinfo.com)) of oil and gas wells within 1 mile of the WCS CISF shows that two dry holes were drilled and one well is no longer producing. Just outside the 1-mile radius of the WCS CISF are an additional four dry holes and two wells that are no longer producing. Based on the map of oil and gas activity around the WCS CISF, 10 out of 12 locations (83%) are dry or no longer producing, which indicates there are little economically viable oil and gas resources within 1 mile of the WCS CISF and therefore further petroleum recovery activities in this area are unlikely. As explained in SAR Section 2.6.2 and in the Probabilistic Seismic Hazard Analysis in Attachment D to SAR Chapter 2, it was determined that there is a relatively low seismic hazard at the WCS CISF even with petroleum recovery activities.

As referenced in Section 12.2.2 of the WCS CISF SAR Chapter 12, Regulatory Guide 1.91, Evaluations of Explosions Postulated to Occur at Nearby Facilities and on Transportation Routes near Nuclear Power Plants, Revision 2, was used to determine distances from nearby facilities or transportation routes beyond which any explosion that might occur is not likely to have an adverse effect on WCS CISF structures, systems, and components (SSCs) important-to-safety. The guidance in Regulatory Guide 1.91 is based on limiting the overpressure at SSCs to less than 1 psi from any explosion. The magnitude of explosions involving solid or liquid material is calculated by converting the weight of potentially explosive materials to their TNT equivalence. Per Regulatory Guide 1.91, a more detailed review of transporting explosive materials on these transportation routes would not be required beyond demonstrating that the overpressures at the WCS CISF can be shown not to exceed 1 psi for any explosion.

The nearest truck transportation routes include New Mexico Highway 18 to the west of the WCS CISF and Texas Highway 176, which is to the south of the WCS CISF. New Mexico Highway 18 is approximately 3.5 miles from the WCS CISF and Texas Highway 176 is approximately 1.5 miles (8000 feet) at the closest point to the WCS CISF.

Using the methodology of Regulatory Guide 1.91, the maximum probable hazardous solid cargo for a single highway truck is 50,000 lb, and detonation of this quantity of explosive could produce a 1 psi overpressure at a distance of approximately 1,660 ft (0.31 mile) from the detonation, which is well short of the WCS CISF.

The TXN is a railway consisting of 111 miles of track that run generally north-south between the Union Pacific lines in Monahans, Texas, and its termination in Lovington, New Mexico. This rail line, at its closest point, is approximately 4.8 miles from the west OCA boundary of the WCS CISF. The rail line typically carries oilfield commodities including drilling mud, hydrochloric acid, fracking sand, piping, and petroleum products including crude oil.

Regulatory Guide 1.91, Evaluations of Explosions Postulated to Occur at Nearby Facilities and on Transportation Routes near Nuclear Power Plants, Revision 2, was used to determine distances from nearby facilities or transportation routes beyond which any explosion that might occur is not likely to have an adverse effect on WCS CISF SSCs important-to-safety. The guidance in Regulatory Guide 1.91 is based on limiting the overpressure at SSCs to less than 1 psi from any explosion. The magnitude of explosions of solid or liquid materials is calculated by converting the weight of potentially explosive materials to their TNT equivalence.

Using the methodology of Regulatory Guide 1.91, the maximum weight of solid explosive cargo (which bounds liquid cargo) for a single box car is 132,000 lb, and detonation of this quantity of explosive (using its TNT equivalence) could produce a 1 psi overpressure at a distance of approximately 2,300 ft (0.44 mile) from the detonation. Considering for the possibility that multiple boxcars of explosive material are connected in a single train and multiple boxcars explode in the same event shows that ten completely full boxcars exploding in the same event produce 1 psi of overpressure at a distance of 5,000 feet from the detonation. This distance is much shorter than the distance to the WCS CISF. The weight of explosive material required to exceed 1 psi of overpressure at the WCS CISF makes the situation extremely unlikely under normal transportation conditions due to the configuration limitations (as the length of the train increases, each successive rail car gets further away from the WCS CISF).

The Waste Control Specialists rail spur and loop exits the Texas & New Mexico Railway near Eunice, New Mexico, as shown in updated Figure 2-3. This spur continues east until it reaches the existing Waste Control Specialists facility, where it forms a loop around the facility. The rail side track to the WCS CISF will begin by connecting to the northwest side of the existing loop and terminate by reconnecting at the north side of the loop. This rail line is completely controlled by ISP joint venture member Waste Control Specialists and limited to approved Waste Control Specialists waste shipments and transport casks. Railcars carrying contents with the potential to adversely affect the WCS CISF will not be permitted on the Waste Control Specialists rail spur and loop. Fire and explosion precautions for the WCS CISF rail side track are discussed in Section 3.3.6 of the SAR.

