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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
1315 W. 4th Avenue • Kennewick, Washington 99336-6018 • (509) 735-7581

March 11, 2004

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EDMC

Mr. Roy J. Schepens, Manager
Office of River Protection
Untied States Department of Energy
P.O. Box 450, MSIN: H6-60
Richland, Washington 99352

Dear Mr. Schepens:

Re: Comments on Tank S-109 Partial Waste Retrieval Functions and Requirements, RPP-18812, Revision 1

The Washington State Department of Ecology (Ecology) received formal transmittal of the Functions and Requirements document (F&R) for the partial retrieval of Tank S-109. Ecology reviewed the document and the Review Comment Record (RCR) is enclosed.

As agreed to in the Tri-Party Agreement Milestone M-45-00C negotiations, additional information is required prior to Ecology's approval of any F&R submitted before February 27, 2004. The Retrieval Work Plan (formerly F&R) outline for that information was provided in the C-200 response and has been sent via e-mail to Delmar Noyes, Roger Quintero, and Moses Jarayssi. After United States Department of Energy (USDOE) submittal of that information and response to the RCR, Ecology will provide acceptance and/or comments within 30 days, and will use the process described in Figure 9-1 of the Tri-Party Agreement. However, we will continue to work with USDOE, as time is available, to expedite the review and approval of the S-109 F&R document.

As stated earlier, Ecology strongly encourages USDOE and their contractors to provide the comments on the Retrieval Work Plan outline. Until the resolution of the outline contents, Ecology expects that all future Retrieval Work Plan documents will be consistent with the outline. Additionally, Ecology will require that these Retrieval Work Plans include a schedule for your retrieval actions, to meet the Tri-Party Agreement criteria in Milestone M-45-00C.

If you have any questions, please contact Nancy Uziemblo at (509) 736-304 or me at (509) 736-3098.

Sincerely,

Jeffery J. Lyon
Tank Waste Storage Project Manager
Nuclear Waste Program

NU:lkd
Enclosure

cc: Delmar Noyes, USDOE
Roger Quintero, USDOE
John Swailes, USDOE
Moussa Jarayssi, CH2M
Todd Martin, HAB
Stuart Harris, CTUIR
Pat Sobotta, NPT
Russell Jim, YN
Ken Niles, ODOE

cc/enc: Billie Mauss, USDOE
Dennis Hamilton, CH2M
Jeff Luke, CH2M
Felix Miera, CH2M
Rick Raymond, CH2M
Ro Vinson, PEC
Environmental Portal
Administrative Record

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1. Document Number/Title	6. Program/Project/ Building Number	7. Reviewer	8. Organization/Group	9. Location/Phone
RPP-18812, Revision 1 Tank S-109 Partial Waste Retrieval Functions and Requirements		Nancy Uziemblo, lead	Washington State Department of Ecology	1315 W. 4th Ave. Kennewick, WA (509) 736-5720

17. Comment Submittal Approval:

Organization Manager (Optional) _____ Date _____

10. Agreement with indicated comment disposition(s)

Reviewer/Point of Contact _____ Date _____

Author/Originator _____

11. CLOSED

Reviewer/Point of Contact _____ Date _____

Author/Originator _____

Item	Comment(s)/Discrepancy(s) (Provide technical justification for the comment and detailed recommendation of the action required to correct/ resolve the discrepancy/problem indicated.)	Hold Point	Disposition (Provide justification if NOT accepted.)	Status
1.	**General Comment.** Functions & Requirements (F&R) documents which describe SST system closure activities must comply with closure requirements specified in WAC 173-303-610 including subsection (3)(a)(iv) which states: A detailed description of the methods to be used during partial closures and final closure, including, but not limited to, methods for removing, transporting, treating, storing, or disposing of all dangerous wastes, and the identification of the type(s) of off-site dangerous waste management units to be used, if applicable. Lacking an approved closure permit for the SST System, the U.S. Department of Energy (USDOE) must include in this primary F&R document, a description of all storage, treatment, and disposal planned for the waste to be removed from S-109. This F&R document is to include detail description of the Treatment Demonstration Facility (TDF), as it relates to the treatment, storage, and disposal of waste removed from S-109. Include a description of the status of any permitting process associated with waste storage, treatment, and disposal following retrieval. Additionally, describe all other treatment, storage, and disposal planned for S-109 waste relative to the retrieval activities covered by this F&R document. A simple reference to another document (as found on			

