

From: Tom Clements <tomclements329@cs.com>
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Subject: [External_Sender] Comments for WEC Fuel Fabrication Facility Draft EIS - 3 attachments for the record
Attachments: Westinghouse nuclear weapons connection for Draft EIS SRS Watch September 14 2021.pdf; Comments on draft EIS by Clements of SRS Watch September 14 2021.pdf; Fact sheet on SRS and Westinghouse and nuclear weapons August 6 2021.pdf

September 15, 2021
Office of Administration
Mail Stop: TWFN-7-A60M
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTN: Program Management
Announcements and Editing Staff
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To Whom it Concerns:

The enclosed documents, also being emailed, are being submitted by the public interest group Savannah River Site Watch as comments into the record of the draft "Environmental Impact Statement for the License Renewal of the Columbia Fuel Fabrication Facility in Richland County, South Carolina."

Please confirm receipt of the attachments.

I expect a response to all comments in the documents in any final EIS that is prepared and released.

The three documents include:

1. A 22-page response to many individual points in the draft EIS.
2. A 28-page report entitled *The Mysterious Role of the Obscure Westinghouse Commercial Nuclear Fuel Plant in Columbia, South Carolina as a "Dual Use" Military-Commercial Facility Key to the Explosive Power of U.S. Nuclear Weapons*, which explores the production inside the Westinghouse facility of rods used to make tritium gas for all U.S. nuclear weapons.
3. A 2-page flyer on the nuclear weapons connections between TPBAR fabrication at the Westinghouse facility and the Savannah River Site.

Thank you for reviewing these documents, for including them in the formal EIS record and for responding to points and comments raised in them in any final EIS that might be issued.

Sincerely,

Tom Clements

Director, Savannah River Site Watch

srswatch@gmail.com

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Savannah River Site Watch

The Fog of Planning for Full-Scale Nuclear War:

The Mysterious Role of the Obscure Westinghouse Commercial Nuclear Fuel Plant in Columbia, South Carolina as a “Dual Use” Military-Commercial Facility Key to the Explosive Power of U.S. Nuclear Weapons

The facility near Columbia, South Carolina produces special rods used to make radioactive tritium gas, which boosts the explosive power of all U.S. nuclear weapons, making it South Carolina’s “other” nuclear weapons site along with DOE’s Savannah River Site

by Tom Clements,¹ Director, Savannah River Site Watch, Columbia, SC, <https://srswatch.org/>

September 15, 2021

This version of this documents is being submitted for the official record of the U.S. Nuclear Regulatory Commission’s Draft Report on the “Environmental Impact Statement for the License Renewal of the Columbia Fuel Fabrication Facility in Richland County, South Carolina.”² A response to all matters raised in it are expected to be addressed by the NRC.



Westinghouse “dual-use” civilian-military facility, with Columbia, SC in background. This facility is key to the U.S. policy to stay on a footing to fight a full-scale nuclear war. Photo ©High Flyer.

¹ Brief biography of Tom Clements on website of Savannah River Site Watch: <https://srswatch.org/savannah-river-site-watch-about-us/>; Comments on this document and clarifying information are welcome: srswatch@gmail.com.

² U.S. Nuclear Regulatory Commission, *Draft Report on the “Environmental Impact Statement for the License Renewal of the Columbia Fuel Fabrication Facility in Richland County, South Carolina*, July 30, 2021, <https://www.nrc.gov/docs/ML2120/ML21209A213.pdf>

Summary

Inside the Westinghouse nuclear fuel plant on the outskirts of Columbia, South Carolina, key activities related to the production of nuclear materials for the U.S. nuclear weapons stockpile are taking place. Few know about this mysterious activity, which may be skirting regulation and which government authorities are trying to keep secret from the public.

In the mid-1980s, after the Savannah River Site reactors³ ceased production of radioactive tritium gas used in all U.S. nuclear weapons, the U.S. Department of Energy sought a new source of tritium.

By the late 1990s, the cheapest and most convenient tritium-production method chosen by DOE was to irradiate special rods in the government-owned Watts Bar commercial nuclear reactor⁴ in Tennessee, beginning in 2003.⁵ The lithium in the rods is converted to tritium, a radioactive gas that boosts the explosive power of a nuclear weapon. The extraction of the tritium gas and its packaging into reservoirs for insertion into nuclear weapons was continued to be done at SRS. Tritium in and of itself isn't "fissile - it can't trigger a nuclear explosion - but goes into weapons in which the nuclear explosion is initiated by plutonium, previously produced at SRS, or highly enriched uranium.

Use of a commercial reactor for production of military materials crossed the imaginary line between commercial and military uses of nuclear technology. Such "dual use" continues to pose an international nuclear proliferation concern, though this case is generally overlooked both domestically and internationally. The tritium rods, called Tritium Producing Burnable Absorber Rods (TPBARs),⁶ were designated by DOE's Pacific Northwest National Lab, to be produced by a company called WesDyne International, located in the Westinghouse commercial nuclear fuel plant near Columbia, South Carolina. WesDyne is a subsidiary owned by the Westinghouse Electric Company (WEC).

At the Westinghouse Columbia Fuel fabrication Facility,⁷ which is regulated by the U.S. Nuclear Regulatory Commission, uranium is fabricated into fuel for foreign and domestic commercial nuclear power reactors. Once again, by selecting a commercial facility for production of the

³ U.S Department of Energy, Savannah River Site, SRS History Highlights, <https://www.srs.gov/general/about/history1.htm>

⁴ U.S. Nuclear Regulatory Commission, Watts Bar Nuclear Plant Unit 1, <https://www.nrc.gov/info-finder/reactors/wb1.html>

⁵ U.S. Nuclear Regulatory Commission, Tritium Production Backgrounder, June 2005, <https://www.nrc.gov/docs/ML0325/ML032521359.pdf>

⁶ U.S. Department of Energy, Pacific Northwest National Laboratory, *Description of the Tritium-Producing Burnable Absorber Rod for the Commercial Light Water Reactor*, February 2012, https://www.pnnl.gov/main/publications/external/technical_reports/PNNL-22086.pdf

⁷ U.S. Nuclear Regulatory Commission, Westinghouse, <https://www.nrc.gov/info-finder/fc/westinghouse-fuel-fab-fac-sc-lc.html>

tritium rods, the imaginary gray line between civilian and military uses of a nuclear facility was crossed.

The gravity of this proliferation matter is compounded as tritium is used in all U.S. nuclear weapons. Those weapons are maintained to keep the U.S. on a footing to fight a full-scale nuclear war. The use of the much-abused term “deterrence” to refer to the U.S. nuclear weapons stockpile of around 4000 active and reserve weapons is simply dishonest as the operative policy is preparation for full-scale nuclear war and not simply deterrence.

The secretive production of the TPBARs inside a commercial plant is something that neither DOE nor Westinghouse nor the NRC want to openly talk about. To compound concerns the WesDyne operation, which may have been taken over by Westinghouse itself, may lack proper environmental permits from the South Carolina Department of Health and Environmental Control, which says TPBAR fabrication produces “hazardous waste.” It is not known how much waste is produced, how it’s managed or if its disposal is regulated in any way.

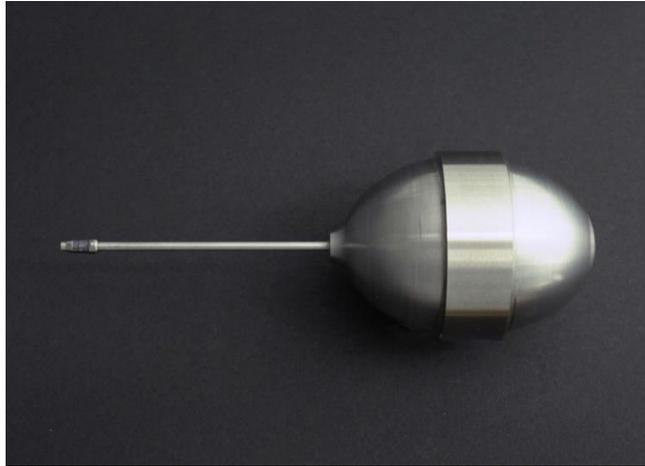
In the draft Environmental Impact Statement on renewing the Westinghouse fuel plant license for 40 years, released on July 30, 2021, the NRC claims that TPBAR production is “outside the scope” of the EIS process. At public meetings, NRC officials have said that DOE’s nuclear weapons arm, the National Nuclear Security Administration (NNSA),⁸ the nuclear weapons arm of DOE, regulates TPBAR production, but this is not accurate as the NNSA is not a regulatory agency. NNSA produces and maintains nuclear weapons for its client, the Department of Defense. The EIS yet to be finalized on the Westinghouse license must address the TPBAR issue.

Due to obfuscation at every turn, very little has been written on the matter at hand. Perhaps the best documentation heretofore on the role of the fuel plant in the nuclear weapons industry was an article in the Free Times, Columbia, SC, on June 26, 2013: *Obscure Columbia Facility Assembles Key Components for U.S. Nuclear Weapons.*⁹

While much is unknown, there is the appearance that operation of the TPBAR facility and its waste are “semi-regulated” or unregulated. This, it appears that the military aspects of TPBAR fabrication have resulted in a potentially unregulated, unlicensed facility in our midst. Authorities have much to explain and clarify about the nuclear-weapons related work hidden inside the Westinghouse fuel plant and what happens to the hazardous waste from the facility.

⁸ U.S. Department of Energy, National Nuclear Security Administration, <https://www.energy.gov/nnsa/national-nuclear-security-administration>

⁹ Charleston (South Carolina) Post & Courier, *Obscure Columbia Facility Assembles Key Components for U.S. Nuclear Weapons*, June 26, 2013, https://www.postandcourier.com/free-times/news/obscure-columbia-facility-assembles-key-components-for-u-s-nuclear-weapons/article_044c6cdf-2fc7-5c69-b963-47f60ca4d7b9.html



Pre-9/11 DOE photo of tritium reservoir. No scale provided.

(See another reservoir image in description of SRS “Defense Programs” - <https://www.srs.gov/general/programs/dp/index.htm>)

Overview of Secretive Nuclear-Weapons-Related Activities in Richland County, South Carolina – Just Who is involved?

Located in Hopkins, SC, on the outskirts of Columbia, a company engaged in key nuclear weapons activities operates for the U.S. Department of Energy in the shadows and outside of the public eye. This memo is a brief attempt to outline the situation of this facility that plays an essential role key to all U.S. nuclear weapons. Much information is lacking about the nuclear-weapons related industrial operation hiding in our midst and many questions remain unanswered, but this memo attempts to generally lay out what is known.

On the road to the Congaree National Park,¹⁰ in Richland County to the south of Columbia, one passes by the Westinghouse nuclear fuel plant. The area where it’s located is called Lower Richland. The facility, one of three such commercial fuel-fabrication facilities in the United States, processes uranium hexafluoride into fuel for nuclear power reactors. The fuel pellets, made from low enriched uranium - which is not directly usable in nuclear weapons - are placed into rods and then fuel assemblies and are shipped to foreign and domestic nuclear power plants. Under the same roof is located an industrial operation, not known to be actively inspected by the NRC, that fabricates specialized rods which play a key role in maintaining the entire U.S. nuclear weapons stockpile.

¹⁰ National Park Service, Congaree National Park, <https://www.nps.gov/cong/index.htm>

Given lack of accurate, up-to-date information by all involved parties, just who is doing the fabrication of the Tritium Producing Burnable Absorber Rods (TPBARs) is unclear. The TPBARs are irradiated in a commercial NRC-regulated reactor - Watts Bar unit 1 - in Tennessee to produce radioactive tritium gas used in all U.S. nuclear weapons. The activity was initially carried out by a company called WesDyne International LLC. At some point, Westinghouse Government Services LLC may have been engaged but they appear to have merged into WesDyne. It is unclear if Westinghouse Electric Company, which operates the nuclear fuel facility, may now be in charge of part or all of the TPBAR work or if the WesDyne subsidiary is still in charge of it.

According to a Westinghouse website, WesDyne, is “a wholly owned subsidiary of Westinghouse Electric Company, LLC, is a leading supplier of non-destructive examination (NDE) services and products to the power generation industry.”¹¹ Westinghouse Government Services LLC also appears to be a Westinghouse subsidiary, registered in Hopkins, SC at the address nuclear fuel plant.

The relationships between Westinghouse, Westinghouse Government Services and WesDyne - is hard to unravel, perhaps by intention but the bottom line is that they all appear to be part of the same corporate structure. This overview will leave it to others to sort out those corporate entanglements but as DOE’s National Nuclear Security Administration has been clear, the TPBAR fabrication job has been contracted, at least in the past, with WesDyne.

