

From: clayton.shedrow [REDACTED]
Sent: Wednesday, February 27, 2008 2:35 PM
To: Dimarzio, John A.
Cc: greg.burbage [REDACTED]; betsy.westover [REDACTED]; joseph.damelio [REDACTED]; linda.nass [REDACTED]; perjetta.hightower [REDACTED]; lee.carey [REDACTED]; james.bell [REDACTED]; rick.spaulding [REDACTED]
Subject: Fw: Updated PuD Immobilization Data Call Response:

Attachments: SAIC CONSTRUCTION 2-27-08.doc; Comments on the Immob Response-022208.doc

John

Additional input per the SEIS data call. Any related technical questions should be directed to John Hammond ([REDACTED]).

[REDACTED]

Thanks.

C. Barry Shedrow
[REDACTED]

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----- Forwarded by Clayton Shedrow [REDACTED] on 02/27/2008 02:30 PM -----

John Hammond [REDACTED] To Greg Burbage [REDACTED] Clayton Shedrow [REDACTED]
[REDACTED]
02/27/2008 02:23 PM cc Betsy Westover [REDACTED], Joseph Damelio [REDACTED]
[REDACTED] Linda Nass [REDACTED] Perjetta Hightower/
[REDACTED] Lee Carey [REDACTED], James Bel [REDACTED]
[REDACTED], Rick Spaulding [REDACTED]
Subject Re: Fw: Updated PuD Immobilization Data Call Response:
[Link](#)

See the attached revised spreadsheet. I revised the responses to questions 12, 13, 14, 15 16 and 16a to reflect a Construction completion date by the end of FY13. In order to achieve this completion date, the data from the MSVL Option (6 Melters) was utilized. Based on current information, the MSVL data will bound any current and future options.

Greg Burbage [REDACTED]

02/25/2008 09:28 AM

To John Hammond [REDACTED], Linda Nass [REDACTED]
cc Clayton Shedrow [REDACTED], Perjetta Hightower [REDACTED]
[REDACTED] Joseph Damelio [REDACTED], Betsy Westover/
[REDACTED]

Subject Fw: Updated PuD Immobilization Data Call Response:

John/Linda,

Based on your previous responses to the SAIC data call, SAIC has forwarded a few additional questions. Please review these on the attachment and provide reply to these questions to Barry Shedrow and myself.

Relative to format, simply go under the "bubbled" question and add you comment/response below it. Your comment should be in red, whereas the SAIC comment will be a blue bubble. For clarification to SAIC, answering your respective comment in a complete sentence would be helpful. As before, if you have any questions, give me a call. Thanks.

----- Forwarded by Greg Burbage [REDACTED] on 02/25/2008 09:17 AM -----

"Dimarzio, John A." [REDACTED]
[REDACTED]

02/25/2008 08:04 AM

To <clayton.shedrow [REDACTED]>
cc <greg.burbage [REDACTED]> <ralph.cansler [REDACTED]> <betsy.
westover [REDACTED]> <bob.bayer [REDACTED]> <perjetta.
hightower [REDACTED]>, "Groome, Chadi D." [REDACTED]
[REDACTED]

Subject RE: Updated PuD Immobilization Data Call Response:

I have a few comments/questions on the interim data call response. The comments appear as balloons in the right margin. You'll need to be sure that you have this feature turned on to see them.

Thanks....John

From: clayton.shedrow [REDACTED]

Sent: Friday, February 22, 2008 1:18 PM

To: Dimarzio, John A.

Cc: greg.burbage [redacted]; ralph.cansler [redacted]; betsy.westover [redacted]; bob.bayer [redacted]; perjetta.hightower [redacted]

Subject: Fw: Updated PuD Immobilization Data Call Response:

John

Attached are additional data in response to the PuD Immobilization data call. As you can see from the attached email, Greg believes that we will probably be able to complete this component of the SEIS data call by Monday of next week. As always,

[redacted]

If your technical lead has any questions, I recommend that he contact Gred Burbage directly ([redacted]).

Thanks.

C. Barry Shedrow

[redacted]

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----- Forwarded by Clayton Shedrow [redacted] on 02/22/2008 01:06 PM -----

Greg Burbage/

[redacted]

To Clayton Shedrow [redacted]

cc Ralph Cansler [redacted], Betsy Westover [redacted], Bob Bayer [redacted]

02/22/2008 01:04 PM

[redacted] Perjetta Hightower [redacted]

Subject Updated PuD Immobilization Data Call Response:

Barry,

Attached is the updated PuD Immobilization data call response. You may wish to provide this information to SAIC, or wait until Monday, at which time I believe our response will be complete. If you have any questions, please give me a call. Thanks.

Immobilization Facility Information Request
 (please provide numerical data in commonly reported units)

Information Requested	Response
Immobilization Facility	Modification of K-Reactor Building for immobilization of up to 13 metric tons surplus plutonium using the glass can-in-canister approach
General	
Schedule	Source: Data Call Response – 10/4/07
- Design	Design complete – 2009 (<i>satisfied in original data call response information</i>)
- Construction or Modification	Construction complete – 2013 (<i>satisfied in original data call response information</i>)
- Operation	Operations – 6 years ending in 2019 (<i>satisfied in original data call response information</i>)
- Deactivation and decommissioning	Deactivation and Decommissioning – Begins 2019 (<i>satisfied in original data call response information</i>)
Description of facility including:	
- Building number	Old K-Reactor Building NOTE: OOU per DOE-SR OPSEC Guide.
- Latitude and Longitude[P1]	1) Vernon O’Steen – can you provide a lat & longitude generally in front of KAC? Info. available. Can provide if absolutely necessary.
- Elevation above NGVD (units)	2) Vernon O’Steen – do you have elevation capability? Approximately 280 msl.
- Area (units)	3) Vernon O’Steen – do you have acreage/hectares assessment capability? Approximately 385,010 square feet.
- Plot plan	4) Not applicable NOTE: Floor Plans for Sensitive Facilities are UCNI.
- Floorplan with equipment arrangement	Data Call Response – 10/25/07, file “Vitrification System” and “Oxidation System” (<i>satisfied in original data call response information</i>)
- Features that prevent unauthorized entry (unclassified description)	5) Bruce Hewett – is there a document/plan/description that we can provide SAIC? DOE Orders along with SRS 7Q Security Manual Procedures identify the Facility Security Requirements. Security & Safeguard Features, to include DBT Upgrades, are controlled information.
- Features that ensure safeguards against malevolent acts or material diversion by internal and external entities (unclassified description)	Data Call Response – 10/25/07, file “ICS and MCA” (<i>satisfied in original data call response information</i>)
- Fire protection systems	Data Call Response – 10/25/07, file “Fire Protection” (<i>satisfied in original data call response information</i>)
- Features that control releases of airborne contaminants (include diagram of treatment train)	Data Call Response – 10/25/07, file “Vitrification System” and “HVAC” (<i>satisfied in original data call response information</i>)
- Features that control releases of waterborne contaminants (include diagram of treatment train)	
- Features/procedures that prevent criticality	6) Greg Burbage – description to describe building sumps/pumps (Randy Sears). Water/liquid is removed from the reactor building through a system of sumps and associated pumps. These sumps may be purged to various holding vessels/tanks for treatment at other onsite wastewater treatment facilities, or if “uncontaminated”, be released to the environment. No treatment of waterborne contaminates takes place within the KAC, beyond that for sanitary wastewater.
- Description of liquid and non-liquid waste processing	7) Bob Bayer – please provide document/information that prevents KAC criticality. Data Call Response – 10/25/07, file “Waste Management” and “Waste Study” (SK-DA-WM-0001)
Construction/modification	
Land disturbed for laydown (acres or hectares)	2 acres Source: Data Call Response – 10/25/07, file “Site Work” (satisfied in original data call response information)