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	page 2, paragraph 2) is not sufficient to comply with regulatory requirements. (DH) Requirement: WAC 303-173-610 (3)(a)(iv)			
2.	**General Comment.** Please describe relevant training for operators of a system that may contain known carcinogens in the immediate environment, or provide information and chemical testing results that indicate there are no known carcinogens, or hazardous compounds identified, as described in PNNL -13000 Rev. 0, UC-2030, "Retained Gas Sampling Results for the Flammable Gas Program". (JL)			
3.	**General Comment.** Include a description of the procedures, Engineering Controls, Administrative Controls, and Operating Requirements to assure minimal fugitive emissions. This should include operating requirements for exhauster, both during construction and for its planned operation during retrieval. Also, include a specific description of the stack height, and any specific weather restrictions for construction and retrieval operations. (JL)			
4.	**General Comment.** Provide the modeled concentration of VOCs, at the point of discharge, at the boundary of the tank farm, and other relevant points of calculation. (JL)			
5.	**General Comment.** Provide a copy of a checklist or other method of recording exhauster operation and verification of weather conditions. (JL)			
6.	**General Comment.** This document should mention the required permitting activities needed to support retrieval like Air NOC and Bulk Vitrification RDD permit. (SD)			
7.	**General Comment.** Include a proposed USDOE schedule for the implementation of the DQO process as references in the October 24, 2003, letter from J. J. Lyon. Although you have presented inventory data in Table 1, Ecology believes that this does not describe the contents adequately to understand the impacts to human health and the environment, for this retrieval effort. Also, as stated in the letter, Ecology believes that the current data on the tanks lacks sufficient defensibility. Ecology seeks to establish an agreed to approach, to establish a more complete understanding of the contents and behavior of these tanks and their contents, as required by			

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	WAC 173-303-300. Implementation of this DQO is essential to assure adequate characterization and knowledge of these wastes. As stated in our conversations, we have not proposed any specific sampling or testing requirements, but seek to reach agreement on the extent of knowledge required to assure adequate understanding of these wastes. (JL)			
8.	**General Comment.** Please indicate when you will be completing the Process Control Plan for this operation. Submit this document for Ecology information. (JL)			
9.	**General Comment.** Please review the F&R Outline provided to ORP and CHG via e-mail, on February 4, 2004, (to Roger Quintero, Moses Jarayssi) and in previous letters that incorporate requirements negotiated in the M-45-00C negotiations. The Outline is an expanded list of F&R (Retrieval Work Plan) Requirements. Information identified in this Outline may be submitted by letter transmittal or incorporated into the F&R (JL).			
10.	**General Comment.** Please clarify in the F&R, the pretreatment requirements for this waste, as information only, and include an explanation of the relationship of the Categorical Exclusion, USDOE Headquarters requirements, and how Selective Dissolution may or may not relate to these items. (JL)			
11.	**Executive Summary.** (1) Leak Detection is to be technology based, Not Risk Based. Delete this language. (2) While attempting to control the retrieval process and minimizing the potential for leakage, USDOE must have an external leak detection system that is capable of detecting a leak in a timely manner (24 hours) and determining the leak volume within 48 hours. Furthermore, there must be an acceptable plan (to Ecology) for a response to any detected leak. (JC)			
12.	**Executive Summary, Page 1, 1.0 Introduction 1st Paragraph (and elsewhere).** Waste feed requirements (WFR) for the treatment demonstration facility (TDF) will need to be referenced in the F&R. Also, more information is needed for when and how waste, if not meeting WFR to the TDF, will go to DSTs. (NU)			
13.	**Executive Summary, 1st Paragraph.** State that retrieved waste will go to a permitted, treatment, test, and demonstration facility. (NU)			