A Government Accountability Office report from 2010, entitled *Nuclear Weapons: National Nuclear Security Administration Needs to Ensure Continued Availability of Tritium for the Weapons Stockpile*¹² is concise in what was known at the time: “In 2000 NNSA contracted with WesDyne International—a subsidiary of Westinghouse—to fabricate TPBARs. WesDyne procures and maintains an inventory of TPBAR components and assembles TPBARs at a Westinghouse facility in Columbia, South Carolina.”

This paper will thus generally refer to WesDyne as being the Westinghouse entity involved in TPBAR manufacturing somewhere on the site of the Westinghouse fuel fabrication facility.

The irradiation of the TPBARs convert the lithium in the rods to tritium gas, which is extracted at DOE’s Savannah River Site¹³ near Aiken, SC. The gas is placed in small canisters, or

¹¹ Westinghouse Electric Company, WesDyne blurb, <https://www.westinghousenuclear.com/operating-plants/outage-services/nde-inspection-services-wesdyne>

¹² U.S. Government Accountability Office, *Nuclear Weapons: National Nuclear Security Administration Needs to Ensure Continued Availability of Tritium for the Weapons Stockpile*, October 7, 2010, <https://www.gao.gov/products/gao-11-100>

¹³ Congressional Research Service, *The U.S. Nuclear Weapons Complex: Overview of Department of Energy Sites*, March 31, 2021, <https://sgp.fas.org/crs/nuke/R45306.pdf>

“reservoirs,” and sent to Department of Defense nuclear weapons sites or to the DOE’s Pantex Plant in Texas. At those sites, the canisters are inserted into nuclear weapons.

The tritium gas “boosts” the explosive power of the plutonium-powered “primary” of a nuclear weapon during the detonation process, which then sets off the secondary part of the weapon. It can’t be emphasized enough that the fabrication of TPBARs for military purposes at the Westinghouse commercial nuclear facility has turned the facility into a “dual use facility.” Such facilities are of nuclear proliferation concern and violate nuclear non-proliferation norms.

As the TPBAR fabrication is operated in secrecy, details about it are hard to come by. But key facts are available in spite of efforts by the National Nuclear Security Administration, the U.S. Nuclear Regulatory Commission and Westinghouse to keep its activities out of the limelight. Based on public information, a picture of a company avoiding public oversight and possibly operating without required regulation emerges. In spite of any security issues involved, this should not be the case.

Especially given that few people know about the nuclear weapons-related work taking place at Westinghouse, a full explanation as to what is happening with TPBAR fabrication and associated hazardous waste production is necessary by all the entities involved. If WesDyne is operating without proper county licenses and absent proper oversight, that should not be allowed in Richland County.¹⁴

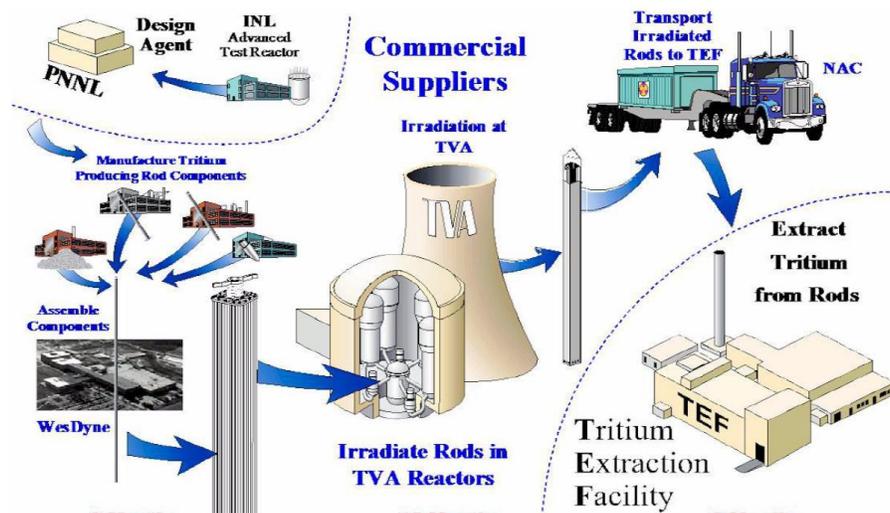


Figure 3 Tritium Production Process Flow

¹⁴ Richland County, South Carolina, capital of the state, <https://www.richlandcountysc.gov/>

From memo entitled “National Nuclear Security Administration Tritium Supply Chain,”¹⁵ UNT Libraries Government Documents Department, August 21, 2013, note inclusion of WesDyne and image on the left of Westinghouse fuel plant in Richland County, SC

What is Tritium?

Tritium¹⁶ is a radioactive gas produced as a by-product during normal operation of nuclear power reactors. It can also be produced by design in a reactor via irradiation of special targets. Tritium has a half-life of 12.3 years, meaning it takes that long for half of the tritium to undergo radioactive decay, which is about 5.5% per year. Due to a glow that it puts out during decay, tritium has been used in such things as exit signs and lights for remote airplane runways.

Tritium can also be used to boost the explosive power of nuclear weapons and is thus used by the U.S. Department of Defense (DOD) in all US nuclear weapons, with the National Nuclear Security Administration being the tritium supplier for DOD.¹⁷

Tritium Production at DOE’s Savannah River Site Ended Over 30 Years Ago

The Savannah River Plant, now known as the Savannah River Site, was established near Aiken, South Carolina in the early 1950s by the Atomic Energy Commission, a precursor to DOE. Thousands of people were removed from the 310-square miles that became the nuclear facility. By 1955, SRP had five “military” reactors that were heavy-water moderated. The reactors were operated not for electricity production but rather to produce plutonium and tritium for U.S. nuclear weapons. SRP produced about 36 metric tons of plutonium.¹⁸ (About 3 kilograms of plutonium is enough to make a “pit” used as the core of all weapons.¹⁹)

The last of the SRS heavy-water moderated reactors, which lacked containment domes and which were not required to meet any NRC safety standards, were shut down by 1988. An effort was undertaken around 1990 to restart the old K-Reactor to produce tritium, via irradiation of special targets in the reactor. In the aftermath of the Chernobyl nuclear reactor disaster, after a large waste of money and in the face of wide-scale public opposition, the reactor was briefly

¹⁵ Link to image: https://digital.library.unt.edu/ark:/67531/metadc844120/m2/1/high_res_d/1090765.pdf

¹⁶ U.S. Environmental Protection Agency, Tritium: Radionuclide Basics, <https://www.epa.gov/radiation/radionuclide-basics-tritium>

¹⁷ Gregory S. Jones, “History of U.S. Tritium Production 1948-1988,” June 12, 2017. <https://nebula.wsimg.com/a4bccfe8ef76f715d91ec4c4f3123259?AccessKeyId=40C80D0B51471CD86975&disposition=0&alloworigin=1>

¹⁸ U.S. Department of Energy, *Plutonium: The First 50 Years*, February 1996, <https://www.osti.gov/servlets/purl/219368>

¹⁹ Wikipedia, “Pit (nuclear weapon),” [https://en.wikipedia.org/wiki/Pit_\(nuclear_weapon\)](https://en.wikipedia.org/wiki/Pit_(nuclear_weapon))

restarted but was permanently shut down in 1992.²⁰ This left the U.S. with no ability to produce tritium for nuclear weapons.

SRS has long processed tritium in specialized, highly secured facilities at the site and packaged it into the small reservoirs that are sent to DOE's Pantex Plant²¹ in Texas, where nuclear weapons are assembled and disassembled, or to DOD sites with nuclear weapons. Pantex also stores over 15,000 surplus plutonium pits from dismantled nuclear weapons.



Tritium complex in H-Area at the Savannah River Site. DOE photo.

Production of Tritium after Closure of SRS Reactors

Lacking tritium-production ability, the Department of Energy by 1990 began reviewing new tritium-production options.

The DOE's Pacific Northwest National Laboratory (PNNL), in Richland, Washington, in a historical review of the "Tritium Production Enterprise" stated that from 1988-1992 that "The US considered the use of dedicated reactors for tritium production."²² Those reactors included

²⁰ Washington Post, "Plan to Restart K-Reactor Questioned," August 7, 1992, <https://www.washingtonpost.com/archive/politics/1992/04/07/plan-to-restart-k-reactor-questioned/85d59cff-05f8-4de4-9973-ef0dcc897b20/>

²¹ U.S. National Nuclear Security Administration, Pantex Plant, "Plutonium Pit Storage," June 2007, <https://fissilematerials.org/library/pan07.pdf>

²² Pacific Northwest National Laboratory, "Irradiation Testing in Support of the Tritium Production Enterprise," 2012, <https://tcw15.mit.edu/sites/default/files/documents/Irradiation%20Testing%20for%20Tritium.pdf>

heavy water reactors (HWRs), high temperature gas-cooled reactors (HTGRs) and light water reactors (LWRs).²³ At SRS, use of a linear accelerator²⁴ was formally proposed for tritium production.

A new dedicated reactor to produce tritium at SRS, the New Production Reactor, was the “preferred strategy” of DOE’s Office of New Production Reactors.²⁵ The New Porkbarrel Reactor, as it was mockingly called, faced withering public opposition and plans for it were terminated. As it would have been a DOE facility it would not have had NRC oversight.

PNNL goes on to state from 1995 to 1998 that “the US considered dual-use facilities” for pursuit of a new tritium production source. Those facilities included the mentioned linear accelerator and commercial light water reactors.

After conducting various reviews, DOE made a formal decision to produce tritium in commercial light-water reactors operated by the federally owned Tennessee Valley Authority. Those reactors are so-called ice-condenser reactors, with the ice being used to melt hot water in the event of an accident. The use of TVA’s commercial reactors for this military purpose “undermines the U.S. commitment to curb nuclear weapons proliferation,” as told in the 2002 book *Tritium on Ice: The Dangerous New Alliance of Nuclear Weapons and Nuclear Power*.²⁶

TVA’s Watts Bar unit 1, a thin-domed “ice condenser” reactor²⁷ on the Tennessee River north of Decatur, TN, was chosen as the first reactor to produce tritium. The plan was to irradiate special rods containing lithium in the reactor to produce tritium gas, which would be contained in the rods before its removal. In order to do this, DOE’s PNNL designed those specialized rods, which became known as Tritium Producing Burnable Absorber Rods (TPBARs).²⁸

²³ U.S. Department of Energy, Office of New Production Reactors, 1990,

“New Production Reactors Program Plan,” <https://www.osti.gov/servlets/purl/6320732>

²⁴ U.S. Department of Energy, Office of NEPA Policy and Compliance, “Accelerator Production of Tritium at the Savannah River Site,” 1999, <https://www.energy.gov/nepa/articles/doeis-0270-final-environmental-impact-statement-march-1999>

²⁵ U.S. Department of Energy, Office of New Production Reactors, Environmental Impact Statement for the Siting, Construction, and Operation of New Production Reactor Capacity, 1991, <https://www.osti.gov/servlets/purl/10191203>

²⁶ Ken Bergeron, *Tritium on Ice: The Dangerous New Alliance of Nuclear Weapons and Nuclear Power*, 2002, <https://mitpress.mit.edu/books/tritium-ice>

²⁷ Ed Lyman, Nuclear Control Institute, “Plutonium Fuel and Ice Condenser Reactors: A Dangerous Combination,” 2002, <https://www.nci.org/e/el-ice-condensers.htm>

²⁸ Pacific Northwest National Lab, Design and Fabrication of In-Reactor Experiment to Measure Tritium Release and Speciation from LiAlO₂, April 2013, and LiAlO₂/Zr Cermets,” <https://www.energy.gov/sites/prod/files/2015/08/f26/Senor%20-%20TMIST-3%20Irradiation%20Experiment.pdf>

In October 1996, the U.S. Nuclear Regulatory Commission allowed Watts Bar unit 1 to irradiate 8 TPBAR “lead test assemblies”²⁹ and in 2002 licensed loading of up to 2304 TPBARs, a number which was reduced in 2003 to 240 TPBARs.³⁰ In 2005, problems were revealed that the rods leaked tritium into reactor cooling water at higher than anticipated rates, and thus into the environment. PNNL could not fully solve the leakage problem.

Since the beginning of the idea to produce tritium for nuclear weapons in a commercial reactor, public interest groups have expressed concern. For example, in 2011, a number of groups filed comments on NNSA’s efforts to prepare a “Supplemental Environmental Impact Statement (SEIS) for the Production of Tritium in a Commercial Light Water Reactor.”³¹

In 2019, the NRC authorized up to 1792 TPBARs to be irradiated in both Watts Bar unit 1 and Watts Bar unit 2,³² which apparently began TPBAR irradiation in 2019.³³ Two reactors at TVA’s Sequoyah site are also being considered for tritium production.

TVA is paid by DOE for the TPBAR irradiation service, which is regulated by the Nuclear Regulatory Commission, and due to the dual civilian-military nature of the operation, only U.S.-origin uranium, known as “unobligated uranium,”³⁴ is used as fuel in the reactors.

