APPENDIX F: DATA CALL FOR THE CISF ENVIRONMENTAL REPORT - SEPTEMBER 2016

CISF Environmental Report Data Call– September 2016

This appendix is a summary of the information Tetra-Tech requested from Holtec to support preparation of the CIS Environmental Report. The questions from Tetra-Tech are in bold font and the responses from Holtec are in regular font.

1. **Provide best available description of the Holtec proposed CISF.**
   a. **Identify and describe all facilities, rail and roads, and infrastructure requirements.**

      Holtec response: The purpose of the CISF is to provide ~12,000 Holtec HI-STORM UMAX spent fuel storage facilities to store spent fuel from all PWR and BWR commercial nuclear power plants throughout the United States.

      The CISF will be a standalone spent fuel storage installation that will have rail access that ties into the existing Texas-New Mexico rail line and vehicular access via U.S. Route 180 in Hobbs, NM.

      In addition to the 12,000 HI-STORM UMAX units, the CISF site will consist of a security building, administrative building, a construction laydown area that contains an equipment storage building, and a cask receiving building where casks will be brought in and repackaged for permanent storage in the HI-STORM UMAX units.

      Note that 12,000 is a bounding value for conservatism to be used in ER development, actual application may contain less.

   b. **Include drawings depicting the facility layout.**

      Holtec response: Note actual drawing are included in the Environmental Report as Figure 3.5.4 and Figure 2.2.2 for phase 1 and the finished facility.

   c. **Describe typical construction process.**

      Holtec response:

      CISF, when completely finished, will house ~12,000 HI-STORM UMAX spent fuel storage facilities. Each phase will consist of constructing 500 units with concrete approach aprons that surround two individual 250 units HI-STORM UMAX ISFSI Pads (see layout drawings). The HI-STORM UMAX system has a total depth of approximately 22.5'. A high level detail of the construction process is illustrated below:

      - A pit must be excavated such that the extents of the facility are taken into consideration as well as the access needed to the excavation pit to support heavy construction equipment/machinery.
      - Once the excavation pit is prepared, the subsurface is compacted/proof-rolled to ensure a stable surface for the impending concrete pours.
      - After surface prep, a mud mat (or leveling slab - ~3" in thickness) is poured to ensure there is an even surface to pour the HI-STORM UMAX Facilities Support Foundation Pad (SFP).
      - After the mud mat is poured, the formwork is errected and the reinforcing steel is staged for the SFP concrete pour; followed by the actual concrete pour itself.

- Once the SFP is poured, the Cavity Enclosure Containers (CEC) are staged and leveled using designed leveling bolts.
- Upon completion of the CEC leveling process, formwork is erected to grout the CEC baseplates in place; followed by the actual grouting process itself.
- Once the CECs are staged and the baseplates are grouted, the area is prepped for the impending placement of the Self-Hardening Engineering Subgrade (SES) Layer. This layer will be made up of either Engineered Backfill, Controlled Low Strength Material (CLSM) or Lean Concrete. Typically, because this portion of the system is ~16' thick, its completion is done in lifts or layers whose thickness is determined based on an agreed upon construction schedule.
- After the SES layer reaches the appropriate elevation, the top surface is prepped for the top slab or Independent Spent Fuel Storage Installation (ISFSI) Pad. This part of the process is a little more cumbersome because of the steel reinforcement that has to be installed around all of the CEC's that have been staged.
- Once the reinforcement is placed, the concrete is poured for the ISFSI Pad and the pad is finished; this marks the completion of the HI-STORM UMAX system itself.
- For CISF, each HI-STORM UMAX ISFSI Pad will be surrounded on all four sides by an Approach Apron. The Approach Apron is an approximately ~35' wide concrete pathway that allows for the Vertical Cask Transporter (VCT) to rotate appropriately and navigate the HI-STORM UMAX CECs and download the spent fuel canisters in each CEC. These Approach Aprons match the top elevation of the HI-STORM UMAX ISFSI Pad and are typically poured in conjunction with the ISFSI Pads, with a doweled expansion joint between the adjacent pads.

d. Describe typical operations process, including the process of receiving casks and loading into CISF

Holtec response: Shipping casks will arrive via rail car, or possible heavy haul trailer. Operations will be similar for either transport system. Operations consist of:

- Initial receipt inspection of the cask by security personnel, prior to transport into the restricted area.
- Movement of the shipping cask into the cask transfer building, using either an auxiliary locomotive of truck.
- Receipt inspection of the cask by radiological personnel, which includes initial radiological surveys, examination for damage and integrity of the shipping container.
- Transfer of the cask from the shipping car/trailer to the receiving stand, using movable gantry cranes within the cask transfer building.
- Removal of the shipping impact limiters from either end of the shipping cask, using an auxiliary crane or similar method.
- Uprighting the shipping cask from a horizontal to a vertical orientation, using the vertical cask transporter and a cask pivot trunnion of the cask.
- Movement of the cask from the receiving pad to a nearby load-rated concrete pad, within the cask transfer building.
- Installation of temporary scaffolding around the shipping cask, to allow access for opening of the shipping cask.
- Removal of the shipping cask lid, and other operations on the cask in preparation for movement to the storage location.