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14.	**Page ii, Last Paragraph, 2nd Line.** What determines when and how the water added will be controlled? (RB)			
15.	**Page ii, 1st Bullet, Last Paragraph.** For estimates for Phase 1 BV demonstration, 300 gallons of waste will be treated while 30,000 gallons will be sent to DST. From what part of the retrieved waste will the 300 gallons be taken for treatment? The same question applies to the 70,000 gallons (i.e. 100,000-30,000 gallons) of Phase 2 waste. Describe how the separation of retrieved waste be done to determine which portion goes to the treatment facility. (RB) **Same bullet.** What will determine which waste goes to DST and which waste gets treated? How will this determination be made? Please list the discerning criteria in the detailed portion of this document and provide summary in executive summary. (SD)			
16.	**Introduction 1.0, Page 1.** Provide the reference that documents the assurance that a DST will accept 100,000 gallons of waste retrieved from retrieval operations? (RB)			
17.	**Introduction, 1st Paragraph.** "The River Protection... is in the process of accelerating SST... and developing supplemental technologies to augment the WTP..." Please make it clear the technology is being tested to compare to LAW II, and the RD&D is a permit to test to evaluate this technology. (NU) **Same Text.** Please eliminate text "accelerating single shell tank waste retrievals and" (SD)			
18.	**Introduction, 2nd Paragraph.** This paragraph is very weak as to its TPA references to specific milestones M-62-08 and M-62-11. Please add text. Also please describe M-62 milestone series and that all the tank waste is currently required to be pretreated and vitrified under M-62-00. (SD)			
19.	**Introduction, 3rd Paragraph.** "... the lower activity portion of the tank waste, referred to as low-activity waste, refers to the salt cake portion of the S-109 tank waste" will need better defensible explanation and evidence. (NU)			

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20.	**Introduction, 3rd Paragraph, Last Sentence.** There will **not** be complete radionuclide removal. Please offer how or why can the immobilized low-activity waste be called incidental waste? (NU)			
21.	**Introduction 1.0, Page 1.** Clarify if Phase 1 retrieval should be 300 gallons for each container that is processed. (RB)			
22.	**Page 1, Last Paragraph.** What is the basis for the estimated volumes of waste that could be added to a DST during Phase 1 and Phase 2 waste retrieval operations, and what is the uncertainty surrounding these estimates? Please specify. (JC)			
23.	**Page 2, 2nd Line.** What is required to get authorization to exceed interim stabilization criteria during retrieval, and how will the tank be evaluated to be "consistent with the interim stabilization criteria" after Phase 2? (RB) & (NU)			
24.	**Page 2, Section 1.1, First Sentence** please add and retrieval implementation after "of the design activities ..." Please add a reference to section 9.3 of the Action Plan on requirements of changes to a primary document. Please discuss this document's role and restriction as a primary document. (SD)			
25.	**Page 2, Paragraph 4.** Add the following bullet (#5): **Worker exposure, both short-term and long-term.** While worker safety may address the short-term exposure, the long-term effects of such exposure need to be considered. (JC)			
26.	**Page 4, Table 1.** Does the first entry mean that there will be approximately 220,000 gallons of saltcake plus sludge remaining to be retrieved? Please clarify. (JC)			
27.	**Page 4, Section 1.3, 1st Paragraph.** Add the description of S-109 depth below ground surface to the top of the tank dome, bottom of the tank, etc. Add a detailed diagram of the tank, risers, and ancillary equipment, including the cascade line that protrudes from the side of the tank. Additionally, explain the meaning of the 22 feet, 11 inch operating depth. (DH) Requirement: WAC 303-173-610 (3)			
28.	**Page 4, Section 1.3.** Explain the basis for the categorization of S-109 as a sound tank. (DH)			