A natural gas pipeline owned by Energy Transfer LP (previously owned by Sid Richardson Energy Services Company) runs parallel to Texas State Highway 176 within an easement on Waste Control Specialists' property. This pipeline is approximately 7,700 feet from the WCS CISF at its closest point. An evaluation assessing the hazards to the WCS CISF due to a pipeline leak and subsequent vapor cloud explosion following the guidance of Regulatory Guide 1.91 determined that the distance between the pipeline and the WCS CISF is sufficient to preclude any adverse impacts to the facility. (Reference [4]) Reference [4] is being submitted along with this RAI response.

Directly adjacent (within 30 feet) and parallel to the Energy Transfer LP natural gas pipeline is an additional buried 14 inch diameter natural gas pipeline which is in idle status. This pipeline is also owned by Energy Transfer LP and it has been idle since before 2004. Should this pipeline be reactivated in the future, the hazard evaluation performed for the adjacent natural gas pipeline bounds this pipeline as well.

There is a 10 inch diameter buried CO<sub>2</sub> pipeline which runs along the western and southern boundary of New Mexico Section 32. This pipeline does not present a hazard to the WCS CISF based on the nature of the pipeline product and its distance from the WCS CISF, which is more than 8,000 feet at its closest point.

Love's Travel Stops & Country Stores has started construction on a travel stop in New Mexico at the southeast corner of the intersection of New Mexico Highway 18 and Texas Highway 176. The Travel Stop will store up to 40,000 gallons of diesel fuel, 28,000 gallons of gasoline, and up to 12,000 gallons of non-flammable Diesel Exhaust Fluid (DEF) in underground tanks. Emergency Response Guide 128 recommends a 0.5 mile safe distance for ignitable liquid tank fires, which is much less than the 3.5 mile distance from the Travel Stop to the closest point at the WCS CISF boundary.

The existing Waste Control Specialists facility has a number of fuel (diesel, gasoline, and propane) tanks used for fueling heavy equipment and site operations. These tanks and their potential hazards will be addressed in the response to RAI NP-12-4 [5]. Additional hazards presented by the Permian Basin Materials quarry near the CISF facility will be addressed in the response to RAI NP-12-3 [5].

SAR Section 12.2.2 has been revised, along with Section 12.3 References, to include discussion of potential risks from the Texas & New Mexico Railway and the Love's Travel Stop. In addition, the pipeline owned by Energy Transfer LP is added and identified as carrying natural gas. Evaluation of potential hazards to the WCS CISF from these sources is added to the section.

Section 2.2 of the SAR has been revised to include discussion of New Mexico State Highway 18, the TXN Railway, the Energy Transfer LP pipeline, the Love's Travel Stop, and reference to the evaluations discussed in SAR Section 12.2.2. SAR Figure 2-3 is updated to include facilities within a radius of 8-km (5-miles).

#### **References:**

1. U.S. Nuclear Regulatory Commission Regulatory Guide 1.91, "Evaluations of Explosions Postulated to Occur at Nearby Facilities and on Transportation Routes near Nuclear Power Plants," Revision 2, July 2013.
2. Emergency Response Guide 128, Emergency Response Guidebook (2016), U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.
3. Dutton et al., 2005, "Play analysis and leading-edge oil-reservoir development methods in the Permian basin: Increased recovery through advanced technologies," AAPG Bulletin, v.89, No. 5 (May 2005), pp. 553-576.
4. ISP Calculation, "Hazard Analysis of Gas Pipeline for WCS CISF," WCS01-0211, Revision 0.
5. Letter from John-Chau Nguyen (NRC) to Jeffery D. Isakson, "Interim Storage Partners LLC's License Application To Construct And Operate The Waste Control Specialists Consolidated Interim Storage Facility, Andrews County, Texas, Docket No. 72-1050 - First Request For Additional Information, Part 2," dated March 6, 2019.

**Impact:**

SAR Sections 2.2, 2.8, 12.2.2, and 12.3 and SAR Figure 2-3 have been revised, and SAR Figure 2-36 has been added as described in the response.