Once removed from the reactors, the highly radioactive TPBARs are allowed to cool for a short period of time and then taken to the DOE’s Savannah River Site for processing. Tritium extraction occurs in the Tritium Extraction Facility (TEF)³⁵ and a new tritium handling and

²⁹ U.S. Nuclear Regulatory Commission, Office of Nuclear Reactor Regulation, “Safety Evaluation Report” on tritium rod lead test assemblies, 1997, <https://www.osti.gov/servlets/purl/491562>

³⁰ Tennessee Valley Authority, “TPBAR Loading Increase License Amendment Request Alignment Meeting,” 2015, <https://www.nrc.gov/docs/ML1522/ML15225A377.pdf>

³¹ Various nonprofit groups, including SRS Watch, “Comments on “Notice of Intent to Prepare a Supplemental Environmental Impact Statement (SEIS) for the Production of Tritium in a Commercial Light Water Reactor”, November 14, 2011, https://www.srswatch.org/uploads/2/7/5/8/27584045/comments_by_groups_on_tritium_seis_11.14.2011_pdf.pdf

³² U.S. Nuclear Regulatory Commission, Environmental Assessment on irradiation of 1792 TPBARs in Watts Bar, 2019, <https://www.nrc.gov/docs/ML1833/ML18332A013.pdf>

³³ ExchangeMonitor, “Watts Bar 2 to Start Weapons Tritium Production When Current Refueling Outage Wraps,” November 17, 2020, <https://www.exchangemonitor.com/watts-bar-2-start-weapons-tritium-production-current-refueling-outage-wraps/?printmode=1>

³⁴ U.S. Department of Energy, “Tritium and Enriched Uranium Management Plan Through 2060,” Report to Congress, 2015, <http://fissilematerials.org/library/doe15b.pdf>

³⁵ U.S. Department of Energy, Office of NEPA Policy and Compliance, Final EIS on “Construction and Operation of a Tritium Extraction Facility at the Savannah River Site,” 1999, <https://www.energy.gov/nepa/eis-0271-construction-and-operation-tritium-extraction-facility-savannah-river-site>

packaging facility, the Tritium Finishing Facility (TFF)³⁶ is under construction. Over the years, tritium processing at SRS has caused large releases of the radioactive gas into the environment, where it can combine with oxygen to form tritiated water, which is radioactive and can enter cells the same as water.

The Defense Nuclear Facilities Board (DNFSB), an independent agency that oversees DOE operations, has been concerned about health and safety issues concerning potential tritium releases by SRS tritium operations. Concern of the DNFSB about SRS tritium operations remains high and their on-going interest is reflected in a report entitled *Safety of the Savannah River Tritium Facilities*,³⁷ delivered to DOE on July 12, 2019. On July 13, 2021, the DNFSB held a public meeting³⁸ on SRS activities and tritium operations was a focus of the meeting.

According to DOE documents, highly radioactive waste from the processing of irradiated TPBARs is defined as low-level waste and is disposed of in above-ground concrete storage and disposal facilities called the “E-Area Intermediate Level Vaults.”³⁹ Leakage of tritium from the spent rods is reported by SRS to be of concern.⁴⁰

Amount of TPBAR Fabrication, Irradiation and Processing Set to Skyrocket

According to a presentation by a National Nuclear Security Administration official to the South Carolina Nuclear Advisory Council on October 16, 2020,⁴¹ the amount of TPBAR processing at SRS is set to jump dramatically. NNSA revealed that the number of TPBAR extractions is set to go from about 2 extractions per year to “8 extractions per year by 2026 and potentially 10.”

³⁶ U.S. Department of Energy, Office of NEPA Policy and Compliance, Final Environmental Assessment on “The Tritium Finishing Facility at the Savannah River Site,” March 21, 2021,

<https://www.energy.gov/nepa/articles/doeea-2151-final-environmental-assessment>

³⁷ Defense Nuclear Facilities Safety Board, *Safety of the Savannah River Tritium Facilities*, 2019,

<https://www.dnfsb.gov/board-activities/recommendations/safety-savannah-river-tritium-facilities>

³⁸ Defense Nuclear Facilities Safety Board, public meeting notice and archived video of July 13, 2021 meeting on SRS issues, <https://www.dnfsb.gov/public-hearings-meetings/public-meeting-and-hearing-status-savannah-river-site>

³⁹ U.S. Department of Energy, Westinghouse Savannah River Company, *Special Analysis: Production TPBAR Waste Container Disposal Within the Intermediate Level Vault*, 2005,

<https://ntrl.ntis.gov/NTRL/dashboard/searchResults/titleDetail/DE2006882717.xhtml>

⁴⁰ U.S. Department of Energy, Savannah River National Lab, “Updated Estimate of Tritium Permeation from TPBAR Disposal Containers in ILV,” April 2021, <https://sti.srs.gov/fulltext/SRNL-TR-2020-00298.pdf>

⁴¹ National Nuclear Security Administration, Savannah River Field Office updates to the Governor’s Nuclear Advisory Council, October 16, 2020,

https://admin.sc.gov/sites/default/files/facilities_manage/NNSA%20Savannah%20River%20Field%20Office%20Updates.pdf

Increased tritium processing at SRS will put pressure on operations, increasing risk of tritium exposure to staff and increasing risk to the public and the environment in case of an accidental release of tritium being processed or stored. NNSA admitted in the mentioned presentation that “Reservoir loading and testing complexity will increase; more complicated surveillance,” but it is unknown if SRS systems can handle the greatly magnified tritium-processing demands. Thus the DNFSB is monitoring the situation for potential technical and safety issues.

Likewise, fabrication of TPBARs at the Westinghouse fuel plant is anticipated to greatly increase and the number of TPBARs to be irradiated by TVA will increase in parallel. TVA may need more than two reactors to get the job done. Such increased capacity will place demands on those facilities but no plan has been presented to make the case that the expansion in operations can be achieved. In the case of the large increase in TPBAR production by WesDyne, this means that there would likely be an increase in hazardous waste, such as solvents, that are produced. It is also possible that in the recent years that WesDyne, in anticipation of a ramping up of TPBAR irradiation in Watts Bar, has been stockpiling the rods. No form of explanation to the public has been forthcoming and no environmental review has been conducted given that the operation takes place in the dark and out of public sight.

The reason for the big increase in TPBAR production, irradiation and processing, seems to be that NNSA aims to fully load tritium reservoirs that go into new and old nuclear warheads with a full charge of tritium,⁴² which could be around 3 grams per warhead. Fully loaded reservoirs will mean less need to periodically full the reservoirs and perhaps result in more predictable operation of the weapons.

NNSA and politicians will claim that topping up all the U.S. nuclear weapons is being done for the sake of “deterrence” but in reality, as has always been the case, the large stockpile of around 4000 active and reserve weapons is being maintained not simply for deterrence but to engage in a full-scale nuclear war. If the U.S. abided by disarmament requirements of Article 6 the Nuclear Non-Proliferation Treaty (NPT), to which the U.S. is a signatory, the hyped up “demand” for tritium would decrease at a programmed pace.

Increased tritium processing at SRS goes hand in hand with efforts to locate the SRS Plutonium Bomb Plant (PBP)⁴³ at the site, to be used, if it goes forward, to make plutonium pits initially for two new nuclear warheads (the first being W87-1 warhead to go into the improperly named

⁴² Gregory S. Jones, “U.S. Increased Tritium Production Driven by Plan to Increase the Quantity of Tritium per Nuclear Weapon,” June 2, 2016, <https://nebula.wsimg.com/08a60104185a91e6db9008fb929a0873?AccessKeyId=40C80D0B51471CD86975&disposition=0&alloworigin=1>

⁴³ Savannah River Site Watch, “Lawsuit Filed by Public Interest Groups Against Biden Administration Over Nuclear Bomb Core Production Plans at SRS,” Los Alamos, June 29, 2021, <https://srswatch.org/lawsuit-filed-by-public-interest-groups-against-biden-administration-over-nuclear-bomb-core-production-plans-at-srs-los-alamos/>

and provocative missile named the Ground Based Strategic Deterrent). DOE estimates the cost of the pit plant has more than doubled to \$11 billion⁴⁴ in order to convert the abandoned plutonium fuel (MOX) building - on which \$8 billion was wasted - into a nuclear bomb factory, an operation that will increase the risks of a new nuclear arms race and produce various new streams of nuclear and chemical waste.

SRS Watch and other groups have sued NNSA with a demand that a Programmatic Environmental Impact Statement, to review impacts across the DOE complex of expanded pit production, be prepared. A lawsuit⁴⁵ was filed against the project on July 30, 2021 by the South Carolina Environmental Law Project for clients Savannah River Site Watch, Nuclear Watch New Mexico and Tri-Valley CARES. A response from NNSA is expected on September 27.

Processing of tritium at SRS already makes it a key nuclear weapons site but if the pit project were to go forward the nuclear weapons role of SRS would be greatly expanded.

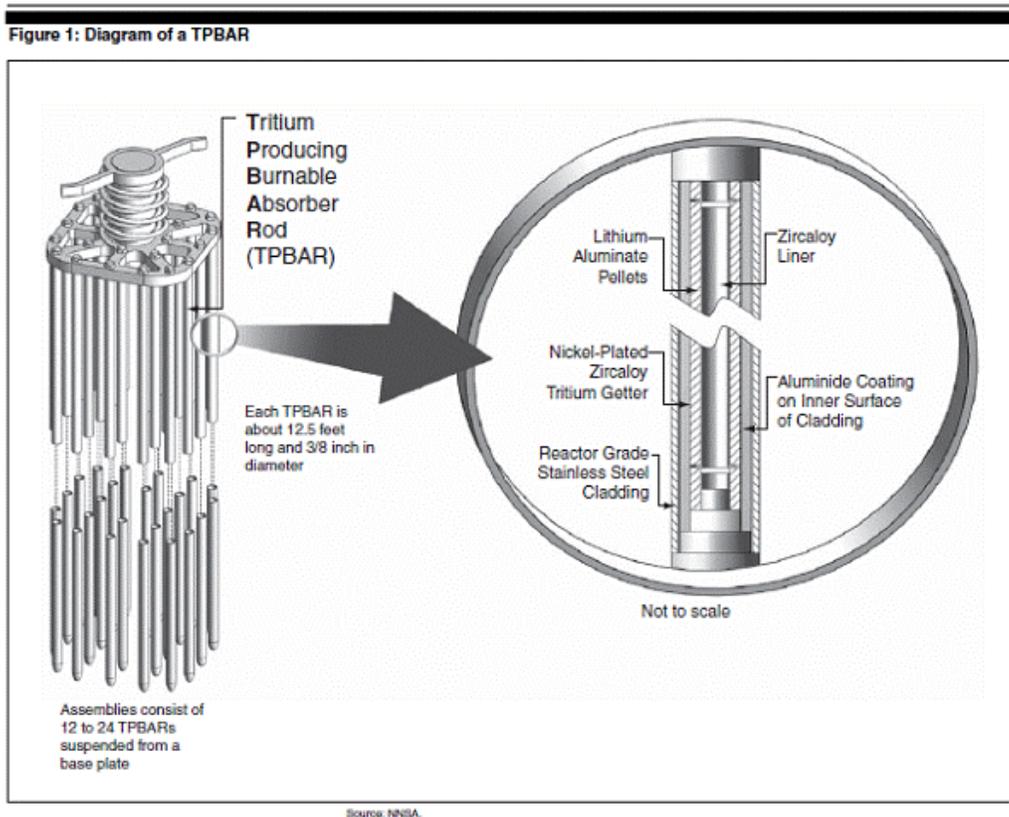


Diagram of TPBAR, from DOE's National Nuclear Security Administration.

⁴⁴ National Nuclear Security Administration, NNSA approves Critical Decision 1 for Savannah River Plutonium Processing Facility, June 28, 2021, <https://www.energy.gov/nnsa/articles/nnsa-approves-critical-decision-1-savannah-river-plutonium-processing-facility>

⁴⁵ South Carolina Environmental Law Project, "Plutonium Pits (Nuclear Bomb Cores)," 2021, <https://www.scelp.org/cases/plutonium-pits>

More on the TPBAR Mystery & Who is Licensed to do the Work?

According to historical documents, a company called WesDyne International LLC has been the company doing the TPBAR fabrication at the Westinghouse Electric Company plant. WesDyne fabricates the TPBARs assemblies from non-radioactive components believed to be produced elsewhere. The lithium in the rods, which converts to tritium gas when irradiated, likely comes from NNSA's Y-12 nuclear weapons site near Oak Ridge, Tennessee.