Information Requested	Response
Description of activities conducted (e.g., decontamination/removal/disposal of existing facilities/equipment, land clearing, onsite concrete plant) and modifications needed (e.g., floors, walls, support beams, roof, waste management, ventilation, new roads)	Data Call Response – 10/4/07 & Data Call Response – 10/25/07, file “Waste Study” (SK-DA-WM-0001) <i>(satisfied in original data call response information)</i>
Describe type and quantity of air pollutant emitting equipment and frequency and duration of use.	Data Call Response – 10/25/07, file “Construction Equipment” <i>(satisfied in original data call response information)</i>
Describe type and quantity of noise producing equipment and frequency and duration of use.	Data Call Response – 10/25/07, file “Construction Equipment” <i>(satisfied in original data call response information)</i>
Emission release parameters – For any stack releases - release location (latitude & longitude), stack height, stack diameter, stack exhaust velocity or flow rate, exhaust air temperature – For fugitive releases - release location and dimensions of source area	<p>8) Linda Nass – describe, if applicable/quantifiable, emissions released during CX/mod. phase of project? <i>A stack location or height has not been determined. A final determination has not been made. Emissions could go out the existing 105-K Reactor Main Stack or a new stack could be built or separate buildings could be built (each with their own stack/vent) outside of the 105-K Reactor Building. The operating 105-K Main Stack currently has a maximum airflow of 107,000 CFM. Stack height is 130 ft from ground level (75 ft above the structure) / Diameter of this stack is 16 ft / and exhaust air temperature is 78°F, exit velocity is 15 ft/sec. (The exit temperature could change with the introduction of the PuVit process depending upon which stack would be used. Air would need to be cooled prior to exiting the gloveboxes/Hepa filters.)</i> [P2]</p> <p>9) Linda Nass – describe, if applicable/quantifiable, fugitive emissions during CX/mod. phase of project? <i>Fugitive emissions during the CX/mod phase of the project would be minimal. If seen, these would exit out the 105-K Reactor Main Stack (info provided above).</i></p>
Air emissions (point source and fugitive): - Criteria Pollutants (metric tons/yr) - HAPs (kilograms/yr) - Radioisotopes (curies/yr)	10) Linda Nass – are there any point source or fugitive source releases for criteria pollutants, HAPs, or radioisotopes during CX/mod. phase of the project? <i>None. If any, they would be in the noise range. Work on HX removal, Bingham pump removal, etc would be done in a containment hut so potential emissions would be minimal. At the most an increase of 10% over current stack emissions may be seen; current emissions from the 105-K Reactor Main Stack were 4.92E-04 mrem/yr for CY07 (or 3.51E-02 Ci) seen mostly as tritium.</i>
Liquid effluents - Location(s) of discharge(s) and copies of permit(s) - Rate(s) of discharge(s) (units/day) - Concentrations of contaminants (picocuries/liter or micrograms/liter)	11) Greg Burbage – describe liquid emissions (locations, permits, rates, concentrations, contaminants) created during CX/mod. phase of the project? <i>Liquid emission from KAC are storm water, which are permitted per SCDHEC Permit #SCR000000, and process water which are permitted per SCDHEC Permit #SC0000175. The process wastewater outfall is designated as NPDES Outfall K-18, and is limited for pH, total suspended solid, and flow. Tritium, typically at or below background levels, is discharged from K-18. Typical flow rate is 200-400 gallons/minute. The PuD Project construction is not expected to effect KAC liquid emissions.</i>
Employment for each year (FTEs)	12) John Hammond – do you have employment numbers for the CX/mod. phase of the project? <i>Maximum FTE’s (Year/FTE): FY09/75, FY10/75., FY11/223, FY12/252, FY13/215, Average FTE’s (Year/FTE): FY09/68, FY10/75., FY11/154, FY12/239, FY13/188 *Note: These FTE’s are based on the MSVL Option (6 Melters).</i>

