Contract No:

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Disclaimer:

Data Call Questions Related to Potential NEPA/Data Gaps

Based on review of the related NEPA documents, and consideration of the potential gaps in NEPA coverage, a number of questions have been generated. These questions are generally higher level (less detailed) questions that should help to establish the applicability of analyses in existing NEPA documents and the ability of these documents to provide NEPA coverage for the Proposed Action. These questions do not request detailed information about SRS facilities/activities and the Proposed Action like typically would be requested when performing impacts analyses for an EIS. We do not believe detail information is needed; if it is needed, it may be an indication that an SA is not the appropriate level of NEPA documentation for the Proposed Action.

1. How much SNF has been processed in F- and H-Canyons at SRS since the RODs for the Programmatic SNF & INEL EIS (DOE/EIS-0203) and FRR SNF EIS (DOE/EIS-0218) were published in 6/1/95 and 5/17/96, respectively. This will help determine how much remaining SNF processing capacity exists from that analyzed in each NEPA document.

   Most of the data provided is from the Material Control and Accountability (MC&A) reporting system. The MC&A reporting system only contains data since it was implemented in 6/1998, additional data that was available is noted in the heading.

MC&A Data for F-Canyon Processing Throughput 6/1998-Present (+7 TRR Batches 1/1997-4/1998)		
Material Type	Material	MT
10	Depleted U	41.52
20	Enriched U	0.00
50	Total Pu	0.34
70	U-233	0.00
82	Np-237	0.00
88	Thorium	0.00
Total		41.86

MC&A Data for H-Canyon Processing Throughput 6/1998-Present (+3 IRR Mk-22 Batches in 1997)		
Material Type	Material	MT
10	Depleted U	0.00
20	Enriched U	22.40
50	Total Pu	0.18
70	U-233	0.15
82	Np-237	0.05
88	Thorium	1.97
Total		24.76

2. How does the proposed processing rate (32.9 MTHM over 12 to 13 years = 2.5 to 2.7 MTHM per year) compare to the 1985 and 1986 processing rates which were described as “near capacity” in the IMNM EIS (DOE/EIS-0220)? We have been unable to locate a description of the basis for the near capacity processing rates from 1985 and 1986. Were all 3 dissolvers operating at the same time in both F-and H-Canyons? Were 2 dissolvers operating at the same time in both F-and H-Canyons? Note: the SRS SNF EIS (DOE/EIS-0279) states that operation of 2 dissolvers was considered to be “full capacity.” Also, Maxcine indicated that only 2 of the 3 dissolvers in H-Canyon can be operated at any one time because of the way the exhaust system is configured.

   Values from 1985 & 1986 are not easily available, thus a comparison couldn’t be made to 1985 and 1986. From 1/1997 until the end of 2002, F-Canyon processed 41.86 MTHM. The average material processed in F-Canyon was over 8 MTHM/year. The operation of H-Canyon is bounded by the capacity of F-Canyon, alone.

H-Canyon's existing exhaust system does not support operating 3 dissolver vessels simultaneously. The electrolytic dissolver is operated, by stitching off-gas from either chemical dissolver to the electrolytic dissolver. Installation of an additional off-gas system would be required to run the electrolytic dissolver concurrently with both chemical dissolvers, but also cost prohibitive.

3. How would operations change if all the processing is performed using 3 dissolvers in H-Canyon versus being split between dissolvers in F- and H-Canyon as described in the Programmatic SNF & INEL EIS (DOE/EIS-0203) and FRR SNF EIS (DOE/EIS-0218)? F-Canyon and H-Canyon are approximately 2 miles apart. F-Canyon is about 5.5 miles from the nearest site boundary. H-Canyon is about 8 miles from the nearest site boundary. For example, would resource use for processing in F- and H- Canyons bound processing in 3 dissolvers in H-Canyon? Staffing? Air emissions? Worker and public dose?

   Processing would not change because the same chemicals and unit operations will use to dissolve material. In the past, two Canyons were operational; and they both processed material simultaneously. There was a significant difference between the two Canyons when they were both operational. F-Canyon used continuous evaporators and jumbo mixer settlers; as oppose to H-Canyon's batch operations. Jumbo mixer settlers along with continuous evaporators were used in F Canyon to increase throughput. Continuous evaporators evaporated 12 -30 thousand pounds per hours vs the batch evaporators used in H-Canyon where the rate was 2 -3 thousand pounds per hour. Also. H-Canyon's existing exhaust system does not support operating 3 dissolver vessels simultaneously. The electrolytic dissolver would have to share the exhaust with one of the other dissolvers.

