

9713538.3081



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION 10 HANFORD PROJECT OFFICE  
712 SWIFT BOULEVARD, SUITE 5  
RICHLAND, WASHINGTON 99352

0047245

April 10, 1997



Jeff Bruggeman  
U.S. Department of Energy  
P.O. Box 550, MSIN: H0-12  
Richland, WA 99352

Re: *Remedial Design Report for the 233-S Plutonium Concentration Facility*

Dear Mr. Bruggeman:

The U.S. Environmental Protection Agency (EPA) has completed the review of the *Remedial Design Report for the 233-S Plutonium Concentration Facility (DOE/RL-97-08)* dated February 1997. The primary focus of the review was to determine whether applicable or relevant and appropriate requirements (ARARs) specified in the *Action Memorandum for the 233-S Plutonium Concentration Facility (April 1997)* are satisfied.

As noted in the comments, the Notice of Construction submitted to and approved by the Washington Department of Health is no longer valid. DOE shall submit an air monitoring plan as part of the design for this action. In accordance with the Action Memorandum, this air monitoring plan shall be submitted to EPA for review and approval. The Washington State Department of Health will provide consultation for the review of this plan.

An electronic version of the comments has been forward via cc:mail for your convenience. If you have any questions regarding these comments, please contact me at 376-4919.

Sincerely,

Pamela S. Innis  
233-S Project Manager  
U. S. Environmental Protection Agency

Enclosure

cc: Administrative Record, REDOX  
Rick Poeton, EPA  
Tom Tobin, Gannett Fleming  
John Martell, Washington State Department of Health  
Jack Donnelly, Washington State Department of Ecology

## INTRODUCTION

The U.S. Environmental Protection Agency (EPA) and their contractor, Gannett Fleming, Inc., have completed the review of the *Remedial Design Report for the 233-S Plutonium Concentration Facility (DOE/RL-97-08)*, dated February 1997. The primary focus of this review was to determine whether applicable or relevant and appropriate requirements (ARARs) specified in the *Action Memorandum for the 233-S Plutonium Concentration Facility (April 1997)* are satisfied.

## GENERAL COMMENTS

1. Although this document states that ARARs from the Code of Federal Regulations (CFR), sections 10 (Energy) and 40 (Environment), and from the Washington Administrative Code (WAC), section 173, are used, the requirements of these ARARs and the detail on how compliance will be achieved are not clearly stated. In contrast, the regulations specified by the Department of Transportation (DOT) (49 CFR) are very detailed in this report, as is the process for implementing these requirements. The substantive ARARs should be listed for the action and anticipated waste streams and the steps taken to demonstrate compliance with the ARAR specified in the Action Memorandum.
2. In order to clarify the waste stream types and disposal options, a table or flowchart should outline the following items for each anticipated waste stream: (1) designation as TRU, LLW, low-level mixed, hazardous only, or inert; (2) physical form; (3) anticipated volumes; (4) anticipated contaminants; (5) packaging and/or special handling requirements, if known; (6) a preferred disposal site. Waste stream types should include concrete, hardware, asbestos, piping, ductwork, soils, sediments/sludges, liquids, soft waste (PPE, plastic sheeting, etc.)
3. This document states that as each item is removed from the structure, it will be checked for radiation using nondestructive analyses (NDA). For the most part, this will serve to segregate the waste stream into transuranic (TRU) waste, low level waste (LLW), and non-radioactive (or at least nonregulated radioactive) waste. Additional analyses will have to be conducted to determine the proper disposal for each of these waste streams, possibly including a more accurate check for radiation if the initial NDA results are uncertain. Specific additional information, which should be listed in Appendix E, includes the analyses required to determine whether or not the waste contains listed hazardous waste. The analyses are needed to determine whether storage and disposal facility criteria are met should be stated.
4. The QAPP does not include either a sampling and analysis plan (SAP), or a quality assurance project plan (QAPjP). A SAP should state what samples will be collected, and what analyses will be done on these samples. A QAPjP states how analytical quality such as precision, accuracy, representativeness, completeness, and comparability will be maintained. A schedule for the submittal of the SAP(s) and QAPjP for the removal action shall be provided, with acknowledgment that EPA shall approve these documents prior to their implementation.