- Removal of all temporary scaffolding and other equipment from area.
- Lifting and transport of the shipping cask, using the vertical cask transporter, from the cask transfer building to the storage pad, along the evaluated/approved transfer route.
- Alignment of the shipping cask with the storage location, and connection of mating devices with the shipping cask.
- Removal of the lower lid of the shipping cask and lowering of the cask into the storage pad, using the raising/lowering capability of the vertical cask transporter.
- Disconnection and removal of the shipping cask from the storage site.
- Installation of the lid and other necessary components on the storage pad, using the vertical cask transport.
- Return of the vertical cask transporter, with the shipping cask, to the cask transfer building.

e. Discuss security requirements for facility.

Holtec response: The security requirements can be found in 10CFR73.51, specifically in paragraph (d) – Physical protection systems, components, and procedures.

2. What will be the initial metric tons of uranium (MTUs) the facility will store? Will there be expansion plans? What is total quantity of MTUs that the ER should evaluate?

Holtec response: The initial phase will include 500 canisters and the final phase will have 10,000 canisters in Holtec's HI-STORM UMAX system. The load capacity of each canister can be different. The current largest capacity for a PWR canister is 37 fuel assemblies and for a BWR canister is 89 fuel assemblies. The Environmental Report shall evaluate the bounding MTU at the final stage.

3. If expansion is foreseeable, how many phases of facility will be built?

Holtec response: Each phase will be 500 systems and there will be total 20 phases.

4. What date should the ER assume for receipt of NRC license?

Holtec response: 1 year from submittal date per current licensing actions (March 2018)

5. When will construction begin and what will be duration of construction for Phase 1 (and other phases)?

Holtec response: Construction on Phase 1 will begin the first quarter of 2020 (~February/March) and will take between 1 and 1.5 years to complete. It should be noted that for the first phase of construction, all of the support structures will be completed as well (security building, cask receiving building, admin building, construction laydown, etc.). For all remaining phases, assuming 500 HI-STORM UMAX facilities will be built for each additional phase, construction duration will be between 9 months and 1 year.

6. What date should the ER assume for commencing operations?

Holtec response: Assume the facility will be in operation 5 years from the site specific license submittal.

7. What is the expected lifetime of the facility?

Holtec response: Design life is 80 years in total (40 yrs for initial licensing + 40 yrs extension)

9. Describe why other site alternatives were eliminated from consideration for the CISF.

Holtec response: Holtec will use the GNEP siting study for alternative locations, selection criterion, and final selection.

10. Identify and describe operational monitoring plans for the CISF.

Holtec response: Monitoring consists of remote monitoring of storage cell temperatures, radiation monitoring of personnel, radiation monitoring at site boundaries, background radiation monitoring, airborne contamination monitoring, and video security monitoring. Health physics personnel will monitor all radiological operations.

12. How many acres will be disturbed for constructing and operating Phase 1 of the facility?

Holtec response: Construction Phase 1 (which includes 500 HI-STORM UMAX Units, all support buildings, and all new road and railway) will disturb approximately 22.70 acres of land. Conservatively add 20% to make expected land disturbance 27.25 acres for Phase 1.

13. What is the total land disturbance for all phases?

Holtec response: The total land disturbance for an in place completed facility with 12,000 UMAX units is 163.65 acres. Conservatively add 20% to make expected land disturbance 196.5 acres. Note that this entire facility will fit into the Bureau of Land Managements "Area 13".

14. During construction, what is the acreage for parking and construction laydown area?

Holtec response: The construction laydown area and parking facilities shown on the attached layouts are anticipated to be permanent fixtures to the site. Total acreage dedicated to these facilities are 1.38 acres or ~60,000 ft^2.

15. Provide specific land disturbance and locations for new roads and rail connections and utility services.

Holtec response: The rail line is ~26,378' long. Knowing this, the expected land disturbance for rail installation based on standard gauge rail widths is ~3.633 acres.

The new roadway is ~5,280' long. Knowing this, the expected land disturbance for roadway installation based on the department of transportation standard lane and shoulder widths is 4.858 acres.

