As of: January 23, 2013
Received: January 18, 2013
Status: Pending_Post
Tracking No. 1jx-836k-c00x
Comments Due: January 18, 2013
Submission Type: Web

PUBLIC SUBMISSION

Docket: NRC-2012-0218
Comparative Environmental Evaluation of Alternatives for Handling Low-Level Radioactive Waste Spent Ion Exchange Resins from Commercial Nuclear Power Plants

Comment On: NRC-2012-0218-0001
Comparative Environmental Evaluation of Alternatives for Handling Low-Level Radioactive Waste Spent Ion Exchange Resins from Commercial Nuclear Power Plants

Document: NRC-2012-0218-DRAFT-0009
Comment on FR Doc # 2012-23205

Submitter Information

9/20/2012
77FR 58416

Name: Thomas Magette
Organization: EnergySolutions

General Comment

5

See attached file(s)

Attachments

Comment Letter re CEE - FINAL 011813

SUNSI Review Complete
Template = ADM – 013
E-RIDS= ADM -03
Add= S. Lemont (SXL8)

ENERGY*SOLUTIONS*

January 18, 2013 CD13-0014

Cindy Bladey, Chief
Rules, Announcements, and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001

Subject: Comparative Environmental Evaluation of Alternatives for Handling Low-Level Radioactive Waste Spent Ion Exchange Resins from Commercial Nuclear Power Plants; Docket ID NRC–2012–0218

Dear Ms. Bladey:

Energy*Solutions* hereby submits comments on the subject document. We appreciate the opportunity to review and comment on the draft environmental evaluation.

In general we agree with NRC staff's conclusion that there are no significant impacts from the management of spent ion exchange resins, including those that involve blending. We further agree that impacts from all alternatives considered are in almost all cases low. We appreciate the staff's efforts to thoroughly address concerns that have been raised regarding the potential environmental issues associated with blending ion exchange resins. As staff has demonstrated with its conservative, bounding analysis, the environmental impacts associated with this waste management strategy are inconsequential.

Attached are several detailed comments for your consideration. While we believe that these comments merit consideration and may result in minor editorial revisions, none are sufficiently significant to challenge the conclusions staff has reached. We do not believe that any additional analyses or significant revisions to the report are necessary.

Thank you again for this opportunity to comment. Questions regarding these comments may be directed to me at (410) 353-0427 or temagette@energysolutions.com.

Sincerely,

Thomas E. Magette, P.E.
Senior Vice President
Nuclear Regulatory Strategy

Attachment

6350 Stevens Forest Road, Suite 200 • Columbia, Maryland 21046
240.565.6200 • Fax: 410.290.8256 • www.energysolutions.com

Detailed Comments – USNRC Draft Comparative Environmental Evaluation of Alternatives for Handling Low-Level Radioactive Waste Spent Ion Exchange Resins from Commercial Nuclear Power Plants

1. page viii IERs are "bead-like materials." A significant portion is powdered material (pressure-precoat sytems). There is also no mention of the frequent addition of activated charcoal to resin beds.

2. page viii last paragraph refers to one licensed disposal facility as being authorized to accept Class A waste from all 50 States. This appears to be a reference to Clive, which while strictly speaking is true, does not correctly portray the situation. The Rocky Mountain and Northwest Compacts have a site that they are required to use. The Northwest Compact can authorize waste from that compact to go to Clive, but that is not the norm.

3. page xi Thermal processing options will result in increased air emissions of radionuclides which are not normally removed from stack flow by mechanical filtration (e.g., $^{14}CO_2$ and tritium). These emissions can be controlled within established limits, but arguably present higher radionuclide releases than mechanical blending.

4. page xiii The Transportation summary states that all resins are assumed to be transported over-the-road in Type A or Type B shipping casks. Note that resins meeting the definition of LSA material may be shipped in Industrial Packaging (see 49 CFR 173.427, Table 6). Current practices include disposition of significant quantities of very low activity Class A resins shipped by truck in 100 ft^3 metal boxes and sometimes metal drums. In addition, final disposition of these very low activity resins can include non-Class 7 shipments to local industrial landfills, rather than subsequent transfer to one of the four licensed disposal sites. Less than half of the resins shipped to Bear Creek arrive in Type A or B casks. It is also important to note that rail transport of wastes has displaced significant fraction of the over-the-road transport (particularly from Oak Ridge, TN, to Clive, UT).

5. page 1-2 Next to last paragraph states that resins must be replaced when their ion exchange capability is expended. Many of these resins can be regenerated, and some existing nuclear power plants (NPPs) were built with the capability to do so. In most NPPs, the practice has been found to be economically inefficient, with resulting waste problematic for disposal. This is, however, an additional processing option for generators, but one that is not addressed to any significant extent in this document.

6. page 1-3 As on page vii, the second paragraph on this page states that one licensed disposal facility is authorized to accept Class A waste from all 50 States. This appears to be an

incorrect reference to Clive, which is *not* authorized to accept waste from the Rocky Mountain or Northwest Compacts.

7. page 2-1, section 2.1.1, Ion Exchange Resin Composition and Use. This section introduces IERs as "typically bead-like...", and should also note the widespread use of powdered resins (e.g., Graver Powdex systems).

8. page 2-1, section 2.1.2, Spent IER Generation and Management. This section states that spent IERs are sluiced to HICs or appropriate liners, which ignores the intermediate use of a spent resin storage tank. These tanks may be sized to accommodate resins from multiple resin beds, and can effectively result in commingling at the NPP sites. This has the same net effect as blending by an offsite processor.