## SPECIFIC COMMENTS

1. **Section 1.0, pages 1 and 2.** The introduction section should provide a discussion of the Action Memorandum signed by EPA and DOE for this removal action.
2. **Section 1.1, page 3, first paragraph.** The text states that the document was prepared in accordance with Section 7.3.9, 7.3.10, and 11.4 of the TPA. These references are inappropriate for a removal action. The appropriate reference is Section 7.2.4.
3. **Section 2.1.1, page 5.** This section identifies several "special needs", but does not provided detail necessary for their development. Provided an estimated time line for the development of these needs and criteria to be followed in the design of each.
4. **Section 2.1.3, page 7, first paragraph.** The time line for the development of the "engineering studies" used to manage the uncertainties of the removal action should be provided. General assumptions or contingency plans for many of the bulleted items must be developed prior to implementation of the removal action.
5. **Section 2.1.3, page 7, last paragraph.** See General Comment 4.
6. **Section 2.1.4, page 7, second paragraph.** It is unclear from the provided information as to whether an evaluation of decontamination alternatives has been completed. Reference the studies completed or explain the process for evaluation.
7. **Section 2.1.5, page 8, last paragraph.** It is unclear from the provided information which decision document shall provide the analysis and determination of the preventive measures to be implemented for control of radiological releases.
8. **Section 2.1.6, page 8, second paragraph.** The information provided fails to acknowledge that improper disposal may occur as a result of mispackaging or incomplete characterization. The text should also acknowledge that process knowledge may be used to provide additional information.
9. **Section 2.1.7, page 9, first paragraph.** The determination to proceed or stop excavation of contaminates soils shall be agreed to by EPA and DOE.
10. **Section 2.1.7, page 9, second paragraph.** This paragraph states that the characterization efforts will be done according to regulatory guides. The text should reference specific guides to be used. Additionally, it should be noted that a sampling plan shall be submitted to EPA for approval.
11. **Section 2.2, page 10.** Hazardous and asbestos containing materials are noted as being present in the 233-S Facility, many of which require treatment prior to disposal. An initial evaluation of treatment options for these materials should be presented within the design report.
12. **Section 2.2.1, page 11, fifth paragraph.** The last sentence of this paragraph implies that additional plans will be developed to determine disposal alternatives. The waste management plan (Appendix E) should specify disposal alternatives for the waste types generated during this action.

13. **Section 2.3.1.2, page 13.** This section discusses building ventilation. It should be noted within the design report that the NOC submitted to and approved by the Washington Department of Health is no longer valid, and that an air monitoring plan shall be developed as part of the design for this action. This air monitoring plan shall be submitted to EPA for review and approval. Washington State Department of Health will provide consultation for the review of this plan.

The second paragraph of this section states that a continuous air monitor (CAM) stack alarm will annunciate upon detection of radioactive concentrations requiring emergency response. The text also states that the alarm will be set at the site alert criteria (100 mrem at 100 meters). The location of this alarm is not specified, therefore it is not clear how it will be used to initiate response actions. Also, the text should state how this will correlate to the National Emissions Standard for Hazardous Air Pollutants (NESHAPs) of no greater than 10 mrem per year to any member of the public.

The third paragraph notes that the stack sampling and monitoring are for normal operations. The D&D work will not, however, be normal operations. It is suggested that the inventory data be used to estimate doses from the D&D operations and demonstrated the need (or lack of need) for continuous monitoring under 40 CFR 61. Methods for doing this are described in the regulations.

14. **Section 4.1, page 28.** The text states that, according to NESHAPs, if the potential offsite dose is less than 0.1 mrem/year, then only periodic confirmatory measurements (PCM) are required. The text should define whether "offsite" means outside the 233S boundary, outside the 200 Area, or outside the Hanford Reservation boundary. Also, 40 CFR 61.93 (b) states that periodic measurements (as opposed to continuous measurements) for radionuclides may be used only with EPA's prior approval. (See comment 13.) Additionally, the PCM will consist of sampling for total alpha/beta only. PCM for gamma radiation should also be conducted.
15. **Section 4.2.1, page 29.** The wastes stream categories, noted in the first sentence on this page, should be defined. See General Comment 2.
16. **Section 4.2.2, page 29.** Specific waste handling information should be provided for asbestos containing material (ACM), smearable material, etc.