Information Requested	Response																														
Shifts	13) John Hammond – do you have shifts information for the CX/mod. phase of the project? <i>Day and night shifts will be required to achieve schedule completion dates</i> [P3]. <i>This would be 2-10 hour shifts with 12 hour shifts utilized as needed on a limited basis.</i>																														
Worker radiological exposure - total dose (person-rem)	14) Ben Morgan – is radiological exposure information during CX phase of the project available? <i>I spoke with John Hammond and got the hours expected for the D&R phase. According to Wayne Farrell the external dose rates in the parts of K-area that will be involved are low. Using a near background dose rate of 0.05 mrem/h and the hours required gives a rough estimate of 59760 h * 0.05 mrem/h = 2988 mrem for FY09 and 71280 h * 0.05 mrem/h = 3564 mrem for FY10. Accounting for the reporting threshold of the dosimeters the actual recorded dose will be about 300 mrem per year. Note: With the MSVL concept, the D&R of contaminated equipment will be limited. Therefore, the exposure would be reduced by approximately 75%.</i>																														
Number of exposed workers	15) John Hammond – can you estimate a number of workers exposed for the CX/mod. phase of the project? <i>Average FTE's for D&R: FY09/68, FY10/75 (Note: The D&R was scheduled during FY09 & FY10 .)</i> <i>*Note: These FTE's are based on the MSVL Option (6 Melters). With the MSVL concept, the D&R of contaminated equipment will be limited. No radiological exposure is expected after the D&R phase is completed.</i>																														
Utilities needed - Potable water (units/yr) - Non-potable water (units/yr) - Electricity (units) - Gasoline (units/yr) - Diesel Fuel (units/yr)	16) John Hammond – can you estimate in annual usage for the CX/mod. phase of the project of potable water, non-potable water, electricity, gasoline, and diesel fuel? (As provided by Rick Spaulding, CX Mngr). <table border="1" data-bbox="787 755 1287 1079"> <thead> <tr> <th></th> <th>FY09</th> <th>FY10</th> <th>FY11</th> <th>FY12</th> <th>FY13</th> </tr> </thead> <tbody> <tr> <td>Pot Water (gal)</td> <td>500</td> <td>500</td> <td>500</td> <td>1000</td> <td>800</td> </tr> <tr> <td>Non-Pot (gal)</td> <td>500</td> <td>500</td> <td>500</td> <td>1000</td> <td>800</td> </tr> <tr> <td>Gas (gal)</td> <td>200</td> <td>200</td> <td>200</td> <td>1000</td> <td>800</td> </tr> <tr> <td>Diesel (gal)</td> <td>400</td> <td>400</td> <td>400</td> <td>4000</td> <td>3000</td> </tr> </tbody> </table> <p><i>NOTE: Minimal to no impact on existing electrical utilities during construction phase</i> <i>*Note: These quantities are based on the MSVL Option (6 Melters).</i></p>		FY09	FY10	FY11	FY12	FY13	Pot Water (gal)	500	500	500	1000	800	Non-Pot (gal)	500	500	500	1000	800	Gas (gal)	200	200	200	1000	800	Diesel (gal)	400	400	400	4000	3000
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Information Requested	Response																																										
<p>Resources needed</p> <ul style="list-style-type: none"> - Concrete (units) - Asphalt (units) - Steel (units) - Crushed stone (units) - Sand & Gravel (units) - Soil (units) - Lumber (units) - Chemicals (units) - Gases (units) - Other construction materials (units) 	<p>Data Call Response – 10/4/07 (concrete volumes) (<i>satisfied in original data call response information</i>) Data Call Response – 10/25/07, file “CSA Outside PIDAS” (concrete volumes for fan house, sand filter and stack) (<i>satisfied in original data call response information</i>)</p> <p>16a) John Hammond (or Rick Spaulding if delegated) – can you provide the construction phase demands for asphalt, steel, crushed stone, sand & gravel, soil, lumber, chemicals, gases, and other, as requested at left?</p> <table border="1" data-bbox="787 418 1423 732"> <thead> <tr> <th></th> <th>FY09</th> <th>FY10</th> <th>FY11</th> <th>FY12</th> <th>FY13</th> </tr> </thead> <tbody> <tr> <td>ASPHALT (TONS)</td> <td>0</td> <td>0</td> <td>200</td> <td>500</td> <td>100</td> </tr> <tr> <td>STEEL (TONS)</td> <td>0</td> <td>0</td> <td>800</td> <td>800</td> <td>100</td> </tr> <tr> <td>CRUSHED STONE (TONS)</td> <td>200</td> <td>200</td> <td>200</td> <td>200</td> <td>100</td> </tr> <tr> <td>SAND&GRAVEL (TONS)</td> <td>0</td> <td>0</td> <td>100</td> <td>100</td> <td>50</td> </tr> <tr> <td>SOIL (CY)</td> <td>0</td> <td>0</td> <td>4000</td> <td>5000</td> <td>500</td> </tr> <tr> <td>LUMBER (BOARD FEET)</td> <td>1500</td> <td>1500</td> <td>2000</td> <td>4000</td> <td>2000</td> </tr> </tbody> </table> <p><i>NOTE: Minimal to no impact with chemicals, gases and other construction materials.</i> <i>*Note: These quantities are based on the MSVL Option (6 Melters).</i></p>		FY09	FY10	FY11	FY12	FY13	ASPHALT (TONS)	0	0	200	500	100	STEEL (TONS)	0	0	800	800	100	CRUSHED STONE (TONS)	200	200	200	200	100	SAND&GRAVEL (TONS)	0	0	100	100	50	SOIL (CY)	0	0	4000	5000	500	LUMBER (BOARD FEET)	1500	1500	2000	4000	2000
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<p>Waste generated (provide solid and liquid separately) (units/yr):</p> <ul style="list-style-type: none"> - TRU - LLW - MLLW - Hazardous - Non-Hazardous 	<p>Data Call Response – 10/25/07, file “Waste Study” (SK-DA-WM-0001) volumes not provided</p> <p>16b) Betsy Westover – can you please provide construction phase waste generated for TRU, LLW, MLLW, Hazardous, Non-hazardous?</p>																																										
<p>Operations</p>																																											
<p>Description of Process including:</p> <ul style="list-style-type: none"> - Flowchart - Throughput (units/yr) - Number of cans filled per year 	<p>16c) Clayton Holloway – can you provide a Operations process description flowchart to me for SAIC? <i>Provided separately (electronically).</i></p> <p>Five 3013 cans per day Source: Data Call Response – 10/25/07, file “Preliminary Assumptions” (<i>satisfied in original data call response information</i>)</p> <p>16d) Clayton Holloway – can you provide the number of cans filled per year during Operations of PuD? <i>Provided separately (electronically)</i>^[P4].</p>																																										
<p>Please provide:</p> <ul style="list-style-type: none"> - Number of DWPF canisters needed - Additional DWPF canisters created 	<p>790 CIC units per <i>Pu Disposition Alternatives Analysis</i> (Y-AES-G-00001) (<i>satisfied in original data call response information</i>)</p> <p>95 additional canisters per <i>Pu Disposition Alternatives Analysis</i> (Y-AES-G-00001) (<i>satisfied in original data call response information</i>)</p>																																										

Information Requested	Response
<p>Emission release parameters</p> <ul style="list-style-type: none"> - For stack releases - release location (latitude & longitude), stack height, stack diameter, stack exhaust velocity or flow rate, exhaust air temperature - For fugitive releases - release location and dimensions (including height) of vents or louvers from which release would occur - Emissions from emergency generators, boilers, and other ancillary equipment 	<p>17) Linda Nass – describe emissions released during operation of PuV for stack, stack height, stack diameter, exhaust velocity, temp, etc.? <i>A determination had not been made whether to use the current (105-K Reactor Main) stack, to build one for the entire vitrification process or to have separate stacks associated with various buildings designed/built outside of the 105-R Reactor building. However, in determining the emissions in mrem/yr, the dose release factors which would provide the largest emissions were utilized; these were the factors for zero elevation. Information for the current operating stack is provided below:</i>[P5]</p> <p><i>Current stack dimensions (note: the stack height was reduced by 70 ft)</i> <i>Height: 130 ft above ground (75 ft above structure)</i> <i>Diameter: 16 ft</i> <i>Exit Temp: 78°F</i> <i>Exit Velocity: 15 ft/sec</i> <i>UTM: N – 3,674,754.903; E – 438,113.483</i></p> <p><i><u>PuV Project:</u></i> <i>The furnace exhaust gas flow rate was used in these release calculations; it assumed an exit velocity of 1 CFM (or 28,316.74 cc/min).</i></p> <p>18) Linda Nass – describe fugitive emissions released during operation of PuV, and dimensions of fugitive sources? <i>Opening/emptying, milling/mixing, metal to oxide conversion, and vitrification will be performed inside gloveboxes. There should be no fugitive emissions; if otherwise, emissions would be minimal.</i></p> <p>19) Linda Nass – describe emissions released during operation for PuV from emergency generators, boilers, else? <i>Emissions from emergency equipment should be minimal. At present it is unknown whether there will be or how many and what size diesel generators would available for emergency use.</i> [P6]</p>