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29.	**Page 4, Table 1.** Is the waste to be retrieved also expected to have the similar proportional composition? (RB)			
30.	**Page 5, Section 1.3, 2nd Paragraph**. Groundwater/Vadose monitoring should be a part of all retrieval operations. Please include description for additional monitoring, and include: 1. Carry out one GW monitoring event prior the retrieval (1 – 2 months in advance, in this case immediately) 2. Carry out one GW monitoring event after the retrieval within 1 – 2 months. These sampling events may be tied with our regular RCRA sampling. 3. If no notable change occurs or detection noted, in the measurement of contaminants, continue the regular RCRA monitoring as provided in the Monitoring Plan for this WMA. 4. At a minimum, please test for cyanide, anions, ICP metals, gross-beta, technetium-99, and low-level gamma scan. Consider adding quarterly monitoring thereafter for S-109 retrieval, for 4 quarters, and that they report any increases within 30 days of observation. (NU, DG)			
31.	**Page 5, Section 2.0, 3rd Paragraph.** This section focuses on long-term risk to the industrial worker and residential farmer via groundwater with no evaluation of short-term risk to workers or public, nor to intruder risk via soil and air pathways. Although short-term worker risk is described in various bullets in Table 4 (page 13-14), it is not discussed in Section 2.0 on risk basis. Please clarify. Short-term worker risks should be balanced against long-term public risks. (DD)			
32.	**Page 5, Section 2.0, 3rd Paragraph.** Explain the decision to use and formation of the 'hypothetical 8,000-gallon retrieval leak" to be used for risk calculations. (NU)			
33.	**Page 5, Paragraph 5.** The amount of Ci in an 8000-gallon leak (1.4 Ci) is calculated by multiplying 1.78E-4 Ci/gallons times 8000 gallons. This assumes that nuclides are evenly distributed in the tank waste. Please provide rationale for this assumption. (DD)			

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34.	**Page 5, Section 2.0, 3rd Paragraph.** What is the quantity of leak losses during waste retrieval from proposed LDMM system? (JC)			
35.	**Page 5, Section 2.0, 4th Paragraph.** Explain why "... only the risks associated with retrieval leaks are addressed". (NU)			
36.	**Page 5, Section 2.0, Last Paragraph on Page.** Please change the third sentence in this paragraph as follows: The risk assessment guidance document describes the technical basis for a streamlined risk assessment process. ~~that DOE and Ecology have agreed to use for purposes of preparing F&R documents.~~ Note that at least Ecology has not agreed to the processes used in this document for risk assessment. (BR)			
37.	**Pages 5 through 11, Section 2.0 (Risk Basis).** It is necessary for risk to provide supporting information for closure performance standards. Risk cannot be considered for one tank while ignoring other nearby sources of contamination. Future groundwater risk is cumulative and must include other sources of contamination that have the potential to add together and create an impact to groundwater greater than one individual component in isolation. Risk at the S/SX WMA from just the past releases to soil/vadose zone alone has been calculated in the 10-4 range, which exceeds clean closure performance standards. Any additional waste remaining in S/SX WMA adds to this level of contamination. The risk documentation only considers one contaminant when assessing risk. USDOE must at least include several major contaminants using the best available information as a basis. What is the relevance of the 1.78 x 10-4 Ci/gallon number included in this section? USDOE also limits risk to only one pathway (groundwater) while ignoring potential exposure to workers – either direct contact or through the air as emissions. Worker exposure includes other contaminants besides Technetium 99. Provide a revised risk section addressing the above concerns. (DH) Requirement: WAC 173-303-610 (2)(b)			
38.	**Page 6, Figure 2.** Explain the purpose and results of the boreholes shown on this figure surrounding Tanks S-104 and S-105. These appear to be different than the locations of the drywells shown on Figure 3. (JC)			