Westinghouse, which had been owned by Toshiba, declared bankruptcy in 2017 and was acquired by Brookfield Business Partners.⁴⁶ It has been reported that Brookfield might have interest in selling Westinghouse but its profitability might motivate Brookfield to keep the fuel-fabrication business. In the Westinghouse takeover they also acquired the TPBAR nuclear weapons business but there appears to be no information in the public realm that operating a dual use commercial-military facility has caused Brookfield to want to shed that portion of the business.

A 2001 NNSA document, entitled *Tritium Readiness Campaign*⁴⁷ clearly states the role of WesDyne: "Fixed-price contract awarded to WesDyne International for assembly of TPBAR components." That same document goes on to state that "WesDyne has set up a facility in South Carolina-for classified TPBAR work."

The word "classified" may be the reason for the obfuscation and total lack of openness about TPBAR fabrication and associated waste streams. When it comes to just who is involved in TPBAR fabrication, which federal licenses are held for such fabrication, which state and county licenses are held and how much waste is produced and how that waste is managed are all things that should be in the public realm and not hidden behind the claim of "classification" that doesn't apply to those aspect of TPBAR fabrication.

WesDyne pops up many times since 2001 as the company doing the TPBAR fabrication, as an internet search will reveal. For example, a DOE Inspector General "Audit Report" from November 2013, entitled "Management of Tritium within the National Nuclear Security Administration"⁴⁸ states that TPBAR irradiation by the Tennessee Valley Authority, owner of the Watts Bar reactors, stated that "NNSA contracted with WesDyne International, LLC (WesDyne) to assemble TPBARs to support each reactor cycle."

⁴⁶ Westinghouse news release, "Brookfield to Acquire Westinghouse Electric Company," January 4, 2018, <https://info.westinghousenuclear.com/news/brookfield-to-acquire-westinghouse-electric-company>

⁴⁷ National Nuclear Security Administration, "Tritium Readiness Campaign," August 2001, <https://www.nrc.gov/docs/ML0126/ML012690098.pdf>

⁴⁸ U.S. Department of Energy, Office of Inspector General, Audit Report on Management of Tritium within the National Nuclear Security Administration, November 2013, <https://www.energy.gov/sites/prod/files/2013/11/f5/OAS-L-14-01.pdf>

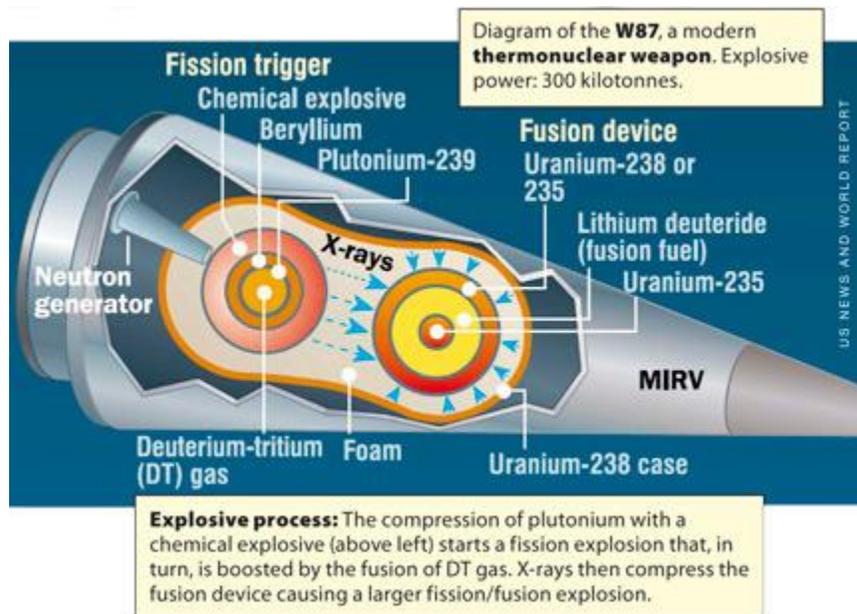


Diagram with nuclear warhead, with indication of where tritium is injected.
Image from US News and World Report.

It appears that WesDyne is registered and has an active status with the South Carolina secretary of state. WesDyne is listed as being in “good standing,” with its “registered agent” being located at “C T CORPORATION SYSTEM, 2 OFFICE PARK COURT SUITE 103, COLUMBIA, South Carolina 29223.” (Search for the company names on the secretary of state website.⁴⁹)

For Westinghouse Government Services, things get a bit more confusing.

Documents requested from the secretary of state’s office, for a small fee, reveal more details about WesDyne. An “Application for an Amended Certificate of Authority By A Foreign Limited Liability Company To Transact Business in South Carolina,”⁵⁰ filed with the SC secretary of state, with a filing date of 05/08/2020 and an “Original Application” date of 07/30/2010, is for WesDyne International LLC. The address for the company is the same as the fuel plant and “managers” included on the application list their affiliation as being with Westinghouse Government Services LLC (also listed with the address of the fuel plant - 5801 Bluff Road, Hopkins, SC 29209).

⁴⁹ South Carolina secretary of state, to search for registered businesses:

<https://businessfilings.sc.gov/BusinessFiling/Entity/Search>

⁵⁰ South Carolina secretary of state document linked on SRS Watch website: https://srswatch.org/wp-content/uploads/2021/09/Sec-State-doc-amended-certificate-Westinghouse-Government-Services-LLC_DownloadedDocument_8-6-2021-1.pdf

Another document⁵¹ filed with the SC secretary of state indicates that there was a merger between WesDyne International LLC and Westinghouse Government Services LLC, with an “effective day of merger” of 3/13/19 and that WesDyne International LLC is the “surviving or resulting limited liability company.”

But Westinghouse Government Services continues to exist, with other work, as reflected by a news release⁵² that the former administrator of NNSA, Ms. Lisa Gordon-Hagerty, went through the revolving door after leaving NNSA in November 2020 to take a position as “lead Director for Strategic Programs” with Westinghouse Government Services.

NNSA Solicitation Reveals TPBAR Irradiation Details, Including NRC Role Concerning WesDyne

A 2014 DOE solicitation for contract DE-SOL-0007797 – “Opportunity: Tritium Producing Burnable Absorber Rods (TPBAR)” - on the US Government contract solicitation site⁵³ - reveals a “sole source” contract was being sought with WesDyne International for TPBAR irradiation.

The “synopsis” with the solicitation contains a wealth of information. To introduce the synopsis, the solicitation says “The United States Department of Energy, National Nuclear Security Administration (NNSA) issues this Notice of Intent to Award a Sole Source Contract to WesDyne International, located in Columbia, South Carolina, for fabrication of Tritium Producing Burnable Absorber Rods (TPBAR). This is a Sole Source synopsis published for informational purposes only.” The following details are attached to the solicitation:

The United States Department of Energy, National Nuclear Security Administration (NNSA) issues this Notice of Intent to Award a Sole Source Contract to WesDyne International, located in Columbia, South Carolina, for fabrication of Tritium Producing Burnable Absorber Rods (TPBARs). This is a Sole Source synopsis published for informational purposes only. In accordance with the Competition in Contracting Act, 41 U.S.C. 3304(a)(3), Use of Non-Competitive Procedures, as implemented by FAR Subpart 6.302-3, other than full and open competition is authorized when it is necessary to award a contract to a particular source to maintain a facility, producer, manufacturer or other supplier available for furnishing supplies or services to achieve industrial mobilization. The Government intends to solicit and negotiate with only

⁵¹ South Carolina secretary of state document linked on SRS Watch website: https://srswatch.org/wp-content/uploads/2021/09/Sec-State-doc-Articles-of-Merger-Westinghouse-Government-Services-LLC_DownloadedDocument_8-6-2021-2-1.pdf

⁵² Westinghouse Electric Company, “Lisa Gordon-Hagerty Joins Westinghouse Government Services,” August 23, 2021, <https://www.prnewswire.com/news-releases/lisa-gordon-hagerty-joins-westinghouse-government-services-301360574.html>

⁵³ At “FedConnect - The Government’s Acquisition and Grants Portal,” search under “Search Public Opportunities Only” for “TPBAR” in the “title” box and find the “solicitation” named “Opportunity: Tritium Producing Burnable Absorber Rods (TPBAR) F,” look for items in “Documentation” on the upper right: <https://www.fedconnect.net/FedConnect/Default.htm>

one source using this authority. The NAICS code for the acquisition is 334517, Irradiation Apparatus Manufacturing, and the Produce Service Code is 4470, Nuclear Reactors.

Tritium has a half-life of 12.3 years and any inventory needs to be continually replenished. One of NNSA's missions is to provide an assured domestic source of new tritium to ensure national security requirements can be maintained at the prescribed level by replacing that lost to radioactive decay.

Tritium is produced by irradiating enriched lithium-aluminate pellets with neutrons in one or more commercial nuclear reactors at the Tennessee Valley Authority (TVA). Specially designed and fabricated TPBARs are critical reactor core components. All components must be manufactured and assembled in accordance with applicable Federal requirements including, but not limited to 10 CFR 50 Appendix B, Quality Assurance (QA) Criteria for Nuclear Power Plants and Fuel Reprocessing Plants. TPBARs and certain TPBAR components must be protected at the Confidential Restricted Data (CRD) security level. Irradiated TPBARs are then transported from TVA to the Tritium Extraction Facility (TEF) at the Savannah River Site (SRS) in a continual effort to meet inventory requirements in support of Department of Defense's (DOD) nuclear weapons stockpile mission.

Contractor shall provide all labor and material necessary to procure or fabricate all required components, materials, and equipment to assemble the TPBARs in accordance with the drawings and specifications provided by the Designer of Record, Pacific Northwest National Laboratory (PNNL), and in accordance with applicable regulations and statutes of which DOE is required to comply. The Government anticipates a period of performance for this award that will consist of a base period of five years with an option(s) for up to five additional years.

WesDyne is a vital source that possesses extensive tritium program experience, knowledge, and expertise with specialized nuclear fuel and fuel component capabilities to produce critical supplies of unique and highly specialized TPBARs. This allows the Tritium Readiness Program to continually provide and maintain tritium at the prescribed level to meet nuclear weapons stockpile requirements and achieve industrial mobilization. This requirement will leverage the WesDyne team's (including parent, Westinghouse) existing infrastructure of which they are major suppliers of fuel and fuel components to the U.S. commercial Pressurized Water Reactor nuclear fleet, which is the only type of reactor compatible for irradiating TPBARs. WesDyne's corporate structure affords them access to the parent's commercial fuel component propriety information for critical design and manufacturing functions, with respect to the TVA reactors, that is specifically needed to meet TPBAR fabrication program requirements, which is essential to the national security interest of the United States. WesDyne has a Nuclear Regulatory Commission (NRC) approved Quality Assurance Program which is accepted in the nuclear industry and is recognized by TVA for TPBAR activities. WesDyne also has a facility certified to handle confidential data and

hardware to fabricate and assemble classified TPBARs. WesDyne is a vital source that has the required certifications, security, NQA-1 qualifications, and facility as well as knowledge, expertise and experience needed for immediate and continued implementation to ensure weapons stockpile inventory are continually replenished. To change contractors and lose a vital supplier's capabilities would cause a break in production and significantly impact the Tritium Readiness Program's ability to be prepared to provide new tritium, thereby jeopardizing the defense mission and placing the nation's security at severe risk in the event of a national emergency.

This notice of intent is not a request for competitive proposals and no solicitation is forthcoming. However, in accordance with FAR 5.207(c)(16)(i), all responsible sources may submit a bid, proposal, quotation or an exception to the intent to procure on a sole source basis, which shall be considered by the agency if received by 3:00 pm Local (Aiken, S.C.) Time, Tuesday, December 16, 2014.

A determination by the Government not to compete this proposed contract based upon responses to this notice is solely within the discretion of the Government. Information received will normally be considered solely for the purpose of determining whether to conduct a competitive procurement, if it is received by the established due date and time indicated below. If a vendor source takes exception to the Government's intent to sole source this requirement, they must (1) provide the basis for disagreement with this assertion, (2) demonstrate how they are qualified and capable of meeting NQA-1 requirements, meeting Security requirements which have classified components, and obtaining required NRC and TVA certifications for production of TPBARs, (3) demonstrate how they have the requisite expertise to meet the scope of this requirement without interruption (including transition) in order to maintain a constant production of TPBARs in support of the national security mission, and (4) demonstrate how a competitive procurement and a change in supplier will not result in a break or interruption of production, and will not adversely impact the Tritium Readiness program.

Submission of any information in response to this notice is purely voluntary. The Government assumes no financial responsibility for any costs incurred. Responses must be in writing, by email to Rita Pernell, Contract Specialist, at rita.pernell@nnsa.srs.gov. The e-mail shall contain the following subject line: Response to Notice of Intent - TPBAR Fabrication. Please submit all responses no later than 3:00 pm Local (Aiken, S.C.) Time, Tuesday, December 16, 2014. Only information/inquiries received by this date will be considered.