Information Requested	Response																		
<p>Air emissions</p> <ul style="list-style-type: none"> - Criteria Pollutants (metric tons/yr) - HAPs (kilograms/yr) - Radioisotopes (curies/yr) 	<p>19a) Linda Nass – can you provide Operations phase criteria pollutants released in metric tons per year? <i>Other than PM, there are no ‘Criteria’ pollutants.</i></p> <p>HAPS:</p> <p><i>Ni/NiO = 6.337E-05 kg/yr</i></p> <p>Radionuclides =</p> <table border="1" data-bbox="787 386 1096 683"> <thead> <tr> <th>Nuclides</th> <th>Curies</th> </tr> </thead> <tbody> <tr> <td>Np²³⁷</td> <td>8.531E-08</td> </tr> <tr> <td>Pu²³⁸</td> <td>4.749E-06</td> </tr> <tr> <td>Pu²³⁹</td> <td>5.081E-07</td> </tr> <tr> <td>Pu²⁴⁰</td> <td>5.683E-07</td> </tr> <tr> <td>Pu²⁴¹</td> <td>1.427E-05</td> </tr> <tr> <td>Pu²⁴²</td> <td>2.757E-09</td> </tr> <tr> <td>Am²⁴¹</td> <td>6.777E-05</td> </tr> <tr> <td>Total</td> <td>8.795E-05</td> </tr> </tbody> </table> <p><i>PSD pollutants: Be/BeO, Fluorides, and PM/PM-10 (all are well below trigger levels)</i></p> <p><i>SCDHEC Std 8 (Toxic Pollutants): HCl, Be/BeO, Ni/NiO</i></p> <p>Data Call Response – 10/25/07, file “Emissions Calculation” (<i>satisfied in original data call response information</i>)</p> <p>Data Call Response – 10/25/07, file “Emissions Calculation” (<i>satisfied in original data call response information</i>)</p>	Nuclides	Curies	Np ²³⁷	8.531E-08	Pu ²³⁸	4.749E-06	Pu ²³⁹	5.081E-07	Pu ²⁴⁰	5.683E-07	Pu ²⁴¹	1.427E-05	Pu ²⁴²	2.757E-09	Am ²⁴¹	6.777E-05	Total	8.795E-05
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<p>Liquid effluents</p> <ul style="list-style-type: none"> - Location(s) of outfall(s) - Rate(s) of discharge(s) (units/day) - Concentrations of contaminants (picocuries/liter or micrograms/liter) 	<p>20) Greg Burbage – describe liquid releases during PuV ops. (locations, rates, concentration of contaminants)?</p> <p><i>Liquid effluents are expected to increase from KAC following PuD Project operations, primarily as cooling tower blowdown, and noncontact cooling water. There are no significant chemical composition changes anticipated beyond cooling tower additives, and flow is expected to be combined with that currently going to NPDES Outfall K-18.</i></p>																		
<p>Employment (FTEs)</p>	<p>34 (24 vit process operators plus 10 waste management) Source: Data Call Response – 10/25/07, file “Preliminary Assumptions” (<i>satisfied in original data call response information</i>)</p>																		
<p>Shifts</p>	<p>Operates 24 hrs/day; 7 days/week with 12 hr shifts Source: Data Call Response – 10/25/07, file “Preliminary Assumptions” (<i>satisfied in original data call response information</i>)</p>																		
<p>Employee radiological exposure - total dose (person-rem)</p>	<p>21) Ben Morgan – during operations do you know total dose for employee radiological exposure? <i>It is much too early to say what total dose will be required to operate the facility. The radiological design guide requires that individual dose be limited to 1 rem/y. A rough estimate of facility annual dose would be 1 rem/y times the number of "hands on" workers. Some staffing information from the previous planning showed 314 workers. This would equate to 314 person-rem/y. If there are new staffing numbers available they could be used instead.</i></p>																		

Information Requested	Response
Number of exposed workers	22) Ben Morgan – during operations do you know the number of workers exposed? <i>Everyone assigned to the facility will probably be monitored for exposure. The previous staffing information gave a total staff of 434.</i>
Utilities needed - Potable water (units/yr) - Non-potable water (units/yr) - Electricity (kw/hr) - Natural gas (units/yr) - Coal (units/yr) - Gasoline (units/yr) - Diesel Fuel (transportation) (units/yr) - Heating fuel oil (units/yr)	23) P.K. Hightower – do you know the POC for utilities? Please ask that they respond for this anticipated usage during operations phase of PuV.
Resources needed - Metals (units/yr) - Frit (units/yr) - Ceramic precursors (units/yr) - Chemicals (units/yr) - Gases (units/yr) - other materials (units/yr)	24) P.K. Hightower – do you know the POC for resources? Please ask that they respond for this anticipated usage during operations phase of PuV.
Waste generated (solid or liquid) (units/yr): - TRU - LLW - MLLW - Hazardous - Non-Hazardous	Source: Data Call Response – 10/25/07, file “Waste Study” (SK-DA-WM-0001) (satisfied in original data call response information) 460 m3/yr 250 m3/yr 80 m3/yr 80 m3/yr 50 m3/yr No liquid waste expected.
Please provide any safety documentation (e.g., safety assessments, safety analysis reports) for these facilities.	25) Bob Bayer – please provide safety doc.s (electronically)requested so that I may forward to SAIC.
List any accident scenarios (in existing safety or NEPA documents) that need to be modified because of changes produced by the proposed action. For any new or modified scenarios provide the information listed below:	26) Bob Bayer – please provide any accident scenarios in existing safety doc.s that must be changed for PuV ops. (please provide per below table criteria).

Information Requested	Response
<p>Radiological accidents</p> <ul style="list-style-type: none"> - Accident description (include release pathways and mitigating factors) - Accident frequency - Material at risk - Material characteristics - Source term released to environment (curies by isotope) - Release parameters: release fractions, release timing, location, release height, release duration, and heat of release - Filtration (specify efficiency) - Number of involved workers 	<p>26) continued, Bob Bayer</p>
<p>Chemical inventory for chemical accident analysis</p> <ul style="list-style-type: none"> - List chemicals, total facility inventory, and annual usage of the chemical - Size and location of largest tank (storage container) for each chemical. Include floor area or diked area that would contain the spill when applicable. - Concentration of chemical in largest tank (identify if this is the highest concentration of the chemical being stored). If not, also list the other storage locations, size of tank and concentration of chemical being stored. 	<p>27) continued, Bob Bayer</p>
<p>Design basis earthquake frequency and intensity</p>	<p>28) continued Bob Bayer</p>
<p>Earthquake frequency that would result in loss of structural integrity</p>	<p>29) continued Bob Bayer</p>
<p>Other natural phenomena that would result in loss of structural integrity and their frequency</p>	<p>30) continued Bob Bayer</p>
<p>Aircraft crash frequency</p>	<p>31) continued Bob Bayer</p>
<p>Deactivation and Decommissioning</p>	
<p>General description of the D&D process and end state achieved after D&D</p>	<p>32) P.K. Hightower – assume that PuV processes will be removed at the end state of project need? Please confirm.</p>

From: clayton.shedrow [REDACTED]
Sent: Wednesday, February 27, 2008 1:30 PM
To: Dimarzio, John A.
Cc: greg.burbage [REDACTED]; perjetta.hightower [REDACTED]; drew.grainger [REDACTED]; linda.nass [REDACTED]
Subject: Fw: Final Input

Attachments: Immobilization Data Request No. 2b.doc

John

Additional info per the SEIS data call. You may have already received this, but just to be safe, here it is again.

[REDACTED]

C. Barry Shedrow
[REDACTED]

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----- Forwarded by Clayton Shedrow [REDACTED] on 02/27/2008 01:27 PM -----

Linda Nass [REDACTED] To Clayton Shedrow [REDACTED]
02/27/2008 01:24 PM cc Greg Burbage [REDACTED]
Subject Fw: Final Input

Barry,
I forgot to copy you on my response to Greg. I've made changes/additions to the SAIC 'bubble' comments/questions.
See attachment below.

Linda S. Nass
[REDACTED]

----- Forwarded by Linda Nass [REDACTED] on 02/27/2008 01:22 PM -----

Linda Nass [REDACTED]

To Greg Burbage [REDACTED]

cc

02/27/2008 12:01 PM

Subject Final Input

Greg,

Here is the additional information. I've incorporated Clayton's comments. I also 'struck out' the lines I'd put in the Operation section regarding stack height, etc. (since it was based upon the current Main Stack) and put the PuV stack dimensions in the bubble in 'red' text.

Linda S. Nass
[REDACTED]

From: clayton.shedrow [REDACTED]
Sent: Wednesday, February 27, 2008 8:55 AM
To: Dimarzio, John A.
Cc: clayton.holloway [REDACTED]; greg.burbage [REDACTED]; linda.nass [REDACTED]; perjetta.hightower [REDACTED]
Subject: Fw: Updated PuD Immobilization Data Call Response:

Attachments: Comments on the Immob Response-022208.doc

John

Additional data. Let me know if you have any questions.

[REDACTED]

Thanks.