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39.	**Page 8, Figure 4.** Where and when are these ILCRs calculated? Are these ILCRs at the WMA fenceline? What year does peak ILCR occur over the 10,000 year modeled period for industrial and residential scenarios, as mediated via a groundwater pathway? Estimates of risk at specific times and locations will ultimately be needed for integrating tank waste with other Hanford source terms in order to assess Hanford site-wide cumulative risk with the SAC tool. Please comment on the uncertainty in the ILCR and Tc-99 Ci estimates displayed in this plot. For the assumed 8000-gallon leak, MTCA ILCR targets (1E-5 and 1E-6) are exceeded for both industrial worker (7E-4 ILCR) and residential farmer (2E-2 ILCR). What is the significance of these exceedances in terms of tank retrieval strategy and closure? By way of comparison, C-200 series tanks (Figure 4 in RPP-16525, Rev 3) show ex tank industrial worker ILCR as approximately 1E-5 for a 1 Ci Tc-99 leak. This C-200-series tank ILCR is about 50 times lower than the corresponding ex tank industrial ILCR for a 1 Ci Tc-99 leak in tank S-109 presented here (approximately 5E-4). Is this difference due primarily to differences in the corresponding transport transfer functions used? Please clarify. (DD)			
40.	**Page 8, Section 2.0, Paragraph below Figure 4.** Tc-99 only accounts for 81% of the risk to industrial workers. Please list the contaminants (in descending order of % contribution) that account for the remaining 19% of the risk. (BR)			
41.	**Page 8, Section 2.0, 1st Bullet.** A focus on only long-term human health via the groundwater pathway is not satisfactory. Please evaluate radionuclide risks to workers via the direct exposure pathways (soil and air) and include short-term risk to workers during the retrieval activities. This tank has large inventories of Cs-137 and Sr-90 and various isotopes of Pu. Leaks may be shallow in the subsurface, and workers at the location could be harmed by leaks. (BR)			
42.	**Page 8, Section 2.0, 2nd and 3rd Bullets.** Evaluate direct exposure (soil and air) for workers, short-term worker risk, and long-term risk via the groundwater pathway. Also, provide the inventory in the tank as best as it is known,			

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	including its inventory in solid and solution phases. This will be used in calculations to help guide Ecology's decisions should a leak occur. (BR)			
43.	**Page 8, Paragraph 2.** Although Tc-99 is predicted to contribute 81% and 95% of the ILCR for industrial and residential scenarios, respectively, it would be informative to also present results for an indicator contaminant of non-cancer effects (e.g., nitrate, nitrite), as quantified via hazard quotient (HQ). Please include at least one hazardous chemical in the assessment – the one with the highest estimated HQ. For different chemicals with different toxicity endpoints and different dose-response methodologies (e.g., Tc-99 vs. nitrate), ILCR and HQ are distinct metrics which cannot be compared on a common scale. (DD) (BR)			
44.	**Page 9, Paragraph 2.** The statement that radiological cancer risk is more restrictive than chemical cancer risk or non-cancer HI depends partly on the assumption that COPCs are evenly distributed in the tank waste. Please acknowledge this assumption and comment on its rationale. (DD)			
45.	**Page 9, Section 2.0, Risk Equation.** Please be more specific about I_i. Is this inventory for the leak, or is it a total value for the tank? (BR)			
46.	**Page 10, Tables 2 and 3.** Regarding Table 2, please acknowledge the uncertainty in the "transport transfer function" (pCi/L per Ci), since this value is the simple ratio of point estimates, namely peak Tc-99 groundwater concentration (pCi/L) from the S-104 past leak divided by the Tc-99 inventory in the tank S-104 past leak (Ci). Similarly, regarding Table 3, acknowledge the uncertainty in risk coefficients (ILCR per pCi/L). (DD)			
47.	**Page 11, Section 2.0, 1st Full Paragraph and Figure 4.** It is stated that the risk picture in Figure 4 does not include contributions from other sources in the S Tank Farm. Existing contamination in the vadose zone near the tank is not accounted for in these evaluations. Please provide the risks associated with nearby contamination and/or the S Farm itself. Figure 4 might be a good place for this information. (BR)			
48.	**Page 11, Section 2.0, 1st Full Paragraph.** Note that the scenarios evaluated here are industrial and residential farmer scenarios. Native American scenarios often provide higher risk values. Also, regulatory ILCR goals for single			