Waste packaging requirements for ACM shall comply with NESHAPS.

Labeling/placarding requirements shall comply with DOT regulations for hazardous as well as radioactive materials.

17. **Section 4.2.3, page 29.** The specific DOT and EPA regulations shall be specified.
18. **Section 4.2.4, page 29.** The preferred alternative for liquids is treatment to render them non-hazardous (e.g., treatment at ETF). Liquids will be solidified on a case by case basis with prior approval from EPA.
19. **Section 4.3.1, page 30, sixth sentence.** The sampling plans for this action shall be approved by EPA prior to implementation.

20. **Section 4.3.2, page 31.** If "in-process sampling" or NDA are use for designation of waste, EPA must approve the plan for implementation of these methods.
21. **Section 4.3.3, page 31.** The "final status" characterization plan shall be submitted to EPA for review and approval. Additionally, it is unclear what "site release criteria" are referenced. At this time no specific land use has been determined for the 200 Area. Sampling shall be performed to determine the extent of contamination left in place. Cleanup criteria shall be established in the operable unit ROD. Finally, the sampling and analysis plan shall also consider a *Methods for evaluation the attainment of cleanup standards - Volume 1: Soils and Solid Media, EPA 230/02-89-042* and Ecology's *Guidance on Sampling and Data Analysis Methods, Pub. No. 49-49*.
22. **Section 5.3, page 34.** Section 9.3 of the TPA does not specifically apply to removal actions taken under CERCLA. The actions to be taken for changes specified in this section shall be deleted. EPA and DOE management shall come to agreement on the level of documentation need for changes to an Action Memorandum or the Design Report.
23. **Section 5.4, page 35.** No reference is made to the requirement that decommissioning workers must complete HAZWOPER training.
24. **Section 5.7, page 37.** This section, which discusses project closeout, states that further remedial action will be conducted if soils three feet below grade are found to exceed either 15 mrem/year or hazardous substance soil cleanup levels as stated in WAC 173-340-745 for industrial sites. No cleanup criteria have been established for the 200 Area at this time. Sampling will be done to determine the level of contamination left in place although may be used at during operable unit cleanup. Prior to closeout, EPA and DOE shall come to agreement that the removal action is complete.

Delete the last paragraph of this section, as it does not apply to this action.

25. **Appendix B, Section B2.2.1, page B-3.** Justification should be provided for not decontaminating equipment to free release levels. Additionally, material should be sorted with respect to hazardous substances, also (e.g., mixed TRU, mixed LLW, hazardous only). Additionally, no discussion is made of a processing area for asbestos containing material.
26. **Appendix B, Section B2.3, page B-5.** It is not clear, from the information provided, if the pipes from the chemical makeup tank and the tank itself are not contaminated. Provide information that clarifies this.
27. **Appendix B, Section B2.5, page B-7.** EPA must make an off-site determination on facilities used for storage or disposal of waste generated during this action, other than ERDF.
28. **Appendix B, Section B2.8.4, page B-13, sixth sentence.** The criteria for determining when "aggressive decontamination methods" are required should be established within the design document. Additionally, the criteria established for determining if decontamination is "too expensive" should be established in a cost benefit analysis and should include life cycle costs for that material.

