



STATEMENT OF BASIS
Page 1 of 5
BAQ Air Permitting Division

| | | | |
|-----------------------|---|-----------------------|------------------|
| Company Name: | USDOE – Savannah River Nuclear Solutions, LLC | Permit Writer: | Robert Mahoney |
| Permit Number: | 0080-0041-C4 | Date: | October 23, 2020 |

EXPEDITED REVIEW: September 28, 2020
DATE APPLICATION RECEIVED: September 23, 2020

FACILITY DESCRIPTION (SIC CODES - 2819/NAICS CODES - 325180)

The Savannah River Site (SRS) is a key Department of Energy industrial complex dedicated to the stewardship of the environment, the enduring nuclear weapons stockpile and nuclear materials. More specifically, the SRS processes and stores nuclear materials in support of the national defense and U.S. nuclear non-proliferation efforts. The site also develops and deploys technologies to improve the environment and treat nuclear and hazardous wastes left from the Cold War.

The SRS complex covers 198,344 acres, or 310 square miles encompassing parts of Aiken, Barnwell and Allendale counties in South Carolina, bordering the Savannah River. The site is owned by DOE and is managed and operated by Savannah River Nuclear Solutions, LLC (SRNS). Under the contract that went into effect August 1, 2008, SRNS is responsible for the site’s nuclear facility operations; Savannah River National Laboratory; environment, safety, health and quality assurance; and most of the site’s administrative functions. DOE has other prime contractors such as Savannah River Remediation, LLC (SRR) which is responsible for the liquid waste operations at SRS. Another contractor, Ameresco Federal Solutions for the Ameresco Biomass Cogeneration Facility (TV-0080-0144), has ongoing collocated activities that have required construction and operating permits.

PROJECT DESCRIPTION

The mission of the Surplus Plutonium Disposition (SPD) Project is to expedite removal of plutonium from the State of South Carolina by dispositioning surplus weapons-grade plutonium via the Dilute and Dispose approach. To reduce the attractiveness level and the required safeguards and security measures, the plutonium will be diluted with an adulterant prior to disposition at the Waste Isolation Pilot Plant (WIPP).

The dilution process will occur in one of the three gloveboxes (300K, 301K, 302K) located in K-Area. A feed can (also referred to as 3013 or SAVY can) will enter a glovebox, where it will be opened using an electric can cutter. Preloaded adulterant blend cans provided by an offsite vender are placed in the glovebox. The feed can is weighed and then the prescribed amount of Plutonium Oxide (feed) is added to multiple blend cans utilizing the Blend Can Loading System (BCLS). The BCLS has an integrated sieve and any material that does not pass through the sieve will go through size reduction. After loading at the BCLS is complete each blend can is closed and mixed in a closed apparatus. When the mixing is completed, the blend can is enclosed in a shield can. The combined blend can and shield can is called the Dilute Product Can. The Dilute Product Can is then removed from the glovebox and stored.

The SPD processing area will exhaust via two (2) stacks. Glovebox emissions will emit to the “low flow” stack (K-OP0001) that has been determined to be a potential impact category (PIC) 1 stack. The feed cans, the source of Plutonium Oxide, are only opened inside a glovebox. Each glovebox has an integrated roughing filter. The glovebox emissions are routed to a HEPA filter bank prior to exiting the K-OP0001 stack. The filters are only credited for radionuclide control, not for any non-radiological emissions.

The remaining SPD processing area will ventilate to a separate HEPA filter bank prior to exiting the second stack, the “Dilute Process Area (DPA)” stack (K-OP0002) that has been determined to be a PIC 4 stack. No open cans or containers of radiological material will be in areas ventilated to the DPA stack.