The above TPBAR-irradiation contract solicitation by NNSA confirms that the Designer of Record (DOR) at the time for the TPBARs was DOE's Pacific Northwest National Laboratory and that Westinghouse is the "parent" of WesDyne. The document claims, without documentation, that "WesDyne has a Nuclear Regulatory Commission (NRC) approved Quality Assurance Program which is accepted in the nuclear industry and is recognized by TVA for TPBAR activities." This

statement thus indicates some regulatory role for the NRC of WesDyne TPBAR activities, but that apparently does not include on-site inspection of the facility or inspection of the TPBARs themselves and does not include oversight of aerial or liquid waste streams or emission.

At public meetings in South Carolina, the NRC's Region II fuel cycle facility staff have said that NNSA regulates TPBAR production. No evidence of this exists as the NNSA is not a regulatory agency as is the NRC. (DOE is self-regulating and the NRC does not inspect activities at DOE-owned sites.)

The DOE solicitation further states, also without providing documentation, that WesDyne has "required NRC and TVA certifications for production of TPBARs." The EIS on the WEC license extension must provide evidence of the above-mentioned the Quality Assurance Program and NRC "certifications" for the record.

An important part of the above solicitation lays out WesDyne's dependence on Westinghouse Electric Corporation, which fabricates uranium fuel and which seemingly has a crucial role in the management of TPBAR fabrication.

WEC Document Indicates Aspects of TPBAR Work is its Responsibility

A Westinghouse "Facility Change Report,"⁵⁴ dated January 6, 2020 and sent to the NRC says that "Westinghouse Electric Company LLC (Westinghouse) hereby submits the report of Columbia Fuel Fabrication Facility (CFFF) changes that did not require Nuclear Regulatory Commission (NRC) preapproval in accordance with 10 CFR 70.72. This report addresses those changes completed within calendar year 2019. Westinghouse had no facility changes that required NRC pre-approval during this time period."

The document covering fuel plant operations includes reference to TPBAR work by WEC. Under "Replace TPBAR HVAC" the document (on page 26) says "The old TPBAR unit is obsolete, failure of this unit would significantly impact product." It goes on to give more details about the HVAC replacement, located on the "TPBAR roof and outside":

Install 480 & 120 VAC electrical service for the new HVAC unit to replace the existing TPBAR HVAC unit. The new air handling unit will be located on the roof of TPBAR south of the existing pad for AC-35. The new condensing unit will be installed outside east of the existing condensing unit. A new power panel and receptacle panel will be installed to feed the new HVAC equipment. AC-35 has been abandoned the electrical service for AC-35 will be removed. The old TPBAR electrical service will be removed.

⁵⁴ Westinghouse Electric Company, Columbia, Fuel Site, Facility Change Report, January 6, 2020, <https://www.westinghousenuclear.com/Portals/0/Columbia%20Community/LTR-RAC-21-10.pdf>

On page 35 of the same document more is indicated about WEC's "TPBAR HVAC Replacement," noting the value of TPBARs in the facility:

TPBAR cladding has a special coating causing it to have a fairly high value of roughly a couple thousand dollars each. At current production levels, we have roughly up to 1,800 cladding tubes in various stages of production. A completed TPBAR is valued at roughly \$11,000, meaning at any given time in TPBAR we could have anywhere from approximately \$4 million to \$20 million worth of product that we would risk having to scrap should we lose the ability to control humidity.

The current DX Split System HVAC unit for TPBAR is approaching 20 years old. The expected life of such units is 15-20 years. Internal components of the unit have become obsolete and difficult to find. Over the past year and a half the unit has required numerous repairs. One such repair required parts found only on Ebay, an unreliable location to find parts. There is a leak in the unit as maintenance has had to add refrigerant more than once over the last year and a half. The required refrigerant is being phased out and federal regulations stipulate how much and how often that particular refrigerant can be added to a unit. As the leak worsens, we risk not being able to use that unit at all due to the federal regulations.

The above confirms a WEC role in TPBAR facility maintenance.

If WEC is admitting that TPBAR fabrication is in its facilities, or that it is in charge of maintenance aspects of those facilities, how can it be that such activities are not covered by WEC's NRC license?

It is not known but some type of document might exist between the NNSA and the NRC by which the NRC waives regulatory rights over TPBAR fabrication and resultant waste streams. In a related matter, DOE assumed responsibility for giving WesDyne security clearance for "secret" projects related to nuclear reactors and relieved the NRC of obligations to provide clearance for WesDyne. That agreement,⁵⁵ which has a history beginning in 2004,⁵⁶ was terminated in 2020.

NNSA-WesDyne Contract Reveals Responsibilities

Though the NNSA is dragging its feet in providing a copy of the NNSA-WesDyne contract to fabricate TPBARs, requested under a November 19, 2020 Freedom of Information Act request by SRS Watch,⁵⁷ a few pages from the NNSA-WesDyne contract were provided.

⁵⁵ Westinghouse Electric Company, Columbia, Fuel Site, Facility Change Report, January 6, 2020, <https://www.westinghousenuclear.com/Portals/0/Columbia%20Community/LTR-RAC-21-10.pdf>

⁵⁶ U.S. Nuclear Regulatory Commission, WesDyne Security Cognizance Agreement Termination, May 8, 2018 and "WesDyne NNSA SCA Termination Package," <https://www.nrc.gov/docs/ML1812/ML18123A426.html>

⁵⁷ National Nuclear Security Administration FOIA acknowledgement letter for request for NNSA-WesDyne contract, December 8, 2020, <https://srswatch.org/wp-content/uploads/2021/09/Ack-Ltr-FOIA-21-00055-DD-1-WesDyne-NNSA-contract-Dec-8-2020.pdf>

Four pages from “Contract No. DE-AC02-00DP00229,”⁵⁸ which appears to be from May 2017, were provided to SRS Watch on May 4, 2021. Excerpts from those four pages reveal the following key information:

C.6 PHASE IV SCOPE OF WORK

The Contractor shall furnish all labor, materials and equipment necessary to fabricate TPBARs in accordance with this Statement of Work. The manufacture and delivery of TPBARs requires that the contractor provide management support to the Tritium Sustainment Program, and support technology development of the TPBAR design, manufacturing process development, and enhancements. The contractor shall perform required inspections, tests, and any special processes or procedures based on Designer of Record (DOR) specifications, drawings and other documents transferred through the interface agreement. The DOE-NNSA will provide the contractor with projected quantities of TPBARs needed to support irradiation schedules at least 15 months prior to TPBAR Delivery. The projection will cover production quantities covering the next three (3) years. Provided below is the most current nominal schedule of TPBAR use through October 2025.

(a) TPBAR FABRICATION AND ASSEMBLY

(1) Provide a facility certified to handle hardware to fabricate and assemble TPBARs.

(2) Provide for storing components and interim storage of assembled TPBARs until shipment. Provide for storage of components and necessary material inventory. Examples include bare cladding tubes, full length getters, and SS 316 ingots. Storage will be in accordance with current requirements identified by the DOR and concurred by the COR.

(3) Provide all labor and material required to procure or fabricate all required materials, components, and equipment to assemble the TPBARs, in accordance with the DOR drawings and specifications, approved and provided by the COR.

(8) Provide a Product Certification to TVA, the irradiation utility, the DOR and the utility’s fuel fabricator at the time of TPBAR delivery. This certification will list the TPBARs by unique

⁵⁸ Excerpt from the NNSA-WesDyne contract was obtained via a Freedom of Information Act request filed on January 2021: <https://srswatch.org/wp-content/uploads/2021/09/FOIA-response-May-4-2021-Excerpt-of-Section-C-from-Mod-060-May-2017-1.pdf>

identification numbers and certify that: (1) they were built in accordance with the approved Quality Assurance Program and the approved Manufacturing and Quality Plan and (2) they meet the requirements of applicable engineering drawings, specifications and acceptance criteria. A reference to each previously approved nonconformance dispositioned "repair" or "use-as-is" will be included as part of the Product Certification. Copies of all such certifications shall be sent to the DOE-NNSA COR at the same time. The format and sample content of the certifications are identified in Part I, Section F.8 (see example in Part III, Section J, Attachment 3).

(11) Provide for ultimate disposal of waste products, including coordination with PNNL, as appropriate, from the fabrication processes that the contractor is responsible for.

(b) PACKAGING AND SHIPMENT

(1) The Contractor shall coordinate with the Fuel Vendor (i.e., Westinghouse), the delivery of the TPBARs to TVA.

(2) The Contractor shall provide shipment services for hardware when required. The numbers of shipments and places of shipment will depend on program requirements.

(3) The Contractor shall ship TPBARs per agreed upon schedules provided by the COR. In order to accomplish this requirement, the Contractor shall provide the following services:

(-) WesDyne will deliver TPBARs to the Fuel Vendor (i.e., Westinghouse) in time for final assembly to meet delivery of fuel as agreed upon between the fuel vendor and TVA.

(A "COR" is a "Contracting Officer's Representative," a government employee who assists in technical monitoring or administration of a contract.)

The obtained pages from the contract appear to confirm WesDyne's responsibility in assembly and delivery of the TPBARs and in handling resultant waste. Additionally it confirms that TPBAR activities will be coordinated with the "fuel vendor" (Westinghouse Electric Company).

SRS Watch informed the FOIA officer of the need to further comply with the FOIA request and was told on August 11, 2021 that the program office is “wrapping up their review so I’m expecting to receive documents on this case pretty soon.” It is unknown when more of the NNSA-WesDyne contract will be provided but an inquiry about that was sent to the NNSA FOIA officer on September 14, 2021 garnered a quick same-day response that the documents from NNSA were in hand and needed final review before being sent during the coming two weeks (ending September 24, 2021).

Lack of Richland County Business License for WesDyne

According to a search of the list of “All Businesses with 2020 Richland County Business Licenses,” posted on the Richland County, South Carolina government website,⁵⁹ neither WesDyne International nor Westinghouse Government Services holds a business license. The only Westinghouse entity holding a license is “Westinghouse Electric Co., LLC,” listed at 5801 Bluff Road (Hopkins, SC 29061) and with a “business description” of “Other Basic Inorganic Chemical Manufacturing.”

Likewise, a search on the Richland County database for taxes paid in 2020,⁶⁰ lists “Business/Merchant” taxes and vehicle taxes having been paid by Westinghouse Electric Company (listed with address of its parent company: 1000 Westinghouse Dr., Cranberry Towns, PA 16066-5200). It appears that no business taxes were paid in Richland County by WesDyne or Westinghouse Government Services.

What this search reveals is troubling. It appears that WesDyne does not have a business license in Richland County and has not paid county business taxes. Thus, how can it operate without a business license and without paying taxes? Richland County should investigate this situation.

This issue of the status of businesses license and payment of taxes by Westinghouse subsidiaries is possibly of greater concern given that the area nearest to the WEC facility in Lower Richland has a large African-American population that is paying more attention to how Westinghouse operates. There are deep concerns in the wider Columbia community about Environmental Justice concerns in Lower Richland and beyond due to the presence of Westinghouse, the contamination from it and how it relates to the public.

Additionally, if WEC is actually doing the TPBAR work then this must be publicly revealed and

⁵⁹ List of “All Businesses with Richland County Business Licenses,” on Richland County, South Carolina government website, December 13, 2020, https://www.richlandcountysc.gov/Portals/0/Departments/BSC/Documents/2020_Business_Licenses_Alpha_Order.pdf

⁶⁰ Richland County treasurer, web site for searches for taxes paid by businesses and individuals, <https://www6.richlandcountysc.gov/TreasurerTaxInfo/Main.aspx>

the NRC must explain why it is not monitoring and regulating waste streams from TPBAR fabrication.

Things Get More Mysterious: DHEC Says No Environmental Permits for WesDyne

Communication⁶¹ between SRS Watch the South Carolina Department of Health and Environmental Control (DHEC)⁶² indicates that WesDyne does not have required environmental-discharge permits.

On August 4, 2021, Mr. Henry J. Porter, Chief Bureau of Land and Waste Management at DHEC, communicated to Tom Clements via email about the status of WesDyne permits:

DHEC does not have any permits issued to Westinghouse Government Services, LLC. DHEC has issued Air and NPDES permits to the Westinghouse Columbia Fuel Fabrication Facility (WCFFF), and the WCFFF is registered as a large quantity hazardous waste generator. Hazardous waste generated at the WCFFF including any hazardous waste resulting from the production of the TPBAR assemblies is managed under the WCFFF's hazardous waste registration.

On August 5, Mr. Porter clarified the situation, while deepening the mystery:

There are no agreements that Westinghouse Government Services, LLC would be regulated under permits that DHEC issued to WCFFF. All of the manufacturing at the Columbia facility is done by WCFFF, including the manufacturing of the TPBAR assemblies. Westinghouse Government Services, LLC does not have manufacturing operations at the Columbia facility.