29. **Appendix B, Section B2.10, page B-14.** No mention of CO<sub>2</sub> Pellet Blasting as a method for decontamination is given. This technology should be considered as no secondary waste stream is generated. Consideration should be given to this technology in coordination with the Technology Deployment Initiative. Several proposals for CO<sub>2</sub> decontamination are being considered in the STCG mixed waste subgroup.
30. **Appendix B, Section B2.11, page B-15, third sentence.** The "established guideline values and conditions" should be reference or provided within the text.
31. **Appendix B, Section B2.14.1, page B-18, last paragraph.** The first sentence in the last paragraph notes that the soils in the pipe trench will be sampled for radiological contamination only. Justification should be provided for not sampling for hazardous substances, otherwise, it should be included within the action. Additionally, the second sentence notes that soil above "permissible levels" will be prepared for disposal. These levels should be defined.
32. **Appendix B, Section B2.15, page B-19, last paragraph.** This paragraph implies that after decontamination of the facility, a reevaluation will take place to determine if continued S&M should occur. Please clarify the intent of this paragraph.
33. **Appendix B, Section B2.22, page B-21.** See comment 21.
34. **Appendix C, Section 9, page C-17.** The IDLH levels given are consistent with the outdated June 1990 NIOSH criteria. The IDLH levels should be updated to be consistent with the 1994 NIOSH criteria.
35. **Appendix C, Section 13, page C-21.** The 10 ppm action level is not justified. Assuming that the action level is taken from the IDLH levels for organics, the new action level should be 8 ppm.
36. **Appendix D.** The plan scope is limited to the "nuclear" portion of the 233-S Facility D&D. The proposed reviews, surveillance, tests, and inspections are appropriate for this project. Work packages and procedure review and worker training surveillance are indicated, but the Quality Plan actions should ensure that all required criticality and radiological safety actions are adequately presented in the procedures and worker training. Will worker training involve intensive practical and mockup experience for the sensitive aspects of the D&D project?
37. **Appendix E, Section E1.0, page E-1, first paragraph.** The management and disposal of the waste generated shall be done in accordance with the ARAR specified in the Action Memorandum for the 233-S Facility and not the EE/CA and comply with the disposal facility waste acceptance criteria. No waivers have been sought for this action.
38. **Appendix E, Section E1.0, page E-1, seventh paragraph.** Revisions to the waste management plan shall be approved by DOE and EPA.
39. **Appendix E, Section E2.0, page E-2.** See General Comment 2. Additionally, prior to shipment of any waste to CWC, EPA shall make an off site determination for that facility. Also, waste can be stored at CWC, not disposed of there.

40. **Appendix E, Section E2.2, page E-2.** This section states that "purely hazardous" waste may result from operations as part of this D&D. Specific examples of the waste should be provided. The text also states that this "regulated waste" will be containerized, then shipped directly offsite to "appropriate disposal sites." It is assumed that the waste referred to in this section is below regulatory radioactive levels, but that a hazardous component is present. The text should state the ARARs used to determine whether or not this waste is hazardous, the analytical methods used to make this determination, and specific disposal options. The option of "appropriate disposal sites" is not clear, and specific landfill options should be stated. If the waste can be treated to satisfy ERDF waste acceptance criteria, onsite disposal is the preferred option. It is required the EPA make an off-site determination for any disposal option other than ERDF.

41. **Appendix E, Section E2.4, page E-3.** The first paragraph states that waste will be treated for "waste form acceptance". The specific standard to which the waste will be treated should be given.

The second sentence in the second paragraph is incomplete. Additionally, it is required the EPA make an off-site determination for any disposal option other than ERDF.

42. **Appendix E, Section E2.6, page E-3.** This section discusses demolition wastes, and states that these wastes will be disposed of at Bechtel-Hanford, Inc. (BHI)-managed waste landfills. Acceptance criteria for these landfills should be summarized. Also, justification is unclear for shipment and disposal in the 100 Area of waste generated in the 200 Area.

The last statement in this section is "All asbestos, creosote, chemically-treated wood, gypsum, sheet rock, etc., will not be considered nonregulated wastes." Does this double-negative mean that these items ARE considered REGULATED waste? Also, the disposal options for these waste should be given.

43. **Appendix E, Section E3.0, page E-4.** It is recommended that a waste profile be developed for each waste stream anticipated during the removal action.

44. **Appendix E, Section E5.0, pages E-4 and E-5.** This section should include a discussion of decontamination and recycling alternatives that may be applied for waste minimization as well as reference for the evaluation of these alternatives.

A discussion of source reduction for waste minimization should be given. This may include substitution of nonhazardous alternatives when available and discrete use of hazardous material for their intended purpose only.

The third paragraph states that hazardous waste will be shipped off site. Justification must be provided for not utilizing the ERDF facility for disposal of this waste. Additionally, if the waste must be shipped off site, EPA must make an offsite determination of the potential TSD facility.

45. **Appendix E, Section E6.0, page E-5.** See General Comment 2.

46. **Appendix E, Sections E6.2 through E6.5.** The information provided in these sections appears to be in the detail more specific to work instructions or procedures rather than a design document.