C. Barry Shedrow

[REDACTED]

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----- Forwarded by Clayton Shedrow [REDACTED] on 02/27/2008 08:53 AM -----

Clayton Holloway [REDACTED]

02/27/2008 07:44 AM

To Linda Nass [REDACTED]
cc Greg Burbage [REDACTED] Clayton Shedrow [REDACTED]
[REDACTED], Perjetta Hightower [REDACTED] Joseph
Damelio [REDACTED], Lee Carey [REDACTED]
Subject Re: Fw: Updated PuD Immobilization Data Call Response:
[Link](#)

Linda,

I have listed the stack, sandfilter and fan house information I have below. I do not know the latitude & longitude of these items.

Clayton Holloway
Mechanical Lead
PUDisp Project

[REDACTED]

Linda Nass [REDACTED]

To Clayton Holloway [REDACTED]

02/25/2008 01:58 PM

cc

Subject Fw: Updated PuD Immobilization Data Call Response:

Clayton,

You may be able to respond to some of these questions, since design-based.

Emission release parameters

For any stack releases

- release location (latitude & longitude),
- stack height, (92 feet)
- stack diameter, 7 feet
- stack exhaust velocity or flow rate, 75,500 CFM
- exhaust air temperature 75 F

For fugitive releases

release location and dimensions of source area (e.g. dust, drying paint, asphalt, etc.)

(this pertains more to the fan house and sandfilter sizes and locations) **FAN HOUSE SIZE:88' WIDE**

X 104' LONG x 35' High with 30' wide x 36' long protrusion on west side

Sand filter Size:120' wide x 220' long x 23' high

Thanks,

Linda S. Nass

[REDACTED]

----- Forwarded by Linda Nass [REDACTED] on 02/25/2008 01:51 PM -----

Greg Burbage [REDACTED]

To John Hammond [REDACTED], Linda Nass [REDACTED]

cc Clayton Shedrow [REDACTED], Perjetta Hightower [REDACTED]

02/25/2008 09:28 AM

[REDACTED] Joseph Damelio [REDACTED], Betsy Westover/[REDACTED]

Subject Fw: Updated PuD Immobilization Data Call Response:

John/Linda,

Based on your previous responses to the SAIC data call, SAIC has forwarded a few additional questions. Please review these on the attachment and provide reply to these questions to Barry Shedrow and myself.

Relative to format, simply go under the "bubbled" question and add you comment/response below it. Your comment should be in red, whereas the SAIC comment will be a blue bubble. For clarification to SAIC, answering your respective comment in a complete sentence would be helpful. As before, if you have any questions, give me a call. Thanks.

----- Forwarded by Greg Burbage [REDACTED] on 02/25/2008 09:17 AM -----

"Dimarzio, John A." [REDACTED]
[REDACTED]

To <clayton.shedrow [REDACTED]>
cc <greg.burbage [REDACTED] <ralph.cansler [REDACTED] <betsy.westover [REDACTED] <bob.bayer [REDACTED] <perjetta.hightower [REDACTED], "Groome, Chadi D." [REDACTED]>

02/25/2008 08:04 AM

Subject RE: Updated PuD Immobilization Data Call Response:

I have a few comments/questions on the interim data call response. The comments appear as balloons in the right margin. You'll need to be sure that you have this feature turned on to see them.

Thanks...John

From: clayton.shedrow [REDACTED]
Sent: Friday, February 22, 2008 1:18 PM
To: Dimarzio, John A.
Cc: greg.burbage [REDACTED]; ralph.cansler [REDACTED]; betsy.westover [REDACTED]; bob.bayer [REDACTED]; perjetta.hightower [REDACTED]
Subject: Fw: Updated PuD Immobilization Data Call Response:

John

Attached are additional data in response to the PuD Immobilization data call. As you can see from the attached email, Greg believes that we will probably be able to complete this component of the SEIS data call by Monday of next week. As always,

[REDACTED]

If your technical lead has any questions, I recommend that he contact Gred Burbage directly ([REDACTED]).

Thanks.

Immobilization Facility Information Request
 (please provide numerical data in commonly reported units)

Information Requested	Response
Immobilization Facility	Modification of K-Reactor Building for immobilization of up to 13 metric tons surplus plutonium using the glass can-in-canister approach
General	
Schedule	Source: Data Call Response – 10/4/07
- Design	Design complete – 2009 <i>(satisfied in original data call response information)</i>
- Construction or Modification	Construction complete – 2013 <i>(satisfied in original data call response information)</i>
- Operation	Operations – 6 years ending in 2019 <i>(satisfied in original data call response information)</i>
- Deactivation and decommissioning	Deactivation and Decommissioning – Begins 2019 <i>(satisfied in original data call response information)</i>
Description of facility including:	
- Building number	Old K-Reactor Building NOTE: OOU per DOE-SR OPSEC Guide.
- Latitude and Longitude[P1]	1) Vernon O’Steen – can you provide a lat & longitude generally in front of KAC? Info. available. Can provide if absolutely necessary.
- Elevation above NGVD (units)	2) Vernon O’Steen – do you have elevation capability? Approximately 280 msl.
- Area (units)	3) Vernon O’Steen – do you have acreage/hectares assessment capability? Approximately 385,010 square feet.
- Plot plan	4) Not applicable NOTE: Floor Plans for Sensitive Facilities are UCNl.
- Floorplan with equipment arrangement	Data Call Response – 10/25/07, file “Vitrification System” and “Oxidation System” <i>(satisfied in original data call response information)</i>
- Features that prevent unauthorized entry (unclassified description)	5) Bruce Hewett – is there a document/plan/description that we can provide SAIC? DOE Orders along with SRS 7Q Security Manual Procedures identify the Facility Security Requirements. Security & Safeguard Features, to include DBT Upgrades, are controlled information.
- Features that ensure safeguards against malevolent acts or material diversion by internal and external entities (unclassified description)	Data Call Response – 10/25/07, file “ICS and MCA” <i>(satisfied in original data call response information)</i>
- Fire protection systems	Data Call Response – 10/25/07, file “Fire Protection” <i>(satisfied in original data call response information)</i>
- Features that control releases of airborne contaminants (include diagram of treatment train)	Data Call Response – 10/25/07, file “Vitrification System” and “HVAC” <i>(satisfied in original data call response information)</i>
- Features that control releases of waterborne contaminants (include diagram of treatment train)	6) Greg Burbage – description to describe building sumps/pumps (Randy Sears). Water/liquid is removed from the reactor building through a system of sumps and associated pumps. These sumps may be purged to various holding vessels/tanks for treatment at other onsite wastewater treatment facilities, or if “uncontaminated”, be released to the environment. No treatment of waterborne contaminants takes place within the KAC, beyond that for sanitary wastewater.
- Features/procedures that prevent criticality	7) Bob Bayer – please provide document/information that prevents KAC criticality.
- Description of liquid and non-liquid waste processing	Data Call Response – 10/25/07, file “Waste Management” and “Waste Study” (SK-DA-WM-0001)
Construction/modification	
Land disturbed for laydown (acres or hectares)	2 acres Source: Data Call Response – 10/25/07, file “Site Work” (satisfied in original data call response information)