   Currently, H-Canyon is the only facility that's operational and capable of processing material, though not at the rate of F-Canyon. Therefore, material processing will be limited by production capability, storage, and system configuration. Previous NEPA evaluations should be bounding where both F & H Canyons were considered in the assessment for processing used nuclear fuels at the SRS.

4. All of the previous NEPA documents (except Draft Supplement Analysis Disposition of Fast Critical Assembly Plutonium [DOE/EIS-0283-S2-SA-02]) address the processing of ASNF only. Are there concerns with differences in the processing of NASNF that would affect the impacts? Larger electricity use? Different chemicals? Different emissions?

   The only significant difference between the dissolution of ASNF and NASNF is that NASNF uses electricity and not as much steam versus the dissolution of ASNF. The chemical composition is roughly the same. The emissions are very similar, the same off-gas system is used, and any iodine gets processed in the same reactor.

5. Would the amount of HLW liquid generated result in exceeding the capacity of the storage tanks or DWPF, or cause changes in how these facilities are operated?

   Revision 21 of the Savannah River Site, Liquid Waste System Plan, January 2019, (attached) includes the receipt of 200,000 gallons of HLW per year in FY20-FY22 and 300,000 gallons of HLW per year in FY23-FY30 for a total of 3,000,000 gallons for the period of 2020 through 2030. The Proposed

Action (processing without uranium recovery) will produce ~200,000 gallons of HLW per year starting in 2022 and ending in 2033 for a total of 2,400,000 gallons of HLW. This is a decrease in HLW volume of 600,000 gallons when compared to the baseline case (Rev 21). In order to accommodate the higher U235 content, DWPF will revise its neutron poison strategy to credit the poisoning benefit of additional materials that are already present within the HLW (i.e., gadolinium). This does not represent a change in how the facility (DWPF) is operated. Additionally, to facilitate HLW discard schedules in the Proposed Action, the HLW Tank Farms will increase the number of waste tanks utilized to compile DWPF sludge batches. Under the current processing schedules (Rev 21), a single tank is sufficient to support sludge batch preparation. Under the Proposed Action a second HLW tank will be dedicated to this function. This does not represent a change in how the Tank Farms are operated.

6. Would an increase in the fissile material limit in the liquid HLW and subsequent glass cause an increase in any impacts such as worker or public dose or cause changes in how these facilities are operated? Would there be similar changes for disposal of saltstone? Are any reports available that examine these issues?

   The Proposed Action will increase the U235 content of the sludge feed to DWPF. The attached document (N-CLC-S-00117) determines the radionuclides that are significant for three radioactive waste streams for safety analysis purposes at DWPF including Gamma Source Strength (worker dose) and Inhalation Dose Potential (dose to the public). It can be seen in Tables 1a and 5a (Gamma Source Strength) and in Tables 2a and 6a (Inhalation Dose Potential), that U235 is an insignificant contributor to worker dose and dose to the public. Additionally, dose to the public can be evaluated by examining the results of DWPF quarterly air emission samples. Currently there is no significant impact to the radiological airborne emissions dose from DWPF, 291-S Vitrification Process (Zone 1). The Zone 1 stack emission point is currently PIC level 3 which requires quarterly sampling and monitoring. Based on review of the January 2020 SRS radiological release data report (attached) which shows the latest publicized 291-S Vitrification Process (Zone 1) sampling data (pages 26 and 33), U-235 contributions to the dose are identified and measured as part of the quarterly sampling, but are negligible regarding the dose. Therefore, the Proposed Action does not increase worker dose or the potential dose to a member of the public. As discussed in the response to #5, in order to accommodate the higher U235 content, DWPF will revise its neutron poison strategy to credit the poisoning benefit of additional materials that are already present within the HLW (i.e., gadolinium). This does not represent a change in how the facility (DWPF) is operated. Since the Proposed Action discards fissile material directly into feed batches for DWPF, there is no impacts to Saltstone worker dose, dose to the public, etc. As discussed in responses to questions #5, and #7 the Proposed Action decreases the quantity of grout produced over the LW lifecycle.

7. How many HLW glass canisters would be generated at DWPF as a result of the ABD mission in H-Canyon? How much saltstone would be generated?

   Preliminary modeling comparing the Proposed Action to the current baseline indicates that the Proposed Action will increase the number of DWPF canisters by 521. As mentioned above (#5), the quantity of HLW generated by the Proposed Action decreases by 600,000 gallons which results in a corresponding decrease in material processed at the Saltstone Processing Facility and a decrease in Saltstone grout production of ~1 million gallons. The Liquid Waste contractor, Savannah River

Remediation, is currently updating the Liquid Waste baseline which will be documented in a revision to Liquid Waste System Plan (Revision 22). Revision 22 will include comparative cases examining liquid waste processing scenarios with and without the Proposed Action.