It is expected that all new utility lines will run along the newly construction roadway and tie into existing systems located adjacent to U.S. Route 180. It is reasonable to assume that the roadway land disturbance acreage includes utility runs as well. However, to make a conservative estimate, add 20% to the roadway disturbance and make the final disturbed acreage value 5.83 acres.

16. Provide peak number of construction workers on site.

Holtec response: Based on current projects at Holtec, it can be expected to have upwards of 80 construction personnel on site during Phase 1 of construction (50 craft, 30 oversight/management). It is expected that during future phases, this amount will be lessened since all support structures (cask receiving building, admin building, etc.) will already be completed.

17. Provide the steady-state operational workforce once fully operational. Please identify security personnel numbers separately.

Holtec response: The estimated steady-state work force is less than 40 personnel. The estimated steady-state security force is less than 15 personnel.

18. Describe the on-site electrical distribution system requirements and provider. What will be the average electrical energy demand (kW-hours) for the facility? Will there be backup diesel generators?

Holtec response: The electrical distribution system will be expected to support the standard energy demands of all support facilities, along with the security fencing and lighting and temperature monitoring system. It is expected that the energy provider, based on the location of the facility will be Xcel Energy (provides service to both Texas and New Mexico). The average electrical demand for a facility of this size is approximated to be 200 kW-hours. Because of the necessity to keep the security systems up and running, backup diesel generators will be needed.

19. Describe the on-site potable water system requirements and provider. What will be the average potable water demand (gal/yr) for the facility?

Holtec response: The potable water system will be expected to support the demands of all support buildings, along with the mobile concrete batch plant that will be utilized during construction. It is expected that the potable water provider will be the City of Hobbs Water Department. The system should be sized to be able to provide ~20 gallons/minute.

20. Will there be an on-site batch concrete plant? If so, describe.

Holtec response: At this time, the plan is to employ a mobile batch plant that will be deployed to the site during all phases of construction. Each phase of 500 HI-STORM UMAX Units along with their associated Approach Aprons will require ~45,000 cubic yards of concrete to be dispatched.

21. Describe the sanitary sewer system for the site once operational. What will be the capacity of the system?

Holtec response: The sanitary sewer systems will need to support facilities in the cask receiving building, the security building and the administrative building. During peak construction, the capacity of the system should be able to handle ~3,000 gallons per day.

22. Identify any notable sources of noise for the CISF.

Holtec response: Engine noise from the vertical cask transporter has been evaluated, and may require hearing protection for operations in close proximity. Engine noise at site boundaries should be negligible. No other notable noise sources are expected.

23. What will be the height of the tallest facility at the CISF?

Holtec response: The cask receiving building is expected to house the Vertical Cask Transporter (VCT), which when fully extended can reach a height of 49'-2.4". Knowing this, with a 5' clearance from roof trusses, and a roof truss depth of ~5', that puts the total height of the facility at ~60'.

24. Identify the quantities of wastes (cubic meters/yr or cubic yards/yr) generated during operations and describe the process for managing/disposing of wastes, including identification of off-site facilities that may be utilized for the following waste classes:

Holtec response:

a. Hazardous waste:

The operations performed at the site are not designed to directly produce any hazardous waste. Minimal amounts of hazardous waste may be generated on site from use of solvents or other chemicals, not yet identified.

b. Non-hazardous waste:

The operations performed at the site are not designed to directly produce any non-hazardous waste. Waste generated will be commensurate with typical office/personnel waste generated by the estimated steady-state work force.

c. Low-level radioactive waste:

A small amount of LLW may be generated consisting of contamination survey rags, anti-contamination garments and other health physics materials. This solid waste would be packaged and temporarily stored at the cask transfer building until it is transported off-site to a disposal facility. The volume of solid waste is minimal, as it would only be generated as the result of an off-normal event. There is no generation of liquid or gaseous radioactive wastes.

d. Mixed waste:

There is no expected generation of mixed waste.

25. Are all workers at the CISF assumed to be 'radiation workers'? If not, how many radiation workers will there be during operations?

Holtec response: Except for administrative staff, Holtec assume all workers will be radiation workers.

27. What is expected direct radiation dose (mrem/yr) to a maximally exposed individual (MEI) at the closest site boundary?

Holtec response: The 10 CFR 72.104 limit is 25 mrem/year. Holtec would expect the actual value for anybody sitting at the fence all year to be less than 10% of that. This is evaluated in Chapter 7 of the SAR.

28. Please verify that the Final SAR on the Hi-Storm UMAX Canister Storage System (Revision 1, November 29, 2012) is the appropriate document to reference for accidents for the ER.

Holtec response: The appropriate documents to reference are Revision 3 of the HI-STORM UMAX FSAR (June 29, 2016) and Proposed Rev. 3.D of the HI-STORM UMAX FSAR (UMAX Amd. 3 – 8/30/16)