Information Requested	Response
Description of activities conducted (e.g., decontamination/removal/disposal of existing facilities/equipment, land clearing, onsite concrete plant) and modifications needed (e.g., floors, walls, support beams, roof, waste management, ventilation, new roads)	Data Call Response – 10/4/07 & Data Call Response – 10/25/07, file “Waste Study” (SK-DA-WM-0001) <i>(satisfied in original data call response information)</i>
Describe type and quantity of air pollutant emitting equipment and frequency and duration of use.	Data Call Response – 10/25/07, file “Construction Equipment” <i>(satisfied in original data call response information)</i>
Describe type and quantity of noise producing equipment and frequency and duration of use.	Data Call Response – 10/25/07, file “Construction Equipment” <i>(satisfied in original data call response information)</i>
Emission release parameters – For any stack releases - release location (latitude & longitude), stack height, stack diameter, stack exhaust velocity or flow rate, exhaust air temperature – For fugitive releases - release location and dimensions of source area	8) Linda Nass – describe, if applicable/quantifiable, emissions released during CX/mod. phase of project? <i>A stack location or height has not been determined. A final determination has not been made. Emissions during modification could go out the existing 105-K Reactor Main Stack or a new stack could be built or separate buildings could be built (each with their own stack/vent) outside of the 105-K Reactor Building. The operating 105-K Main Stack currently has a maximum airflow of 107,000 CFM. Stack height is 130 ft from ground level (75 ft above the structure) / Diameter of this stack is 16 ft / and exhaust air temperature is 78°F, exit velocity is 15 ft/sec. (The exit temperature could change with the introduction of the PuVit process depending upon which stack would be used. Air would need to be cooled prior to exiting the gloveboxes/Hepa filters.)</i> [P2] 9) Linda Nass – describe, if applicable/quantifiable, fugitive emissions during CX/mod. phase of project? <i>Fugitive emissions during the CX/mod phase of the project would be minimal. If seen, these would exit out the 105-K Reactor Main Stack (info provided above).</i>
Air emissions (point source and fugitive): - Criteria Pollutants (metric tons/yr) - HAPs (kilograms/yr) - Radioisotopes (curies/yr)	10) Linda Nass – are there any point source or fugitive source releases for criteria pollutants, HAPs, or radioisotopes during CX/mod. phase of the project? <i>None. If any, they would be in the noise range. Work on HX removal, Bingham pump removal, etc would be done in a containment hut so potential emissions would be minimal. At the most an increase of 10% over current stack emissions may be seen; current emissions from the 105-K Reactor Main Stack were 4.92E-04 mrem/yr for CY07 (or 3.51E-02 Ci) seen mostly as tritium.</i>
Liquid effluents - Location(s) of discharge(s) and copies of permit(s) - Rate(s) of discharge(s) (units/day) - Concentrations of contaminants (picocuries/liter or micrograms/liter)	11) Greg Burbage – describe liquid emissions (locations, permits, rates, concentrations, contaminants) created during CX/mod. phase of the project? <i>Liquid emission from KAC are storm water, which are permitted per SCDHEC Permit #SCR000000, and process water which are permitted per SCDHEC Permit #SC0000175. The process wastewater outfall is designated as NPDES Outfall K-18, and is limited for pH, total suspended solid, and flow. Tritium, typically at or below background levels, is discharged from K-18. Typical flow rate is 200-400 gallons/minute. The PuD Project construction is not expected to effect KAC liquid emissions.</i>