9. page 2-4, last paragraph. Another reference to Clive accepting Class A waste from all 50 States that needs to be corrected.

10. page 2-5, 1st paragraph states that processors may "take title" to B and C wastes, then thermally process the wastes for long term storage at another location pending availability of disposal. This statement oversimplifies the waste attribution considerations applicable to processors. These considerations are Compact-driven, and generally require explicit treatment in the licensing process.

11. page 3-3, Alternative 2. This direct disposal option assumes that NPPs perform handling (including dewatering), final packaging, and shipment to the LLRW disposal site. It should be noted that the NPP will need appropriate shielded process areas, dewatering equipment, and (most importantly) a process control plan to ensure the final IER package meets the water content limits. This can be addressed in detail in Section 4.

12. page 3-3, last paragraph. For Alternative 4A (thermal volume reduction of B&C concentrations IERs by a processor, long-term storage, then disposal. Using the stated VR factor of 5, spent IERs should be limited to those with concentrations < 20 % of the Class C limit (volume concentration based limits, Ci/m^3) to avoid generating > Class C waste. Similar constraints are needed for alpha-emitting TRU nuclides (with half-life >5 years), ^{241}Pu, and ^{242}Cm subject to specific activity limits (nCi/g). Details are appropriate for Section 4, but the limitation should be mentioned here. In addition, a VR of 5 may shift materials from Class B to Class C, with associated disposal restrictions and increased disposal cost.

13. page 3-3, 2nd paragraph. The same considerations noted in #12, above, concerning volume reduction apply to Alternative 4B, as well.

14. page 4-1, paragraph 4.1.1, Dewatering of Spent IERs. Many NPPs lack available space, equipment and validated process control plans (frequently held as processor proprietary

information) to conduct final dewatering for disposal. In addition, some resins require additional pre-treatment to reduce gas generation resulting from biological contamination of the IER. This treatment requires additional processing equipment and time. It should also be noted the IERs with significant iron oxide content become very difficult and time consuming to dewater. We do not propose that the analysis be revised to accommodate these exceptions, but they should be noted as limitations on the applicability of on-site final dewatering by NPPs.

15. page 4-3, paragraph 4.1.3, Disposal of Untreated and Treated Spent IERs. This section states that all untreated and treated spent IERs will ultimately be disposed at licensed LLRW facilities. A significant quantity of very low activity resins is disposed at unlicensed industrial landfills. This could be classified as an additional disposal alternative.

16. page 4-4, last paragraph. This section should note that a process option for liquid from the dewatering step is necessary. Although gross dewatering may occur at NPP site prior to shipment to a processor, additional contaminated water is removed to prepare the IERs for disposal. This is in addition to the recycled water associated with routine sluicing operations.

17. page 4-6, 3rd paragraph. This section states that thermal processing produces essentially no secondary solid wastes. As noted in the process description, ceramic filters are used in two stages of processing, along with HEPA filtration of the final offgas. In addition, contaminated waste salts are produced from acid gas neutralization and dewatering filters (used by NPPs to conduct the initial gross dewatering) and must be properly disposed, along with any shipping containers not reused for burial shipment. In summary, the thermal process does produce substantial secondary waste.

18. page 4-6, Alternative 2, Direct Disposal of Class A, B, and C Spent IER LLRW. This very brief entry for this Alternative should acknowledge considerations described above in comment #14.

19. page 4-8, paragraph 4.2.5, Alternative 4A. We do not find this alternative to be credible or realistic. Storage of processed waste at disposal and processor sites is strictly controlled and long-term storage of waste is prohibited by license. Although it was recently done at the Texas Compact site, regulators in Texas have objected to its becoming a common practice and it is not likely to be repeated. Rather than investing effort to remove or reanalyze this alternative, we propose that its practical limitations simply be noted.

20. page 5-9, 1st paragraph. For reference and comparative risk evaluations, an outdated baseline "U.S background dose" is cited as 360 mrem/y, using data from the 1998 3rd edition of Handbook of Health Physics and Radiological Health, Schleien, et al. That data is based upon information from the NCRP Report #93, Ionizing Radiation Exposure of the Population of the United States, published in 1987. The data set has been updated in NCRP Report #160, Ionizing Radiation Exposure of the Population of the United States, published in 2009. The reference

value has been revised upward to 620 mrem/y, mostly attributable to increased use of CT scans as a diagnostic tool. Note that the use of the term "U.S background dose" may be somewhat misleading, as the values in both reports are the average exposures to the U.S. population from all sources. The effect of the nominal 70% increase in average exposure is the commensurate reduction in relative risk when transportation-related doses are compared to the average annual dose from all sources.

21. page 5-13, Accidents in Which a Type A Cask Would Be Impacted. As noted in comment #4, above, resins meeting LSA 2 criteria may be shipped in IP-2 packages, rather than Type A or Type B casks. Shielded overpack containers may be used to meet restrictions on radiation levels.

22. page 5-28, Table 5, Comparison of Potential Environmental Impacts of the Six Alternatives..... Assessing the potential impacts of Alternatives 3 and 4A (both long-term storage scenarios) on Historic and Cultural Resources as "small to moderate" appears unduly conservative. Given the acknowledged small footprint required for storage and the thorough environment siting process for NPPs and disposal sites, it is highly unlikely that there would be any impacts from these alternatives that could not be easily avoided or fully mitigated. We recommend the potential impacts of alternatives 3 and 4A be revised downward to "small".

23. page 5-49, paragraph 5.2.7.2, dose should be updated to reflect currently available information. The result will be reductions in the already extremely low relative risk data presented. Analyses do not consider use of Industrial Packagings in addition to Type A and B casks.