STATEMENT OF BASIS
Page 2 of 5
 BAQ Air Permitting Division

| | | | |
|-----------------------|---|-----------------------|------------------|
| Company Name: | USDOE – Savannah River Nuclear Solutions, LLC | Permit Writer: | Robert Mahoney |
| Permit Number: | 0080-0041-C4 | Date: | October 23, 2020 |

COLLOCATION DETERMINATION

Ameresco Biomass Cogeneration Facility (TV-0080-0144), Salt Waste Processing Facility and the Research and Development (R & D) Activities performed at leased facilities within the Savannah River Research Campus maintained by Aiken County are co-located facilities/activities. The Salt Waste Processing Facility and the R&D Activities are exempt sources. The Three Rivers Solid Waste Authority Regional Landfill is not co-located with SRS.

SOURCE TEST REQUIREMENTS

Under 40 CFR Part 61, Subpart H §61.93(c), Radionuclide emission rates from new point sources (stacks or vents) as defined in subpart A shall be measured in accordance with the requirements of this regulation. Continuous sampling of radionuclides and Relative Accuracy tests will be performed.

SPECIAL CONDITIONS, MONITORING, LIMITS

The filters (roughing and HEPA) are only used to control radionuclides. Since continuous sampling of radionuclides is required, no pressure drop monitoring is being required for the filters. The roughing and HEPA filters shall be in place and operational whenever processes controlled by them are running, except during periods of malfunction or mechanical failure.

EMISSIONS

| Pollutant | PROJECT EMISSIONS | | | | | |
|--|-------------------|------------------|------------|------------------|----------|----------|
| | Uncontrolled | | Controlled | | PTE | |
| | lb/hr | TPY | lb/hr | TPY | lb/hr | TPY |
| PM | 0.0088 | 0.0022 | -- | -- | 0.0088 | 0.0022 |
| PM ₁₀ | 0.0088 | 0.0022 | -- | -- | 0.0088 | 0.0022 |
| PM _{2.5} | 0.0088 | 0.0022 | -- | -- | 0.0088 | 0.0022 |
| SO ₂ | 0.549 | 0.137 | -- | -- | 0.549 | 0.137 |
| NO _x | 0.176 | 0.044 | -- | -- | 0.176 | 0.044 |
| CO | 1.540 | 0.386 | -- | -- | 1.540 | 0.386 |
| VOC | 0.673 | 0.168 | -- | -- | 0.673 | 0.168 |
| Lead | 2.27E-11 | 9.95E-11 | -- | -- | 2.27E-11 | 9.95E-11 |
| Chromium (H, T) | 4.61E-10 | 2.02E-09 | -- | -- | 4.61E-10 | 2.02E-09 |
| Chlorine (H, T) | 2.00E-10 | 8.74E-10 | -- | -- | 2.00E-10 | 8.74E-10 |
| Phosphorus (H, T) | 1.23E-10 | 5.38E-10 | -- | -- | 1.23E-10 | 5.38E-10 |
| Manganese (H, T) | 5.22E-11 | 2.29E-10 | -- | -- | 5.22E-11 | 2.29E-10 |
| Beryllium (H, T) | 2.12E-11 | 9.28E-11 | -- | -- | 2.12E-11 | 9.28E-11 |
| Cobalt (H, T) | 7.98E-12 | 3.50E-11 | -- | -- | 7.98E-12 | 3.50E-11 |
| Cadmium (H, T) | 8.90E-13 | 3.90E-12 | -- | -- | 8.90E-13 | 3.90E-12 |
| Nickel Compounds (H, T) | 3.36E-09 | 1.47E-08 | -- | -- | 3.36E-09 | 1.47E-08 |
| Lead Compounds (H) | 2.44E-11 | 1.07E-10 | -- | -- | 2.44E-11 | 1.07E-10 |
| Total Non-Rad HAPs | 4.24E-09 | 1.86E-08 | -- | -- | 4.24E-09 | 1.86E-08 |
| Radionuclides (units of mrem/year) (H) | -- | 2.03E+02 mrem/yr | -- | 2.03E-01 mrem/yr | -- | |