Then, on August 20, Mr. Porter, in response to another inquiry by SRS Watch further clarified DHEC's understanding about WesDyne operating at the Westinghouse fuel plant or not:

We do not have any permits issued to WesDyne, and WesDyne does not have any manufacturing operation at the Westinghouse fuel facility.

Do the DHEC emails reveal that WEC itself is producing waste from TPBAR manufacture? If so, why isn't such waste being regulated by the NRC and being reviewed in the draft EIS?

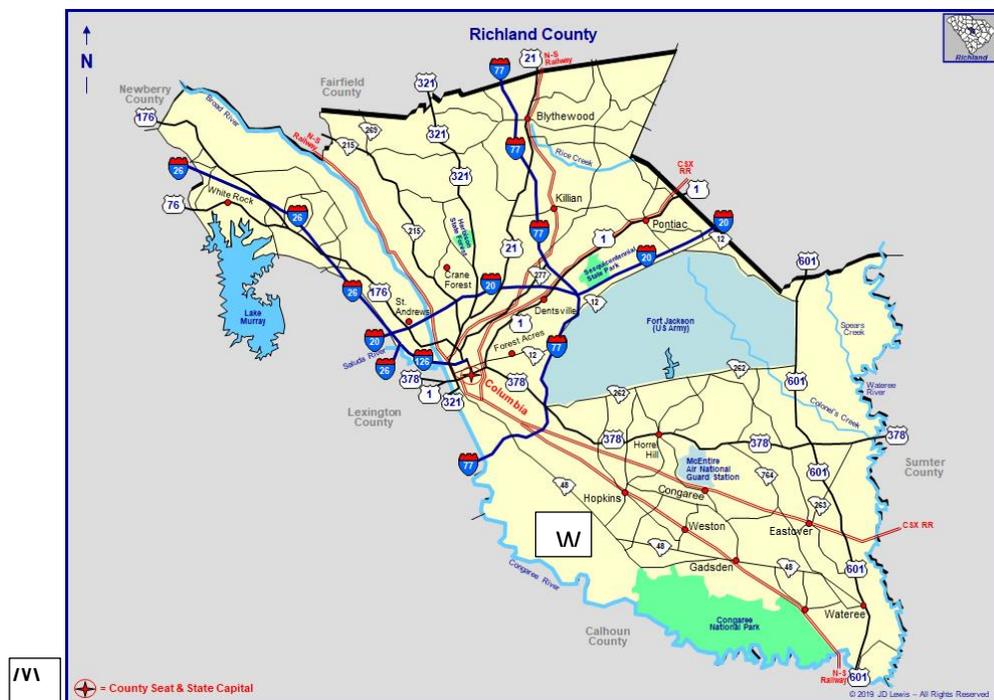
⁶¹ See series of email exchanges in August 2021 between Tom Clements of SRS Watch and the head of the South Carolina Department of Health and Environmental Control, Chief of the Bureau of Land and Waste Management: <https://srswatch.org/wp-content/uploads/2021/09/DHEC-and-Clements-email-interaction-on-WesDyne-and-TPBAR-fabrication-etc-August-2021.pdf>

⁶² SC Department of Health and Environmental Control website on "Westinghouse Columbia Fuel Fabrication Facility – Hopkins, South Carolina," <https://scdhec.gov/environment/ongoing-projects-updates/westinghouse>

What DHEC definitively states seems to conflict with what other agencies have presented as far as which entity manufactures the TPBARs. DHEC’s interpretation of the facts or information available to them is not questioned and the email exchange only serves to strengthen demands for clarification from the NRC and NNSA.

The kinds and amounts of hazardous waste are unknown but could be solvents and perhaps lithium waste. Most components of the TPBARs appear to be supplied by off-site contractors, meaning fabrication of them is done elsewhere. It is believed that no nuclear components are involved in the fabrication of the fresh, unirradiated TPBARs.

There appears to be no doubt that WEC is involved in aspects of TPBAR management, and possibly fabrication. But how can WesDyne, which appears to be an independent subsidiary, be doing the TPBAR fabrication without the required air-discharge permit and a National Pollutant Elimination System (NPDES) permit that it should have? How can WesDyne be operating under the WEC permits that would apply to the uranium fuel fabrication part of the facility? These questions must be answered in the EIS.



“W” in the white box is the location of the Westinghouse site, Richland County, South Carolina;
Large green area nearby, on the Congaree River, is the Congaree National Park.

If the Westinghouse Electric Company, which operates the fuel fabrication facility, also operates TPBAR fabrication under the same environmental permits as the uranium fuel fabrication part of the operation, then waste streams from TPBAR manufacture are under the control of WEC and thus must be covered in the Environmental Impact Statement being prepared on the license renewal for WEC. Those waste streams, apparently passed from the

TPBAR area of work to the uranium fuel fabrication area, may become indistinguishable from fuel fabrication waste at some point and thus can't be separated out in the EIS analysis. Thus, the TPBAR operations are not "outside the scope" of the EIS, as claimed by the NRC in the summary of "scoping" comments received in advance of preparing the EIS on the facility's license renewal.⁶³

General Overview of Facts about TPBAR Production & Who Is Involved

Entities involved in any aspect of TPBAR work at the Westinghouse facility appear to be hiding under a NNSA claim that the work is "classified." In general, as included in the SRS Watch comments(*) on the draft Environmental Impact Statement(*) on operation of the Westinghouse facility, here's what is known about the TPBAR issue. Given the lack of public information and the obfuscation about the matter, some of these summary items may appear to be inaccurate or contradictory.

- It appears that WesDyne International LLC fabricates Tritium-Producing Burnable Absorber Rods (TPBARs) for production of tritium gas in the military-commercial Watts Bar unit 1 reactor (known as the Watts Bar Nuclear Bomb Reactor) operated by the Tennessee Valley Authority;
- It appears that WesDyne, which has evidently absorbed Westinghouse Government Services LLC, is registered with the South Carolina secretary of state;
- Though operating in Richland County, WesDyne is apparently not a registered business in Richland County;
- WesDyne appears to pay no business taxes in Richland County;
- At various public meetings, NRC officials have said that activities of WesDyne are regulated by DOE's National Nuclear Security Administration (NNSA);
- NNSA, the nuclear weapons part of DOE, is not a regulatory agency;
- The NNSA-WesDyne contract, part of which has been obtained by a Freedom of Information Act request, states that the contractor is "responsible for ultimate disposal of waste products;"
- There are indications that the TPBAR work has been taken over by Westinghouse Electric Company (WEC) and that the TPBAR work is covered under existing WEC permits;
- Though being asked by stakeholders to analyze the operation of WesDyne in the NRC's draft EIS (on extending the Westinghouse operation license), the NRC has totally ignored the matter and in the Scoping Process Summary Report and claims, without a single word of justification or explanation and with no documentation, that WesDyne is "outside of scope" of the draft EIS;
- Waste from WesDyne operations are not covered in the draft EIS;

⁶³ U.S. Nuclear Regulatory Commission, "Environmental Impact Statement for the Westinghouse Electric Company Columbia Fuel Fabrication Facility License Renewal Application, Scoping Process Summary Report," February 2021, <https://www.nrc.gov/docs/ML2103/ML21033A675.pdf>

- The South Carolina Department of Health & Environmental Control (DHEC) says that WesDyne produces hazardous waste and that such waste is handled by the Westinghouse facility;
- DHEC affirms that WesDyne has no stand-alone air permit and no National Pollutant Discharge Elimination System (NPDES) permit, both of which are required, and says that WesDyne operates under the WEC permits;
- Highly radioactive TPBARs irradiated in TVA’s Watts Bar reactor are transported to the DOE’s Savannah River Site, where tritium gas is removed from the highly radioactive rods;
- NNSA currently conducts about 2 processing campaigns per year of TPBARs but that is planned to go up to 8 to 10 “extractions” per year by 2026 which means TPBARs production at WesDyne could increase dramatically, meaning more waste will be produced;
- Tritium gas is packaged in reservoirs and shipped to the DOE’s Pantex facility in Texas or Department of Defense facilities for insertion into nuclear warheads.
- TPBAR waste is handled as low-level nuclear waste and “disposed of” in the “E-Area Intermediate Level Vaults.”
- Irradiation of TPBARs in Watts Bar units 1 & 2 is an NRC-licensed activity;
- It appears that there is no NRC inspection of TPBAR fabrication or waste production or waste management though there may be a NRC requirement for a Quality Assurance program covering TPBAR fabrication;
- There is no accounting for management and disposal of waste from TPBAR fabrication and thus no NRC reports of any kind about TPBAR activities taking place under the roof of the WEC facility;
- The draft EIS must clarify who regulates TPBAR operations and what wastes it produces and how that waste is managed. That information must not be classified.
- The public must be allowed to comment in the draft EIS process on the management and impacts of waste streams from TPBAR production.



While we work to eliminate nuclear weapons, per the binding Nuclear Non-Proliferation Treaty, let’s hope that there are no future nuclear blasts utilizing tritium gas produced in components manufactured at the Westinghouse dual-use facility in Columbia, South Carolina

Conclusion

The Westinghouse Columbia Fuel Fabrication Facility has inside it secretive operations connected to all U.S. nuclear weapons - the fabrication of tritium rods irradiated to produce radioactive tritium gas that goes into all weapons to boost the explosive power of them. This makes the facility a “dual use” military-commercial facility, which threatens international nuclear non-proliferation norms.

Government entities must be fully forthcoming about management of the nuclear weapons aspects of the WEC facility. The Nuclear Regulatory Commission must reconsider its lack of regulation of the production of Tritium Producing Burnable Absorber Rods (TPBARs), reveal what types of waste are generated by the production of those rods, regulate the resultant waste and allow the public to comment about that in the current draft Environmental Impact Statement that remains open for public comment until at least September 20, 2021. The final EIS, due in early 2022, must discuss TPBAR waste streams and offer full explanation, based on regulations and law, as to why the NRC claims it does not regulate the TPBAR area of the WEC facility or the waste from it.

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Comments and information clarifying the matter at hand are welcome: srswatch@gmail.com.



Savannah River Site Watch

September 14, 2021

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Comments of Savannah River Site Watch on the Draft EIS on 40-Year License Extension Request for the Westinghouse Electric Company, LLC; Columbia Fuel Fabrication Facility

Is the NRC Protecting Unregulated, Secretive Nuclear Weapons-Related Activities at the WEC?

The Federal Notice on the release of the draft EIS was posted on August 6, 2021 (Hiroshima 76th anniversary) at: <https://www.govinfo.gov/content/pkg/FR-2021-08-06/pdf/2021-16595.pdf>

The Draft EIS - "Environmental Impact Statement for the License Renewal of the Columbia Fuel Fabrication Facility in Richland County, South Carolina" - was publicly released on July 30, 2021 and posted here:

<https://www.nrc.gov/docs/ML2120/ML21209A213.pdf>

The following comments are being formally submitted via mail and email by Savannah River Site Watch, located in Columbia, South Carolina, for the formal record of the Draft Environmental Impact Statement prepared by the Nuclear Regulatory Commission on the 40-year license renewal request for the Westinghouse nuclear fuel plant. A full response to each comment is expected.



Westinghouse fuel plant with Columbia, SC downtown in background. Courtesy of ©High Flyer

Comments on “Executive Summary”

Of paramount importance, the draft EIS totally fails to justify preparation of a document on a 40-year license extension. While the NRC has accepted the license application by Westinghouse Electric Company, LLC (WEC), no reason is given in the draft EIS justifying the 40-year period of time that is under consideration.

For nuclear power plants, license renewal is limited to 20 years by 10 CFR 54.31(b). The NRC says on its “Fuel Cycle Facilities Licensing” web page (<https://www.nrc.gov/materials/fuel-cycle-fac/licensing.html>) that “Fuel cycle material facility licenses can be renewed for up to 40 years if certain conditions are met. The review of the renewal applications includes evaluation of safety, safeguards, and environmental impact.” But no adequate explanation is given for why a 40-year license extension for a fuel cycle facility is allowed or justified. Where is this written in regulations or law? It is clear that regulations allow for a 10-year extension, correct?

Likewise, no reason is given for the draft EIS coming to the “preliminary” conclusion in support of the 40-year license extension before public comments are accepted, reviewed and considered. The beginning of the draft EIS states: “the NRC staff preliminarily recommends that the WEC’s license SNM-1107 for the operation of the CFFF be renewed for an additional 40 years.” At best, this determination is premature and is reached absent any public stakeholder comments on the draft EIS.

Based on observation of performance over the last decade and numerous accidents and releases of nuclear materials into groundwater and the admission by the NRC of anticipated future problems, it remains the case that SRS Watch believes that only a 10-year license extension should be reviewed. The draft EIS totally ignores earlier “stakeholder” input submitted for the record that called for a review of a 10-year license renewal. Impacts of a 10-year license renewal must be analyzed.