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	contaminants (such as Tc-99) can be 10x lower than those for a mixture of contaminants. Therefore, Ecology would have to use very low ILCR goals (possibly as low as 1E-07 or lower) to err on the conservative side if a leak occurs if we are only provided with this type of assessment. (BR)			
49.	**Page 11, Paragraph 2.** Please acknowledge the uncertainty in estimated risks, due to uncertain transport transfer function, risk coefficients, and leak inventory. Can the magnitude of the uncertainty in these input parameters, as well as in the risk output, be estimated? (DD)			
50.	**Page 16, 4.1.1, Leak Mitigation Strategy.** What is the predicted amount of water addition during retrieval that should be minimized? There are already 16,000 gallons of drainable interstitial liquid in the 533,000 gallons of total waste. (NU)			
51.	**Page 16, 4.1.1, Leak Mitigation Strategy, 2nd Bullet.** The location of retrieval for Phase 2 is briefly discussed, but where and what are the details for Phase I retrieval location risers in the tank? (NU)			
52.	**Page 17, 4.1.2, Leak Detection Strategy, 1st Bullet.** Where/what risers are LOWs in and how often will the LOW be measured? (NU)			
53.	**Section 4.1.2 -** Please include a justification and basis for the implementation of HRR only during Phase 2. Section 1.0 indicates as much as 30,000 gallons could be sent to the DST's. (JL)			
54.	**Page 17, Section 4.1.2, Bullet 2.** Describe that if it is necessary to use baseline LDM system of drywell monitoring as the primary leak detection system supplemented by LOW monitoring: 1) The estimated ability of the drywell monitoring to detect leaks from various locations in the tank (in terms of gallons). 2) The estimated accuracy of using LOW measurements for all potential situations (in terms of gallons). 3) A description of responses to different potential tank/ancillary equipment leak scenarios. Requirement: WAC 173-303-610(3). (DH)			

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55.	**Page 18, 4.2.1 Paragraph 1.** It is recommended that the Phase 3 activities for complete retrieval of S109 be a separate document (Waste Retrieval Plan) and not a revision of RPP-18812. (NU)			
56.	**Page 18, 4.1.2.** When using HRR, what are the expected gallons detected if a leak is sensed? (NU)			
57.	**Page 18, Section 4.** There needs to be a more complete description of the retrieval system including, but not limited to: • A detailed description on what hase 1 physical system will look like and how it will be implemented. How does selective dissolution work? What is the evidence for radionuclide separation? How in detail will the high rad supernate be discerned? What will be criteria? How will know when to switch to phase 2 - what will be criteria, how will it be measured? • Please provide a detailed description on what phase 2 physical system will look like and how it will be implemented. How does controlled sluicing work? How in detail will the high rad portion be discerned and separated during this phase? What will be criteria? How will know when to stop phase 2 - what will be criteria, how will it be measured? How will control sluicing result in lower rad product being produced when you needed selective dissolution to accomplish this in phase 1. • How much liquid will be introduced during the specific phases (total and rate)? What will the liquid be (Always water? Heated water?) • What kind of nozzle pressures are you expecting in phase 2? • What does liquid /solid separator look like, how does it work? • Please show more system details on the retrieval system – such as tank sizes, capacities, description of liquid solid separator, and number of sluicing nozzles in tank. • Describe in detail pre-retrieval sampling efforts, during retrieval sampling efforts. A new section needs to be added that describes in detail how this planned action will meet the criteria laid out by NRC and low activity waste determination. What are the NRC criteria? What is the concentration of key			

