SUNSI Review Complete
Template = ADM-013
E-RIDS=ADM-03
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COMMENT (204)
PUBLICATION DATE:
3/30/2018
CITATION # 83 FR 13802

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July 12, 2018

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Re: Holtec International Environmental Report on Hi-Store CIS Facility
Docket ID NRC-2018-0052

Thank you for the opportunity to comment on the Environmental Report (ER). References to page numbers are for Revision 1 of the ER.

A principle currently applied to computer security, that of defense in depth, is a concept which could improve the security of this proposed consolidated interim storage (CIS) site. Defense in depth is an information assurance concept in which multiple layers of security controls (defense) are placed throughout an information technology system. Its intent is to provide redundancy in the event a security control fails or a vulnerability is exploited that can cover aspects of personnel, procedural, technical, and physical security for the duration of the system's life cycle.

In the case of this CIS proposal, the potential failure of any element, whether procedural, process, technical issues, or physical security, should be addressed by multiple layers. For example, if a cask starts leaking, it should be placed in a bigger cask; if a larger cask is not available, a hot cell should be available. Another example is that of monitoring for cask leakage. That should be monitored by two different systems – not totally ignored as is the case presented by this ER.

There are many critical issues in this ER:

1. If any leakage is reported on an arriving cask, it is 'returned to sender' (page 214). This would potentially distribute radioactivity along the entire route going back to its source. It is critical for Holtec to consider means of dealing with leaking casks on-site, and for the NRC to require adequate on-site measures to deal with leakage. Two options should be available:
    a. A hot cell should be constructed and maintained. Shipments into the facility should not be scheduled or accepted if the hot cell is under maintenance.
    b. A Russian-doll type of a "cask around a cask" should be available to place leaking casks into another larger cask.

2. Current dosimetry monitoring is performed at many locations within the site. However, these are being read on a quarterly basis (pages 218, 242). Weekly readings should be performed.
3. Real time monitoring by at least two different methods should be done on every cask. The casks cost about $1M to construct and load with used fuel. Monitoring would not add much cost. At least one real-time monitor should be on the outflow vent. Since helium is used in the cask, and helium is a small molecule for which monitoring techniques exist (Budweiser uses it to detect beer can leaks), helium is an obvious candidate for monitoring.
4. Annual evaluation of every cask should be performed to establish development of cracking. Research has shown cracks can grow from very small to big enough to leak considerable radioactivity in a decade.
5. Casks that develop cracking should be fixed well before any radioactivity if released.
6. Many of the analysis stated in the ER are for a 40-year period. This CIS site may be used for up to 120 years after the 20-year 'population' phase. Therefore, any analysis should cover a minimum of 120 years, and preferably 140. A larger overriding issue, however, is that fact that this could become a permanent site. Therefore, projections on what will happen in the 10,000+ year timeframe are needed.
7. Analysis should be performed on risk to workers and public in the case of a leaking cask. It is quite likely that some of these emergency tasks will expose workers to high doses of radiation. A backup force of trained workers needs to be available as some existing workers will exceed 'safe' dose limits in the case of an accident.
8. Some of the soils in the area are alkaline. Assessment of alkaline dust impacts should be performed on casks and concrete. The debris left by potash mining is particularly alkaline and can be distributed by the wind. Concerns have been raised about the safety of these casks in a moist, saline environment along the ocean; similar concerns should be addressed for the much drier alkaline environment at the proposed site.
9. The 50-mile radius population area is majority Hispanic. Hispanic salaries are generally lower than white; other measures of the Hispanic population also differ. The ER does not address these issues – it assumes a 'typical' population.
10. Evaluation of casks that are leaving the site is critical. Transportation of casks that may been stored up to 120 years is very different than casks that are only a decade or two old. During a century, the potential cracking of stainless steel caused by radiation and heat is high. Changes to the integrity of the fuel cladding is likely.
11. Terrorism risk is largely ignored. Armor piercing missiles could be launched from nearby roads and go thru a cask in transport, a cask being inspected, and casks being loaded/unloaded into the vertical ventilated modules (VVM) into the concrete storage slots. More durable 'hats' and substantial berms around the site should be established.
12. A no-fly zone should be established around the site. Drones should not be allowed in the area. Visual data from drones or aircraft could be used to assist in targeting missiles.
13. Criteria should be established to report unplanned radioactive releases to the public. Data on larger releases should be released to the public more quickly.
14. The cumulative risk of radioactivity dosing to the public in the 50-100 mile zone around this site should be addressed. WIPP has had several unplanned radioactive releases, it is similarly likely

the other sites in the area (Urenco, National Enrichment Facility (NEF), and the International Isotopes Incorporated Fluorine Extraction Process and Depleted Uranium De-conversion Plant (FEP/DUP)) have also have had releases. The permitting process for another CIS facility is underway for WCS just across the TX/NM border near Eunice. Oil and Gas operations sometimes drill thru naturally radioactive geologic formations. Only some of these are noted in the ER (page 227). The discussion of the cumulative risks of all these facilities is not adequately made in the ER.