The designation of gallons seems more appropriate for liquids rather than the type of material anticipated from D&D operations. It would appear that tons or cubic feet/yards would be a more appropriate scale of measurement

47. **Appendix E, Section E6.7, page E-9.** Waste transportation methods for sites other than ERDF is not clearly identified.
48. **Appendix E, Section E6.8, page E-10.** Waste storage areas should be proposed for approval within the waste management plan. Additionally, the text should be changed to show that hazardous waste may be disposed of at ERDF or shipped off site after EPA makes an off site determination for that facility.
49. **Appendix E, Section E7.0, pages E-10 and E-11.** The acceptance criteria for ERDF are not appropriately quoted in the section. It is recommended that the acceptance criteria for the storage and disposal facilities mentioned in this document be reference only and not paraphrased. Additionally, it is recommended that Table E1 be deleted and the ERDF WAC referenced.
50. **Appendix G.** The criticality safety analysis methodology is based on accepted methods and techniques. The nondestructive analysis methods, results, error estimates, and overall evaluation were complete. The plutonium inventory determined to remain in the system components is reliable and satisfactory to support the criticality safety calculations and evaluations, and the D&D project planning.

The D&D operations will result in configuration changes and possible material redistribution. These factors and concerns were adequately addressed in the report and appropriate actions were suggested to ensure a conservative criticality safety margin is maintained during D&D. It is important that the D&D work procedures and NDA plans adhere to the controls and limitations outlined in this report.

51. **Appendix H.** The hazard analysis was complete in that it covered significant possibilities, and, in general, the assigned classification and likelihood were appropriate. Changes to considered are given below.

Page H-14, for electrical shorts caused by water intrusion into the building. Category II may be more appropriate than category IV (minor, non-life threatening injury or exposure). Electrical shocks may even be fatal (category I).

In general, the accident analysis sections addresses the principal concerns, and the analysis methodology and dose calculations are based on accepted methods and techniques. The results are reasonable considering the source terms, environmental conditions, and accident scenarios. Changes to considered are given below.

Appendix H, pages H-43/44, -49/50, and -57. These pages discuss air modeling for three different scenarios. Scenario 1 is a fire in the process cell; scenario 2 is an accidental drop of the pressure vessel; and scenario 3 is an accidental drop of the pipe trench cover block. Various assumptions were used for all three scenarios, including an elevated stack release with and without HEPA filtration, and a ground level, unfiltered release. In all cases, the conclusion is that, for an elevated stack release with no HEPA filtration, an insignificant dose is observed at 100 meters. It appears that the site alert criteria of 100 mrem (0.1 rem) are used. However, in all scenarios, the ground level release dose exceeds the 0.1 site alert criteria at distances of 100 and 300 meters. Also, at scenario 2, the site alert criteria are exceeded at 600 meters for the elevated stack release with no HEPA filtration. The text should justify assuming an elevated stack release (versus a ground level release) for all scenarios, and the HEPA filtration assumption for scenarios 1 and 2.

Also, NESHAPs specifies an annual dose of 10 mrem per year or 0.01 rem per year to the general public; above this level is not acceptable. For all three scenarios, the dose at 100 meters is less than the dose at further distances. For scenario 2 (elevated stack, no HEPA filtration), the doses at 0.3, 0.6, and 3.3 kilometers all exceed NESHAPs (Table 2, page H-48). Also for scenario 2 (ground level release), the doses at 0.1, 0.3 and 3.3 kilometers exceed NESHAPs (Table 4, page H-49). For scenario 3 (ground level release), the doses at 0.1, 0.3, and 3.3 kilometers all exceed NESHAPs (Table 2, page H-56). The applicability of NESHAPs should be determined.

Appendix H, pages H-52 and H-60. These pages show air model input and results. Two input parameters should be examined and possibly changed. First, no deposition velocity is assumed, although the contaminant being modeled is plutonium, a very dense element. Plutonium would be expected to settle out (deposit) fairly quickly, given its density. This could result in much higher doses closer to the scenarios modeled, possibly at the 100 meter range. This could affect the results for the site alert criteria. Second, a receptor height of 0 meters is assumed, although a receptor height of 2 meters is more commonly used in air modeling. Two meters is used because it is assumed to represent the breathing zone for most adults. Using 0 meters could result in incrementally increased doses for the scenarios being modeled. Either the text should support why these two potentially nonconservative parameters were used, or the models should be changed.