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	contaminants in S-109? What is expected concentration is supernate – destined to DST system? What is concentration expected in selective dissolution product and what is the evidence for this? What is expected concentration in controlled sluicing product – and is the evidence for this. What will WTP be able to do when it is built? What is concentration of cesium in DST system – for comparison reasons? What is evidence for limited sludge within the salt cake? Where is the sludge layer? How does solid liquid separator meet NRC criteria? What is the limiting specification for waste feed to the bulk vitrification RDD facility?(SD)			
58.	**Page 18, 4.2.** The liquid/solid separation system and staging tank will be an important step in the retrieval process. More details are needed in this document. Text should added to this document to note that these aboveground tanks and systems will be permitted by the adjacent RD&D facility where the details will be included in the permit for new equipment tanks, including installation and operation under WAC 173-3030640(3)-(8) for: 1. above ground staging tank 2. solid/liquid separation (NU) (SD)			
59.	**Page18-19, 4.2.1, Partial Waste Retrieval System Description.** More detail is needed to approve the "historical waste management actions that contribute to pretreatment of the waste". • The previous processing of S-109 to reduce Cs and Sr lacks information on how much was removed, when this was removed, and where did this waste go. There is not enough evidence in this F&R to substantiate this as "pretreatment". • What is the evidence and data for reduction of Cs and Sr through crystallization of the salt solution during interim stabilization? • How will the reduction of Cs through removal of the brine be done and recorded? • How will the liquid/solids separation process minimize sludge carryover? (NU)			

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60.	**Page 19, Section 4.2.1.** Besides reducing the Cs-137 concentration (by selective pumping), please clarify whether the Waste Retrieval System will pretreat for reducing other constituents, e.g. Tc-99. When will complete and detailed information on pretreatment be available? Has a determination been made that retrieved waste will be suitable for use in the treatment facility? (RB)			
61.	**Page 19, Section 4.2.1, 4th Bullet.** Please provide a definition for selective dissolution in this context. This term, when used in other applications, can mean a dissolution process that targets a specific set of components in a mixture. If it has the same meaning here, what is the solution that will be used to accomplish selective dissolution? (BR)			
62.	**Page 19, Bullet 5.** What does "inadvertently retrieved sludge" mean in a waste retrieval process? (JC)			
63.	**Page 19, Next to Last Paragraph.** Note that the addition of any liquid to a hazardous waste, via the "mixture rule" means that the total sum (i.e., original plus added liquid) is dangerous waste. (JC)			
64.	**Page 20-21, 4.3.1.** What is the expected amount of dissolution water to be added in Phase 1 and 2? How much of the initial liquid removed is anticipated to go to the DST? (NU)			
65.	**Section 4.3.1.** Please provide clarification of the Phase 1 retrieval operation. Section 1.0 indicates as much as 30,000 gallons could be sent to the DSTs and also that as little as 300 gallons (or 1,000 gallons of brine) may be retrieved. Clarify what will be pumped (I assume it is interstitial fluid), what amount of liquids are being added and the timing of such additions, what pretreatment means and what will the results be. Provide mass or concentrations if there are any speculations regarding these values. (JL)			
66.	**Page 21, Section 4.3.2, Paragraph 1.** When and where will the specifics of drywell logging be provided? This should include the number and depth of boreholes to be logged, the instruments/tools to be used in logging, the detection limits, the logging rate, and the frequency of logging. (Information also needed in RCR #54 - Section 4.1.2) (JC)			

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67.	**Page 21, Section 4.3.2, Paragraph 2.** When and where will the response to a detected leak be provided to Ecology? This process is a critical element in the waste retrieval process. (JC)			
68.	**Page 21, Section 4.3.3.** Add detail or reference to summarize/tabulate the response actions to any detected leak during waste retrieval. (JC)			