15. The radioactive decay of U-241 to PU-241 is very rapid after removal from the reactor. The decay continues to release heat, which drops exponentially as the cores reside in the cooling pool. After movement from the cooling pool to cask storage, the high-burnup fuel cores have another peak of thermal radiation, apparently not currently accounted for by the NRC. The timing of movement of the casks to a CIS facility should be re-evaluated. Under the current design for transport, casks may be in the process of being moved when the second thermal heat peak occurs. This could result in cask damage, cladding damage, or fuel damage.
16. Emergency planning should be expanded to include complete evacuation of up to 50 miles from the site. Major failure of a single cask, in windy conditions, can spread radioactive particulate matter. Current WIPP planning does not include evacuation on such a substantial scale, since WIPP waste is over 2,000 feet underground, and it is mixed waste, not high-level waste. The assumption that current training by DOE for WIPP personnel is sufficient, is not the case for Holtec's CIS site. Holtec's ER assumes all operations are incident-free operations (page 198).
17. Emergency planning should be completed for all transport routes prior to transport. As recommended at the May Nuclear Waste Technical Review Board (NWTRB) in Idaho Falls, transport should be planning regionally, to minimize training costs. This is particularly true where waste passes thru rural areas, and full-time responders are not available, and where training of volunteers is more difficult due to other volunteer commitments.
18. The seismic risk is evaluated on historical data. However, fracking in the Permian basin has increased dramatically in the last few years, and continues to grow. Many recent observations have shown that seismic hazard increases around fracking areas. The USGS re-evaluates earthquake hazard every 6 years. Seismic hazard for next 140 years (20 years to populate site plus 120 years of storage) should be extrapolated based on continued fracking in the area until all reserves are depleted. The USGS has performed magnetic mapping in Oklahoma which shows prior unknown deep faults caused by fracking. The entire Permian basin area, and a 50-mile radius around both the Holtec and WCS sites, should have magnetic mapping completed. The decision of acceptable risk should be based on extrapolating these results to 14-decades – the lifetime of the facility.
19. The maximum rainfall event is underestimated. Planning should establish the impact of a 15 inch rainfall in a 24-hour period. The maximal observed daily rainfall event in Hobbs was very recent, in 2015 of 3.6 inches. Global warming is (a) increasing the size of hurricane events starting in Atlantic and passing over Gulf of Mexico with associated greater moisture content due to higher temperature, and (b) hurricane storm tracks are changing, drifting toward the west. The ER states on page 102 that hurricanes are not a problem. Hurricane left-overs are, however, the greatest potential for sustained high rainfall event.

20. The behavior of a large rainfall event or series of days where high rain events occur should be established, particularly with nearby Laguna Gatuna and Laguna Plata. The ER states on page 92 that a one-day storm of 7.5 inch will leave freeboard on these playas. This is desirable to prevent any radioactive contamination being spread by water, however, at what threshold (greater than 7.5 inch as stated on page 180) is there no freeboard left, and how much of the water will drain into the Pecos River?
21. Near surface water (ER page 91) at 35-50 feet should be actively monitored for radioactive contamination. Similarly, near groundwater at 90-300 feet should be monitored (page 173).
22. In section 3.12.1 it appears that WIPP/DOE releases are substantially under-represented. Data that includes the most recent radioactive releases from accidents should be discussed. Given the predominant winds are from the south – the location of WIPP – cumulative impacts of workers could be much higher that the EA states.
23. As noted on page 224, Holtec is extrapolating CIS risk from NRC probabilistic risk analysis (PRA) of the HI-STORM 100 system. This risk analysis is for a 20-year period. This CIS site is being evaluated for up to 140-year lifetime. The PRA may well be a beginning of a risk analysis for this CIS location, but it is 120 years short of total risk analysis.
24. It is possible accidents can occur which release radioactivity. Therefore, the conclusion of Holtec that no special actions are needed for decontamination and decommissioning (p 224) is incorrect.
25. Reporting procedures for accidents should be mentioned specifically, not just reference NRC requirements. Reporting for any accidents that approach potential for maximum annual radioactive exposure by any single person within a day should be reported within 12 hours.
26. In the cost-benefit analysis (page 251) a good background is presented on the recommendations of the Blue Ribbon Commission on American's Nuclear Future. However, a shortcoming of the ER is that there is no discussion of the elements of the Blue Ribbon Commission's recommendations that are, and that are not considered.
27. One or more recent documents from the NRC state that up to 120,000 metric tons of waste may be stored at this location. This differs from the 100,000 metric tons number specified in this ER.

There are several non-critical issues that could be corrected:

1. In both the introduction of the ER and in a cover letter from contractor Tetra Tech to Holtec (page 317), it is stated that no utilities are required. It is quite clear elsewhere what the actual power, water, road, and railroad needs are. I believe this site could safely go for quite a long time without power, but it does appear to mislead the reader unnecessarily. And if Tetra Tech was providing information to Holtec based on this incorrect assumption, the data should be reviewed for accuracy.
2. The definition of person-rem could be improved (page 299) An alternative definition: A measure of the exposure of a population to radiation, calculated as the average dose per individual (in rem) multiplied by the number of people exposed.

3. The temperatures at this site is characterized as 'generally mild' (page 100). While it is true this is generally a very dry area, climate change is leading to routine 100+ degree F temperatures from April to October every year. This is hot.
4. The copy of the ER in the Roswell public library had maps which showed to location of the Holtec site as much as 50 miles from the correct location. They appeared to be old maps prepared for a previous application for a CIS proposal in the vicinity of the Holtec site.
5. It is curious that the most recent on-site survey, there were no observations of lizards. It was also noted on page 78 that Slevin's Bunchgrass Lizard (Sceloporus slevini) is of management concern – but no further discussion ensued. It was good, however, that the BISON database was consulted.

Thank you for the opportunity to comment on this proposal. The current Sierra Club policy is that until a suitable long-term solution is in hand, waste should be stored in a hardened on-site location (HOSS). The need for proper monitoring, risk minimization and integration of planning of the entire process of cask management – from the cooling pool all the way to a permanent long-term repository – is clear. However, this plan is sorely lacking in many areas. The NRC should go beyond evaluation of this proposal and make suggestions to lawmakers on how to integrate the entire high-level nuclear waste management process.

Sincerely,

John R. Buchser

Chair, Water Issues Committee