H = HAPs; T = SC TAPs



STATEMENT OF BASIS
Page 3 of 5
 BAQ Air Permitting Division

| | | | |
|-----------------------|---|-----------------------|------------------|
| Company Name: | USDOE – Savannah River Nuclear Solutions, LLC | Permit Writer: | Robert Mahoney |
| Permit Number: | 0080-0041-C4 | Date: | October 23, 2020 |

SO₂, NO_x, CO emissions are from the emergency generator. VOC emissions are from the emergency generator and associated storage tank.

| FACILITY WIDE EMISSIONS | | | | | | |
|-------------------------|-----------------------|------------|------|-------------------|------------|------|
| Pollutant | Prior to Construction | | | Post Construction | | |
| | Uncontrolled | Controlled | PTE | Uncontrolled | Controlled | PTE |
| | TPY | TPY | TPY | TPY | TPY | TPY |
| PM | 2730 | 275 | 275 | 2730 | 275 | 275 |
| PM ₁₀ | 2040 | 268 | 268 | 2040 | 268 | 268 |
| PM _{2.5} | 2010 | 246 | 246 | 2010 | 246 | 246 |
| SO ₂ | 2800 | 561 | 561 | 2800 | 561 | 561 |
| NO _x | 972 | 805 | 805 | 972 | 805 | 805 |
| CO | 659 | 659 | 659 | 660 | 660 | 660 |
| VOC | 198 | 198 | 198 | 199 | 199 | 199 |
| Lead | 0.36 | 0.24 | 0.24 | 0.36 | 0.24 | 0.24 |
| Total HAPs | 295 | 280 | 280 | 295 | 280 | 280 |

OPERATING PERMIT STATUS

This facility operates under Title V Operating Permit; issued on 02/19/03; effective on 04/01/2003; expired on 03/31/2008. A timely application for renewal was received on 09/18/2007.

| REGULATORY APPLICABILITY REVIEW | |
|---------------------------------|---|
| Regulations | Comments/Periodic Monitoring Requirements |
| Section II(E) – Synthetic Minor | Not Applicable. The facility has not requested any Synthetic Minor limits for the SPD project. |
| Standard No. 1 | Not Applicable. The SPD project does not have any fuel burning operations to which this regulation applies. |
| Standard No. 3 (state only) | Not Applicable. The SPD project does not involve any reduction of wastes or waste combustion to which this regulation applies. |
| Standard No. 4 | Applicable. The SPD project emits radionuclides as the main form of particulate matter; SC Regulation 61-62.5, Standard 4, opacity and PM limits are applicable for such sources. This particulate matter is subject to 40 CFR 61 Subpart H, National Emission Standards for Emissions of Radionuclides Other Than Radon From Department of Energy Facilities, and the methods described in the NESHAP will be sufficient to ensure continued compliance with Standard 4. |
| Standard No. 5 | Not Applicable. This facility does not have any process operations that are specified by this regulation and therefore this standard does not apply. |
| Standard No. 5.2 | Not Applicable. The only NO _x emissions associated with the SPD project is from the emergency generator, which is exempt from this Standard. |
| Standard No. 7 | Not Applicable. The facility is a major source for PSD for PM, PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , CO, and VOCs, however this project is not significant. |



STATEMENT OF BASIS
Page 4 of 5
 BAQ Air Permitting Division

| | | | |
|-----------------------|---|-----------------------|------------------|
| Company Name: | USDOE – Savannah River Nuclear Solutions, LLC | Permit Writer: | Robert Mahoney |
| Permit Number: | 0080-0041-C4 | Date: | October 23, 2020 |