Information Requested	Response																																																																						
Employment for each year (FTEs)	12) John Hammond – do you have employment numbers for the CX/mod. phase of the project? <i>Maximum FTE's (Year/FTE): FY09/99, FY10/151., FY11/119, FY12/0, FY13/0, FY14/182, FY15/330, FY16/307, FY17/340., FY18/210, FY19/241, FY20/169, FY21/179 & FY22/76 Average FTE's (Year/FTE): FY09/83, FY10/99., FY11/75, FY12/0, FY13/0, FY14/90, FY15/263, FY16/281, FY17/231., FY18/161, FY19/169, FY20/132, FY21/128 & FY22/47</i>																																																																						
Shifts	13) John Hammond – do you have shifts information for the CX/mod. phase of the project? <i>Day and night shifts will be required to achieve schedule completion dates</i> [P3].																																																																						
Worker radiological exposure - total dose (person-rem)	14) Ben Morgan – is radiological exposure information during CX phase of the project available? <i>I spoke with John Hammond and got the hours expected for the D&R phase. According to Wayne Farrell the external dose rates in the parts of K-area that will be involved are low. Using a near background dose rate of 0.05 mrem/h and the hours required gives a rough estimate of 59760 h * 0.05 mrem/h = 2988 mrem for FY09 and 71280 h * 0.05 mrem/h = 3564 mrem for FY10. Accounting for the reporting threshold of the dosimeters the actual recorded dose will be about 300 mrem per year.</i>																																																																						
Number of exposed workers	15) John Hammond – can you estimate a number of workers exposed for the CX/mod. phase of the project? <i>Average FTE's: FY09/83, FY10/99 (Note: The D&R was scheduled during FY09 & FY10. It is assumed that after D&R is completed that the sources will be removed and the work areas will be rolled back. Therefore, no radiological exposure is expected after the D&R phase is completed.</i>																																																																						
Utilities needed - Potable water (units/yr) - Non-potable water (units/yr) - Electricity (units) - Gasoline (units/yr) - Diesel Fuel (units/yr)	16) John Hammond – can you estimate in annual usage for the CX/mod. phase of the project of potable water, non-potable water, electricity, gasoline, and diesel fuel? (As provided by Rick Spaulding, CX Mngr). <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>FY09</th> <th>FY10</th> <th>FY11</th> <th>FY12/13</th> <th>FY14</th> <th>FY15</th> <th>FY16</th> <th>FY17</th> <th>FY18</th> <th>FY19</th> <th>FY20</th> <th>FY21</th> <th>FY22</th>[P4] </tr> </thead> <tbody> <tr> <td><i>Pot Water (gal)</i></td> <td><i>0</i></td> <td><i>0</i></td> <td><i>0</i></td> <td><i>0</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>500</i></td> </tr> <tr> <td><i>Non-Pot (gal)</i></td> <td><i>0</i></td> <td><i>0</i></td> <td><i>0</i></td> <td><i>0</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> </tr> <tr> <td><i>Gas (gal)</i></td> <td><i>200</i></td> <td><i>200</i></td> <td><i>200</i></td> <td><i>0</i></td> <td><i>200</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>500</i></td> <td><i>300</i></td> <td><i>200</i></td> </tr> <tr> <td><i>Diesel (gal)</i></td> <td><i>400</i></td> <td><i>400</i></td> <td><i>400</i></td> <td><i>0</i></td> <td><i>400</i></td> <td><i>5000</i></td> <td><i>5000</i></td> <td><i>5000</i></td> <td><i>3000</i></td> <td><i>2000</i></td> <td><i>1000</i></td> <td><i>1000</i></td> <td><i>400</i></td> </tr> </tbody> </table> <p>NOTE: Minimal to no impact on existing electrical utilities during construction phase</p>		FY09	FY10	FY11	FY12/13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22	<i>Pot Water (gal)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>500</i>	<i>Non-Pot (gal)</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>0</i>	<i>1000</i>	<i>Gas (gal)</i>	<i>200</i>	<i>200</i>	<i>200</i>	<i>0</i>	<i>200</i>	<i>1000</i>	<i>1000</i>	<i>1000</i>	<i>500</i>	<i>500</i>	<i>500</i>	<i>300</i>	<i>200</i>	<i>Diesel (gal)</i>	<i>400</i>	<i>400</i>	<i>400</i>	<i>0</i>	<i>400</i>	<i>5000</i>	<i>5000</i>	<i>5000</i>	<i>3000</i>	<i>2000</i>	<i>1000</i>	<i>1000</i>	<i>400</i>																
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Information Requested	Response																																																																																																		
Resources needed - Concrete (units) - Asphalt (units) - Steel (units) - Crushed stone (units) - Sand & Gravel (units) - Soil (units) - Lumber (units) - Chemicals (units) - Gases (units) - Other construction materials (units)	Data Call Response – 10/4/07 (concrete volumes) (<i>satisfied in original data call response information</i>) Data Call Response – 10/25/07, file “CSA Outside PIDAS” (concrete volumes for fan house, sand filter and stack) (<i>satisfied in original data call response information</i>) 16a) John Hammond (or Rick Spaulding if delegated) – can you provide the construction phase demands for asphalt, steel, crushed stone, sand & gravel, soil, lumber, chemicals, gases, and other, as requested at left? <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th></th> <th>FY09</th> <th>FY10</th> <th>FY11</th> <th>FY12/13</th> <th>FY14</th> <th>FY15</th> <th>FY16</th> <th>FY17</th> <th>FY18</th> <th>FY19</th> <th>FY20</th> <th>FY21</th> <th>FY22[P5]</th> </tr> </thead> <tbody> <tr> <td><i>ASPHALT (TONS)</i></td> <td>0</td> <td>0</td> <td>200</td> <td>0</td> <td>0</td> <td>0</td> <td>500</td> <td>100</td> <td>100</td> <td>50</td> <td>50</td> <td>0</td> <td>0</td> </tr> <tr> <td><i>STEEL (TONS)</i></td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>1000</td> <td>1000</td> <td>200</td> <td>200</td> <td>100</td> <td>50</td> <td>25</td> <td>0</td> </tr> <tr> <td><i>CRUSHED STONE (TONS)</i></td> <td>200</td> <td>200</td> <td>200</td> <td>0</td> <td>200</td> <td>200</td> <td>200</td> <td>100</td> <td>100</td> <td>100</td> <td>50</td> <td>0</td> <td>0</td> </tr> <tr> <td><i>SAND&GRAVEL (TONS)</i></td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>100</td> <td>100</td> <td>100</td> <td>50</td> <td>50</td> <td>50</td> <td>50</td> <td>0</td> <td>0</td> </tr> <tr> <td><i>SOIL (CY)</i></td> <td>0</td> <td>0</td> <td>0</td> <td>0</td> <td>7000</td> <td>7000</td> <td>8000</td> <td>0</td> <td>0</td> <td>500</td> <td>500</td> <td>0</td> <td>0</td> </tr> <tr> <td><i>LUMBER (BOARD FEET)</i></td> <td>2000</td> <td>2000</td> <td>2000</td> <td>0</td> <td>5000</td> <td>5000</td> <td>5000</td> <td>2000</td> <td>1000</td> <td>1000</td> <td>1000</td> <td>500</td> <td>0</td> </tr> </tbody> </table> NOTE: Minimal to no impact with chemicals, gases and other construction materials.		FY09	FY10	FY11	FY12/13	FY14	FY15	FY16	FY17	FY18	FY19	FY20	FY21	FY22[P5]	<i>ASPHALT (TONS)</i>	0	0	200	0	0	0	500	100	100	50	50	0	0	<i>STEEL (TONS)</i>	0	0	0	0	0	1000	1000	200	200	100	50	25	0	<i>CRUSHED STONE (TONS)</i>	200	200	200	0	200	200	200	100	100	100	50	0	0	<i>SAND&GRAVEL (TONS)</i>	0	0	0	0	100	100	100	50	50	50	50	0	0	<i>SOIL (CY)</i>	0	0	0	0	7000	7000	8000	0	0	500	500	0	0	<i>LUMBER (BOARD FEET)</i>	2000	2000	2000	0	5000	5000	5000	2000	1000	1000	1000	500	0
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<i>STEEL (TONS)</i>	0	0	0	0	0	1000	1000	200	200	100	50	25	0																																																																																						
<i>CRUSHED STONE (TONS)</i>	200	200	200	0	200	200	200	100	100	100	50	0	0																																																																																						
<i>SAND&GRAVEL (TONS)</i>	0	0	0	0	100	100	100	50	50	50	50	0	0																																																																																						
<i>SOIL (CY)</i>	0	0	0	0	7000	7000	8000	0	0	500	500	0	0																																																																																						
<i>LUMBER (BOARD FEET)</i>	2000	2000	2000	0	5000	5000	5000	2000	1000	1000	1000	500	0																																																																																						
Waste generated (provide solid and liquid separately) (units/yr): - TRU - LLW - MLLW - Hazardous - Non-Hazardous	Data Call Response – 10/25/07, file “Waste Study” (SK-DA-WM-0001) volumes not provided 16b) Betsy Westover – can you please provide construction phase waste generated for TRU, LLW, MLLW, Hazardous, Non-hazardous?																																																																																																		
Operations																																																																																																			
Description of Process including: - Flowchart - Throughput (units/yr) - Number of cans filled per year	16c) Clayton Holloway – can you provide a Operations process description flowchart to me for SAIC? <i>Provided separately (electronically)</i> . Five 3013 cans per day Source: Data Call Response – 10/25/07, file “Preliminary Assumptions” (<i>satisfied in original data call response information</i>) 16d) Clayton Holloway – can you provide the number of cans filled per year during Operations of PuD? <i>Provided separately (electronically)</i> [P6].																																																																																																		
Please provide: - Number of DWPF canisters needed - Additional DWPF canisters created	790 CIC units per <i>Pu Disposition Alternatives Analysis</i> (Y-AES-G-00001) (<i>satisfied in original data call response information</i>) 95 additional canisters per <i>Pu Disposition Alternatives Analysis</i> (Y-AES-G-00001) (<i>satisfied in original data call response information</i>)																																																																																																		

Information Requested	Response
<p>Emission release parameters</p> <ul style="list-style-type: none"> - For stack releases - release location (latitude & longitude), stack height, stack diameter, stack exhaust velocity or flow rate, exhaust air temperature - For fugitive releases - release location and dimensions (including height) of vents or louvers from which release would occur - Emissions from emergency generators, boilers, and other ancillary equipment 	<p>17) Linda Nass – describe emissions released during operation of PuV for stack, stack height, stack diameter, exhaust velocity, temp, etc.? <i>A determination had not been made whether to use the current (105-K Reactor Main) stack, to build one for the entire vitrification process or to have separate stacks associated with various buildings designed/built outside of the 105-R Reactor building. However, in determining the emissions in mrem/yr, the dose release factors which would provide the largest emissions were utilized; these were the factors for zero elevation. Information for the current operating stack is provided below:</i> [P7]</p> <p><i><u>Current stack dimensions (note: the stack height was reduced by 70 ft)</u></i> <i><u>Height: 130 ft above ground (75 ft above structure)</u></i> <i><u>Diameter: 16 ft</u></i> <i><u>Exit Temp: 78° F</u></i> <i><u>Exit Velocity: 15 ft/sec</u></i></p> <p><i><u>PuV Project:</u></i> <i>The furnace exhaust gas flow rate was used in these release calculations; it assumed an exit velocity of 1 CFM (or 28,316.74 cc/min).</i></p> <p>18) Linda Nass – describe fugitive emissions released during operation of PuV, and dimensions of fugitive sources? <i>Opening/emptying , milling/mixing, metal to oxide conversion, and vitrification will be performed inside gloveboxes. There should be no fugitive emissions; if otherwise, emissions would be minimal.</i></p> <p>19) Linda Nass – describe emissions released during operation for PuV from emergency generators, boilers, else? <i>Emissions from emergency equipment should be minimal. At present it is unknown whether there will be or how many and what size diesel generators would available for emergency use.</i> [P8]</p>