Oral comments during the NRC’s webinar of the draft EIS on August 26, 2021 were unanimously against a 40-year license extension. Are those comments being taken into account? Nobody spoke in favor of a 20-year license extension.

The narrative on page xiii fails to fully present the record about environmental review of the license renewal. It fails to present the fact that members of the public were calling for preparation of an EIS well before the NRC made the determination that it would do so. Members of the public were well aware of the uranium scrubber event, leakage of uranium into ground under the facility and chronic groundwater contamination at the plant site. For example, in written and oral comments on the second Environmental Assessment draft at an NRC public meeting on November 14, 2019, SRS Watch called for an EIS to be prepared and that a license period of no more than 10 years be considered. Similar public requests were ignored for over six months until the NRC agreed to prepare the EIS. I did not hear anyone at public meetings voice support for a 20-year license extension, for which limited justification is

presented in the draft EIS. Why is consideration of a 10-year license extension, which has public support, not being considered and reviewed?

The EIS “Scoping Process Summary Report,” February 2021, includes the following (on page 9):

Comment Summary: A number of comments requested that the NRC consider the alternative to renew the CFFF license for a period less than the requested 40 years. Some commenters requested that the NRC not renew WEC’s license for more than 10 years or consider a shorter license with WEC demonstrating safe operations before renewing the license for a longer period.

Comments: (2-1) (7-1) (15-4) (16-1) (16-5) (17-3)

Response: *The October 2019 draft EA assessed the impacts of the no-action alternative and Alternative 1 – License Renewal for Less than 40 Years (NRC 2019-TN6472). The EIS is the next step in the NRC staff’s environmental review. In the EIS, the NRC staff will also evaluate the no-action alternative and the alternative of renewing the license for less than 40 years.*

Likewise, in the SRS Watch EIS scoping comments of August 20, 2020, we objected to a 40-year license and said that a 10-year licensed should be analyzed. Our comment, repeated here, was ignored in the draft EIS: “Given that an extension of the operating license for 40 years would mean that unpredictable events having environmental and health impacts could occur at any point during that period of time, I request that a much shorter period of time be analyzed. I request that the license extension be analyzed for only an additional 10-year period of time and that conditions be attached to that period of time, such as accomplishment of clean-up milestones, no significant health or environmental problems or events and no discovery of old, yet unknown problems or contamination.”

The request by “stakeholders” to consider a 10-year license extension has been ignored and “the alternative of renewing the license for less than 40 years” does not mean that a 10-year license is actively being considered. Is it? If not, why not?

While claiming to base its “preliminary” support of the 40-year license extension on, in part, “input from other stakeholders,” which is the category for the public, I now wonder if the NRC will ignore public input on the draft EIS. By already supporting a 40-year license extension before draft EIS comments are received may well reveal a disturbing and potentially harmful bias by the NRC. Citizen requests for review of a 10-year license extension have been summarily dismissed with no explanation, which is troubling.

The draft EIS states (on page xiii) the following : “This draft EIS also describes avoidance of potential adverse impacts and mitigation measures for the reduction of potential adverse impacts, including the new conditions that the WEC agreed to add to the license, if renewed, new commitments from the WEC that would be incorporated into the LRA, and additional measures that the NRC staff identified as having the potential to further reduce environmental

impacts, but that the licensee did not commit to in its application.” The licensee has not agreed to stated “additional measures” in a modified license application and the draft EIS can’t hold the licensee to those “additional measures.” Thus, there is no guarantee that the licensee will take steps that the NRC might require for tougher license conditions. The Westinghouse-SC Department of Health and Environmental Control “consent agreement” is outside the scope of NRC regulation and is not enforceable by the NRC, which essentially has observer status related to the Consent Agreement.

The draft EIS states (on page xiv) that “Future discharges to the Congaree River would continue in accordance with the NRC license and National Pollutant Discharge Elimination System (NPDES) permit and, thus, would have minor effects on water quality.” This claim of “minor impacts” is totally speculative and has no basis in fact as it is possible that harmful levels of discharges could occur into on-site water resources and into the Congaree River. The draft EIS analysis must be bound by large, unplanned releases of contaminants.

What is the basis for the determination of “minor” impacts? What does this mean? Is the term “minor” based in law or regulation? The document seems to use a small-moderate-large scale of impacts but on page iv the term “minor” is used. Where did this come from and what is the basis of its use? What is the relationship of the use of “minor” to the “small-moderate-large” scale?

On page xiv it is stated that “Additionally, the current groundwater contamination is not likely to travel beyond the CFFF site boundary during the period of the proposed action. However, there are significant uncertainties that affect the evaluation of fate and transport of contaminants in groundwater. Based on these findings, the NRC staff concluded that impacts on groundwater from the proposed action would be SMALL to MODERATE.” Given that the NRC admits “significant uncertainties” concerning groundwater contaminants, it is unknown how a “small to moderate” impact can be determined. The impact could as well be large.

On page xv, it is stated that “the WEC has committed to submit the environmental monitoring and sampling program to the NRC for review and approval, again, at the completion of the implementation of the CA; specifically, within 90 days of the submittal of the CA final written report to SCDHEC.” What does “committed” mean? Is this a license condition or legally binding? What are the repercussions if the “monitoring and sampling program” is not submitted or if it’s faulty? What regulation, if any, does the NRC have over terms of the Consent Agreement? Why doesn’t the NRC enter into a similar Consent Agreement with WEC, with milestones that are legally enforceable?

Again on page xv, it is stated “the NRC staff concluded that the cumulative impacts to groundwater and surface water from past and current CFFF operations are MODERATE. Although the proposed continued operation of the CFFF for an additional 40 years could noticeably alter onsite groundwater quality, the continued operation would not destabilize or

significantly affect the groundwater resource because there is a low potential for contaminants to move offsite.” While admitting that groundwater resources could be significantly impacted no reason is given as to why the claim is made that “there is a low potential for contaminants to move offsite.” What models were used to support this claim? We have already been surprised by significant movement of groundwater contaminants onsite and discharge plumes are spreading. And, the NRC’s “moderate” may be large for others or to impacted aquatic life. What is the scientific, quantifiable definition of “moderate?”

Also on page xv it is stated “The NRC staff also considered as an alternative approving the WEC’s a license renewal request with a shorter license renewal term, i.e., a renewal term of 20 years. The NRC staff found that the potential environmental impacts from this alternative would be similar to the potential impacts from the proposed action except that the impacts would occur over a shorter timeframe.”

This claim of essentially the same impacts over 40 years or 20 years makes no sense. If the facility operated for a full 40 years, there would be unpredictable and perhaps serious impacts for the last 20 years of operation. Given the nature of past accidents, it is all but assured that impacts for that additional 20 years would be greater than for operation of only 20 years. It appears that the NRC is alleging that after the first 20 years of additional operation that there would be no further discharge or new impacts. Such an assertion is ludicrous and the data and plant record do not support such a claim. And, the NRC elsewhere admits that there will be “future inadvertent releases,” belying the claim that impacts for the two periods of time under consideration would be similar.

On page xvi, the NRC reviews why it is recommending a 40-year license, based on cost and benefits. Stakeholders do not agree with this conclusion. The NRC analysis fails to take into account the negative social, economic, environmental and health impacts of a serious design-basis or beyond-design-basis accident or of a serious leak of radioactive and chemicals to the environment, especially in the last 20 years of an additional 40 years of operation.

Comments on “Introduction”

Please clarify that the facility produces uranium fuel for foreign and domestic commercial reactors.

How much uranium is handled at any one time? In what forms?

Does the facility hold any uranium in reserve for any type of national security or other special reasons? If so, what are potential environmental, health and security impacts of any such stored stocks?

What happened to fuel designated to replace MOX fuel in the event that the US Department of Energy's plutonium fuel (MOX) program faltered after it started and was not able to provide MOX to any utility that had signed up to use MOX? (Note: no utilities signed up to use MOX before the bungled NRC-regulated project was terminated.)

Do other agencies, such as DOE's National Nuclear Security Administration, have a role with any materials or equipment stored, handled or operated at the facility?

On August 11, the USA Department of Energy published a Federal Register notice entitled "Request for Information Regarding Establishment of the Department of Energy Uranium Reserve Program." It states that "The Department is considering options to acquire natural uranium and convert this uranium into uranium hexafluoride that would be stored at commercial facilities in the United States." Could WEC have a role in this program? If so, what could be the environmental and health risks and impacts?

What is the "insider threat" to public health, safety and the environment? As there could be a host of impacts, this is clearly inside the scope of things analyzed in the EIS. The NRC has not attempted to explain why it determined that the "insider threat" is outside the scope of the draft EIS. Why and what is the basis for that determination?

The NRC says that a separate Safety Evaluation Report (SER) will be prepared. It is imperative that the SER be provided to the public well before the end of the draft EIS comment period. If it is not, the draft EIS comment period must be extended. Any policy not to release the SER during the draft EIS comment period must be reconsidered. Where is this written into law or NRC policy that a SER will not be released for comment, especially during an EIS process?

Could the facility handle or process High Assay Low Enriched Uranium (HALEU)? What if that is proposed in the future? Would that require a license amendment? Given the current promotion of HALEU for use as fuel in "advanced reactors" this should not be beyond the scope of the EIS.

The draft EIS fails to analyze "reasonable" alternatives, such as a license extension for 10 years. No reason is given for not analyzing the 10-year-license alternative. A 10-year license extension, as recommended by stakeholders, must be analyzed. Why was it not?

The NRC does not adequately explain its role in the DHEC-Westinghouse Consent Agreement or how the NRC can base decisions on information in a non-NRC document. Why doesn't the NRC have a similar CA with Westinghouse or why isn't the NRC party to the Westinghouse-DHEC CA?

Were scoping comments or comments on the draft EIS solicited from the Pine Hill Indian Tribe, as promised? If not, comments from them must be solicited and the comment period extended.

Were scoping comments or comments on the draft EIS solicited from the Native American Studies Center at University of South Carolina Lancaster or from any other institute of higher learning in South Carolina? If not, comments from them must be solicited and the comment period extended.

Were comments solicited by property owners adjacent to the facility?

The draft EIS mentions the Scoping Process Summary Report but the response to comments that were captured are inadequate. For example, things related to WesDyne (Westinghouse Government Services, LLC) were determined to be “outside of scope” of the EIS. Why? No explanation for that determination was given. The draft EIS concludes that WesDyne is outside the scope of the EIS and says this has been excluded: “concerns regarding regulation and oversight of dual-use facilities, including the relationships to U.S. Department of Energy’s National Nuclear Security Administration.” Documents on any agreement between the NRC and Westinghouse Government Services and/or WesDyne and/or between the NRC and Westinghouse fuel plant as it pertains to fabrication of Tritium Producing Burnable Absorber Rods (TPBARs) must be presented for the EIS record.

Documents must be presented to back up the NRC’s unsubstantiated claim that WesDyne operations are “outside the scope” of the EIS. On this matter, DOE’s National Nuclear Security Administration must be engaged as a cooperating federal agency in preparing the draft EIS. More on the WesDyne matter will be presented later and in a separate comment.

“Issues Studied in Detail” must include avian and insect populations, which can move long distances, and their potential exposure to radioactive materials or chemical contaminants in surface waterways and lagoons. Likewise, movement of terrestrial creatures such as frogs, lizards and mice, between contaminated and non-contaminated areas must be analyzed.

Has the Remedial Investigation Work Plan and the Consent Agreement between DHEC and Westinghouse been made a part of the licensing record? Are these documents outside the scope of NRC involvement? If so, what action would formalize the information and requirements under them to be made part of the NRC licensing requirements? The NRC includes much discussion of these non-NRC documents but it does not seem they are up for formal review and assessment in the NRC’s EIS process. Please include them for the EIS record.

Comments on “PROPOSED ACTION AND ALTERNATIVES”

Again, a discrete 10-year license-renewal period must be considered in this section. No reason has been given for not considering 10 years. Significant detrimental events have occurred at the facility in the last five years, a predictor of what could happen over 40 years.

Please explain what wildlife would have access, including birds, to the various lagoons on the site, especially near to the facility. Would contamination be encountered by such visiting wildlife?

What are disposal pathways for used ammonium hydroxide?

How is waste from fuel pellet grinding managed and how is it disposed of?

What goes up the stacks from “power production” and “powder processing/pellet manufacturing?”

Please provide a diagram and explanation of where the uranium scrubber that caused problems is located. How has it been modified so as not to cause a release or near-criticality accident?

Where is the incinerator that processes uranium-bearing and other materials located? Is this inside or outside the main processing facility?

What is the status of the “contaminated wastewater (CWW) line” installed in 1978? Is it accessible and can it be inspected?