| REGULATORY APPLICABILITY REVIEW | |
|--|---|
| Regulations | Comments/Periodic Monitoring Requirements |
| 61-62.6 | Not Applicable. Section III – Statewide. This facility is not a potential source of fugitive PM dust emissions. |
| 40 CFR 60 and 61-62.60 | Applicable. Subpart A – General Provisions. Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines: This project includes one (1) diesel fired emergency generator which meet the applicability criteria specified in 40 CFR 60.4200(a)(2)(i). The emergency generator will be an EPA-certified diesel fuel-fired emergency generator. |
| 40 CFR 61 and 61-62.61 | Applicable. Subpart A – General Provisions. Subpart H – National Emission Standards for Emissions of Radionuclides Other than Radon from Department of Energy Facilities: The SPD project is subject to this regulation. Compliance will be demonstrated using the EPA approved CAP88 dose model as required by 40 CFR §61.93(a) and reporting as required by 40 CFR §61.94. |
| 40 CFR 63 and 61-62.63 | Applicable. The emergency diesel generator (303K) meets the criteria under 40 CFR Part 63, Subpart ZZZZ, §63.6590(c)(6). <u>Stationary RICE subject to Regulations under 40 CFR Part 60.</u> An affected source that meets any of the criteria in paragraphs (c)(1) through (7) of this section must meet the requirements of this part by meeting the requirements of 40 CFR part 60 subpart IIII, for compression ignition engines or 40 CFR part 60 subpart JJJJ, for spark ignition engines. No further requirements apply for such engines under this part. |
| 61-62.68 | Not Applicable. SRS does not exceed the threshold levels in this regulation. |
| 40 CFR 64 (CAM) | Not Applicable. The SPD project does not meet the applicability requirements of this regulation. Compliance Assurance Monitoring (CAM) applies to a pollutant specific emission unit (PSEU) at a major source that (1) is subject to an emission limitation or standard for the applicable regulated air pollutant; (2) uses a control device to achieve compliance with any such emission limitation or standard; and (3) the potential pre-control device emissions of the applicable regulated air pollutant are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source. The control devices are used to control radionuclides. In EPA’s Response to Comments document (Part I, page 129, dated October 2, 1997), “as a practical matter, the part 64 applicability threshold will result in no applicability for radionuclide emissions from any source unless the Administrator establishes a pollutant-specific “major” source threshold for radionuclide emissions.” The Administrator has not established this threshold. |



STATEMENT OF BASIS
Page 5 of 5
 BAQ Air Permitting Division

| | | | |
|-----------------------|---|-----------------------|------------------|
| Company Name: | USDOE – Savannah River Nuclear Solutions, LLC | Permit Writer: | Robert Mahoney |
| Permit Number: | 0080-0041-C4 | Date: | October 23, 2020 |

| Standard No. 4 Allowable | | | | | |
|--------------------------|-------------------------------|----------------------|-----------------------------------|---------------------------------|--|
| Process | Process Weight Rate (tons/hr) | PM Allowable (lb/hr) | Uncontrolled Emissions PM (lb/hr) | Controlled Emissions PM (lb/hr) | Monitoring |
| SPD | 2.40E-04 | 1.54E-02 | 3.46E-06 | 3.46E-06 | None required because uncontrolled is not greater than allowable |

| AMBIENT AIR STANDARDS REVIEW | |
|------------------------------|--|
| Regulations | Comments/Periodic Monitoring Requirements |
| Standard No. 2 | The SPD project will emit PM ₁₀ , PM _{2.5} , SO ₂ , NO _x , and CO at levels below exemption emission rates. Facility-wide emissions of lead will remain below 0.5 tons per year. No modeling demonstration required. |
| Standard No. 7.c | This project is not subject to PSD. An Air Dispersion Analysis with respect to Standard No. 7.c. only applies to PSD projects. Therefore, this rule does not apply. |
| Standard No. 8 (state only) | The SPD project will not emit any toxic air pollutants above trace or facility-wide exemption levels. No modeling demonstration required. |

PUBLIC NOTICE

A public notice was not required for this permit.

SUMMARY AND CONCLUSIONS

It has been determined that this source, if operated in accordance with the submitted application, will meet all applicable requirements and emission standards.