Information Requested	Response																		
<p>Air emissions</p> <ul style="list-style-type: none"> - Criteria Pollutants (metric tons/yr) - HAPs (kilograms/yr) - Radioisotopes (curies/yr) 	<p>19a) Linda Nass – can you provide Operations phase criteria pollutants released in metric tons per year? <i>Other than PM, there are no ‘Criteria’ pollutants.</i> HAPS: <i>Ni/NiO = 6.337E-05 kg/yr</i> Radionuclides =</p> <table border="1" data-bbox="611 386 921 680"> <thead> <tr> <th>Nuclides</th> <th>Curies</th> </tr> </thead> <tbody> <tr> <td><i>Np²³⁷</i></td> <td><i>8.531E-08</i></td> </tr> <tr> <td><i>Pu²³⁸</i></td> <td><i>4.749E-06</i></td> </tr> <tr> <td><i>Pu²³⁹</i></td> <td><i>5.081E-07</i></td> </tr> <tr> <td><i>Pu²⁴⁰</i></td> <td><i>5.683E-07</i></td> </tr> <tr> <td><i>Pu²⁴¹</i></td> <td><i>1.427E-05</i></td> </tr> <tr> <td><i>Pu²⁴²</i></td> <td><i>2.757E-09</i></td> </tr> <tr> <td><i>Am²⁴¹</i></td> <td><i>6.777E-05</i></td> </tr> <tr> <td>Total</td> <td>8.795E-05</td> </tr> </tbody> </table> <p><i>PSD pollutants: Be/BeO, Fluorides, and PM/PM-10 (all are well below trigger levels)</i> SCDHEC Std 8 (Toxic Pollutants): HCl, Be/BeO, Ni/NiO Data Call Response – 10/25/07, file “Emissions Calculation” (<i>satisfied in original data call response information</i>) Data Call Response – 10/25/07, file “Emissions Calculation” (<i>satisfied in original data call response information</i>)</p>	Nuclides	Curies	<i>Np²³⁷</i>	<i>8.531E-08</i>	<i>Pu²³⁸</i>	<i>4.749E-06</i>	<i>Pu²³⁹</i>	<i>5.081E-07</i>	<i>Pu²⁴⁰</i>	<i>5.683E-07</i>	<i>Pu²⁴¹</i>	<i>1.427E-05</i>	<i>Pu²⁴²</i>	<i>2.757E-09</i>	<i>Am²⁴¹</i>	<i>6.777E-05</i>	Total	8.795E-05
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<p>Liquid effluents</p> <ul style="list-style-type: none"> - Location(s) of outfall(s) - Rate(s) of discharge(s) (units/day) - Concentrations of contaminants (picocuries/liter or micrograms/liter) 	<p>20) Greg Burbage – describe liquid releases during PuV ops. (locations, rates, concentration of contaminants)? <i>Liquid effluents are expected to increase from KAC following PuD Project operations, primarily as cooling tower blowdown, and noncontact cooling water. There are no significant chemical composition changes anticipated beyond cooling tower additives, and flow is expected to be combined with that currently going to NPDES Outfall K-18.</i></p>																		
<p>Employment (FTEs)</p>	<p>34 (24 vit process operators plus 10 waste management) Source: Data Call Response – 10/25/07, file “Preliminary Assumptions” (<i>satisfied in original data call response information</i>)</p>																		
<p>Shifts</p>	<p>Operates 24 hrs/day; 7 days/week with 12 hr shifts Source: Data Call Response – 10/25/07, file “Preliminary Assumptions” (<i>satisfied in original data call response information</i>)</p>																		
<p>Employee radiological exposure - total dose (person-rem)</p>	<p>21) Ben Morgan – during operations do you know total dose for employee radiological exposure? <i>It is much too early to say what total dose will be required to operate the facility. The radiological design guide requires that individual dose be limited to 1 rem/y. A rough estimate of facility annual dose would be 1 rem/y times the number of "hands on" workers. Some staffing information from the previous planning showed 314 workers. This would equate to 314 person-rem/y. If there are new staffing numbers available they could be used instead.</i></p>																		
<p>Number of exposed workers</p>	<p>22) Ben Morgan – during operations do you know the number of workers exposed? <i>Everyone assigned to the facility will probably be monitored for exposure. The previous staffing information gave a total staff of 434.</i></p>																		

Information Requested	Response
<p>Utilities needed</p> <ul style="list-style-type: none"> - Potable water (units/yr) - Non-potable water (units/yr) - Electricity (kw/hr) - Natural gas (units/yr) - Coal (units/yr) - Gasoline (units/yr) - Diesel Fuel (transportation) (units/yr) - Heating fuel oil (units/yr) 	<p>23) P.K. Hightower – do you know the POC for utilities? Please ask that they respond for this anticipated usage during operations phase of PuV.</p>
<p>Resources needed</p> <ul style="list-style-type: none"> - Metals (units/yr) - Frit (units/yr) - Ceramic precursors (units/yr) - Chemicals (units/yr) - Gases (units/yr) - other materials (units/yr) 	<p>24) P.K. Hightower – do you know the POC for resources? Please ask that they respond for this anticipated usage during operations phase of PuV.</p>
<p>Waste generated (solid or liquid) (units/yr):</p> <ul style="list-style-type: none"> - TRU - LLW - MLLW - Hazardous - Non-Hazardous 	<p>Source: Data Call Response – 10/25/07, file “Waste Study” (SK-DA-WM-0001) (satisfied in original data call response information) 460 m3/yr 250 m3/yr 80 m3/yr 80 m3/yr 50 m3/yr No liquid waste expected.</p>
<p>Please provide any safety documentation (e.g., safety assessments, safety analysis reports) for these facilities.</p>	<p>25) Bob Bayer – please provide safety doc.s (electronically) requested so that I may forward to SAIC.</p>
<p>List any accident scenarios (in existing safety or NEPA documents) that need to be modified because of changes produced by the proposed action. For any new or modified scenarios provide the information listed below:</p>	<p>26) Bob Bayer – please provide any accident scenarios in existing safety doc.s that must be changed for PuV ops. (please provide per below table criteria).</p>

Information Requested	Response
<p>Radiological accidents</p> <ul style="list-style-type: none"> - Accident description (include release pathways and mitigating factors) - Accident frequency - Material at risk - Material characteristics - Source term released to environment (curies by isotope) - Release parameters: release fractions, release timing, location, release height, release duration, and heat of release - Filtration (specify efficiency) - Number of involved workers 	<p>26) continued, Bob Bayer</p>
<p>Chemical inventory for chemical accident analysis</p> <ul style="list-style-type: none"> - List chemicals, total facility inventory, and annual usage of the chemical - Size and location of largest tank (storage container) for each chemical. Include floor area or diked area that would contain the spill when applicable. - Concentration of chemical in largest tank (identify if this is the highest concentration of the chemical being stored). If not, also list the other storage locations, size of tank and concentration of chemical being stored. 	<p>27) continued, Bob Bayer</p>
<p>Design basis earthquake frequency and intensity</p>	<p>28) continued Bob Bayer</p>
<p>Earthquake frequency that would result in loss of structural integrity</p>	<p>29) continued Bob Bayer</p>
<p>Other natural phenomena that would result in loss of structural integrity and their frequency</p>	<p>30) continued Bob Bayer</p>
<p>Aircraft crash frequency</p>	<p>31) continued Bob Bayer</p>
<p>Deactivation and Decommissioning</p>	

August 11, 2008

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Information Requested	Response
General description of the D&D process and end state achieved after D&D	32) P.K. Hightower – assume that PuV processes will be removed at the end state of project need? Please confirm.