What are the “approved” low level waste sites to which such waste is shipped and how is it packaged and transported? What are the impacts of waste disposal at those LLW disposal facilities? Are LLW shipping casks inspected and fully certified?

Since discovery of problems at WEC facilities, have there been any further issues with the Hydrofluoric Spiking Station (HFSS) #2, or intermodal container storage? Are UF6 cylinders in good condition and stored safely?

The draft EIS says (on page 2-13) that “operations at CFFF generate gaseous and liquid effluents.” Are there no particulate discharges or could there be in the event of an accident? Particulate release, whether routine or through accident, could be of concern to local inhabitants in Lower Richland. What assurance is that such releases won’t occur and there that they will not be impacts to the public at some distance from the facility? What happens if particulate filters fail to function properly?

The scrubber incident could have resulted in release of solid uranium particles, so future release of such material is possible. Please include a discussion and analysis of potential aerial release of uranium particles or other solid contaminants. Could there be pathways into the environment without filtration (such as a broken HEPA filter or scrubber)? [I note that “particulates” are mentioned on page 2-17, so there must be such discharge: “A significant change is the direct analysis for uranium and Tc-99 for all media, except air particulates, instead of the analysis of gross alpha and gross beta activity as surrogates.” Likewise, “air particulates”

are listed in Table 2-4.] What is the potential environmental and health impact of such particulates? What do these particulates consist of?

On page 2-14, the draft EIS seems to base information on the status of waste lagoons on information provided by Westinghouse, such as “The WEC stated that additional inspection is also performed to observe signs of erosion, cracks or bulges, seepage, or wet or soft soil in the dams, dikes, and toe areas. The additional inspection also includes observation of changes in geometry...” Did the NRC itself not make any observations on the status of the lagoons and inspection of them? If not, why not? Please elaborate in the EIS.

On page 2-15 it is stated that “WEC sends the calcium fluoride offsite for reuse in concrete, if uranium concentrations are less than 30 pCi/g.” To which concrete facilities is this material shipped and what are potential impacts to the public of those materials? Who regulates this off-site shipment of the calcium fluoride waste?

On page 2-17 it says: “If renewed, a new license condition would require the WEC to submit its environmental monitoring and sampling program to the NRC for review and approval upon either SCDHEC’s approval of the Remedial Investigation Report (SCDHEC/WEC 2019-TN6554); as required by the CA (see Section 1.5.2.2.1 of this EIS), or within 5 years of 20 the license renewal, whichever comes first.” Where did the five-year period of time come from? Is this NRC review stipulated by regulation or not? Given that accidental releases could occur at any time, why isn’t review of WEC’s environmental monitoring more frequent?

On 2-18, it is stated that “During the proposed license renewal period, the WEC will collect four co-located soil and vegetation samples annually and evaluate them for uranium and Tc-99 content (WEC 2019-8 TN6423).” Does this imply that Tc-99 could be mobilized from the soil into vegetation or that aerial release of Tc-99 could occur? Likewise, what would be the source of uranium deposited on vegetation?

Concerning groundwater sampling, the draft EIS says on page 2-21: “Going forward, the WEC will sample these groundwater wells and analyze for uranium and Tc-99 to determine (1) whether the source of the current shallow groundwater contamination is leaks from plant operation and/or (2) if existing contamination of uranium or Tc-99, from a known or unknown source, is moving offsite.” Is it unknown if Tc-99 is still leaking? What is the original source of Tc-99, a by-product of the fission reaction? Is the Tc-99 from experiments of “Reprocessed Uranium” that was imported, perhaps from Russia, and fed into the enrichment plants in Paducah and Piketon, contaminating the facilities as well as the enriched uranium product?

I reiterate an EIS scoping comment that SRS Watch submitted in August 2020:

Source of technetium-99 must be definitively identified and how Tc-99 got in groundwater must be further identified and remediated must be addressed.

The Westinghouse-DHEC Consent Agreement document *Technetium (Tc-99) Source Investigation Work Plan* must be made part of the EIS record. The analysis of that document on the source of the technetium must be assessed in the draft EIS.

On “page i” of the draft Environmental Assessment it is stated: “Nonradiological and radiological contamination exists in the groundwater in the shallow aquifer and in the surface water onsite. In December 2018, WEC sampled all groundwater wells and found uranium and technetium-99 in the groundwater, onsite, above drinking water standards. The source of the uranium is believed to be from operations in the main facility, whereas the source of the technetium-99 is still being investigated.” The source of the uranium and the associated contamination must be determined. On page 4-5 of the draft EA it is stated: “There is also a plume of Tc-99 in the lower portion of the shallow groundwater aquifer based on recent groundwater sampling results. The source and extent of the Tc-99 plume has not been fully delineated. The likely source of the Tc-99 is the recertification building and/or the WWTP lagoons, but the RI Work Plan identifies additional investigations to determine the source of the Tc-99 contamination.”

I note that on page 3-40 it says this about the source of the Tc-99 contamination: “The WEC evaluated potential sources and mechanisms for Tc-99 releases to the environment and determined that a liquid release from the cylinder recertification building was the most likely source of the Tc-99 releases (WEC 2019-TN6510).” How did the Tc-99 leave the named building? Is the building contaminated with Tc-99? Where did the Tc-99 originally come from and why did it end up at WEC?

It is not encouraging to read (on page 3-45) about unknowns related to Tc-99: “With little information about the timing, location, duration, volume, and inventory of past Tc-99 releases, it is difficult to draw conclusions about the processes that have resulted in the observed Tc-99 behavior at the site.” How will these unknowns be addressed by WEC and the NRC?

The *Columbia Fuel Fabrication Facility Tc-99 Source Investigation Report*, by Westinghouse and dated July 30, 2020, should be made part of the EIS record. The report, unfortunately, does not clarify where the Tc-99 at the WEC site came from and leaves the reader thinking it might be from reprocessed uranium (RepU) solely from U.S. Government material that inexplicably ended up in the “nuclear fuel cycle.” The report states:

Tc-99 was introduced into the commercial nuclear fuel cycle beginning in 1956, when high enriched U from U.S. Government military reactors was reprocessed (e.g. down-blended) into low enriched U fuel. Reprocessed U was used in the commercial nuclear fuel cycle until 1977; however due to residual impacts, Tc-99 remains in the nuclear fuel cycle to this day.

This explanation is incomplete and misleading. RepU, including from foreign sources, was evidently also introduced into DOE’s enrichment plants. This material contained fission products that contaminated the process lines, exposed workers and made its way into enriched

uranium product. That enriched material containing fission products including Tc-99 evidently contaminated shipping containers. Likewise, internal equipment at WEC that processed this material could have been contaminated. The draft EIS must discuss where the RepU containing Tc-99 came from, if Tc-99 contaminated equipment at the WEC facility and if other contaminants from RepU, such as uranium isotopes, are present in equipment at WEC.

The report *Columbia Fuel Fabrication Facility Tc-99 Source Investigation Report* was provide to DHEC by Westinghouse as part of the Consent Agreement. Thus, what NRC regulatory role does this report play? If it has no regulatory status then is this report and other things provided under the Consent Agreement only of informational value from a NRC perspective? Again, why isn't the NRC a party to the Consent Agreement such that the terms of it are binding as far as NRC regulation of WEC goes?

On page 2-21 of the draft EIS there is a discussion of monitoring wells, including plumes that are moving toward the site boundary. Is it possible that such plumes will move beyond the plant boundary? At current plume movement rates, when could this happen? Can the plumes be remediated?

Please describe details of "Environmental Remediation" of groundwater plumes, a LRA matter mentioned on page 2-24. Would there be such remediation while the plant is still operating or only on decommissioning?

Again, why has the "License Renewal for 20 Years" alternative been considered (page 2-25) but, given groundwater contamination, 10-year license extension has not been reviewed despite numerous request from stakeholders for this alternative?

The draft EIS makes this claim (on page 2-26): "The nature/type of potential environmental impacts from continued licensed operations for an additional 20 years would be similar to those from the proposed action (i.e., proposed 40 years of continued operation)." As stated earlier and bearing stating again, this statement is ludicrous as more leaks and accidents could well occur in the second 20 years of a 40-year license extension. The NRC's statements seems to assume no further discharge into the environment from the facility. Back up this claim.

The "preliminary recommendation" (page 2-28) of a 40-year license extension is of concern given the NRC's acknowledgement of "moderate" impacts to groundwater. That reason alone should result in a denial of a 40-year license extension.

As I commented in the EIS scoping, dated August 20, 2020, the NRC said more leaks and spill were "likely." Now, it appears the NRC is saying that "future inadvertent releases" could occur. What's the difference between a release and a spill or accident? Is this still the opinion of the NRC that future leaks and spill are likely? My scoping comment for the draft EIS record:

NRC admits it is “likely” that accidents will occur in the future.

On “page ii” of the draft EA the NRC says that “Due to past releases, the uncertainty of the migration pathways for contamination, and because it is likely that there will be leaks and spills in the future, the NRC determined that there could be noticeable impacts to the soil, surface water, and groundwater, however the impacts will be adequately monitored and mitigated.”

The NRC’s initial evaluation preliminarily concluded that continued operations for an additional 40 years would not have a significant impact on the environment. This is absurd as the NRC has no idea about the magnitude of future incidents and has no clue if future impacts will be significant or not or if they can be mitigated. The draft EIS cannot take this same approach.

While the NRC must state that it has no idea what the size of future leaks and spills might be or if they can be “adequately mitigated” - please present proof of that claim - it must present bounding options for the size of accidents and releases, including those of a grave or “significant” nature. Likewise, the NRC must explain that it cannot accurately predict anything about the magnitude or impact of any accidents (including criticalities) that might occur and that it has no ability to predict anything about extent of any “mitigation” that might be attempted after an accident, spill or leak.

I note that the term “noticeable” was used in the draft - how does this fit into The NRC’s small-moderate-large scale, or has this term now been discarded?

The admission by the NRC that more leaks and spills - and perhaps accidents or deliberately instigated events (such as from a currently unknown insider threat) - will occur should alone preclude any consideration of a 40-year license extension.

Other comments

Does the applicant, Westinghouse Electric Company LLC (WEC), have subsidiaries engaged in any activities at the Westinghouse facility that should be regulated by the NRC? Are the entities WesDyne International, LLC, Westinghouse Government Services or Westinghouse Government Environmental Services Company LLC or any other subsidiary engaged in any activities at the Westinghouse fuel plant that require Richland County business licenses, NRC licenses or SC DHEC licenses? Do any of these companies produce or manage any type of waste that is or should be covered in the draft EIS? If such waste are not covered by the draft EIS, why not? If the WEC facility is relicensed, will any WEC subsidiaries be required or should be required to seek similar relicensing or licensing by the NRC and state and county authorities?

What is the role of Brookfield Business Partners in relation to WEC and any WEC subsidiaries? If Brookfield is the owner of the WEC facility, why isn’t Brookfield seeking an NRC licenses for operation of the fuel plant? What would be the impact to environmental and health impacts if WEC is sold by Brookfield?

The NRC admits (on page 3-27) that “The proposed continued operation of CFFF could result in additional inadvertent releases of contaminants. For example, future episodes of significant rainfall, such as the rain event in October 2015, could again cause the lagoons to overflow, possibly resulting in an uncontrolled release of their contents into groundwater or into nearby surface water bodies.” What could be the impact of future “inadvertent releases” of large magnitude (as large as the October 2015 rain event or larger)?

And, on page 3-28: “The proposed continued operation of the CFFF for an additional 40 years could result in future inadvertent releases that may contribute additional contaminants to the onsite surface water bodies.” Why would such “inadvertent release” occur and could they come from the plant itself?

The above statements are of concern as they confirm that the magnitude of future inadvertent releases and contamination is unpredictable and could be LARGE or VERY LARGE.

On page 3-45 it is stated that “The Feasibility Study will be provided to SCDHEC within 90 days of SCDHEC’s approval of the final Remedial Investigation Report.” I request that the draft EIS comment period remain open until the public has had a chance to review both the Feasibility Study and the final Remedial Investigation Report. If this will not be the case, why not?

Of concern is the threat to wells in Lower Richland near to the facility. On page 3-48, it is confirmed that such a threat exists: “The offsite, private wells that were identified by the WEC (see Figure 3-13) are located in the general direction of groundwater flow from the CFFF site and could be affected by the existing and any potential future contamination from CFFF activities during the proposed license renewal period if contaminants were transported to these wells.” Granting a license beyond 10 years of time will mean a much longer period of potential additional releases and groundwater movement to private wells. This concern is amplified as WEC is currently only in an investigative phase of the Consent Agreement.

What monitoring program is in place or will be put in place by the NRC or under its direction to monitor potential off-site impacts to private wells in Lower Richland? Given this admission (on page 3-50), off-site groundwater impacts are of concern despite claims that steps will be taken to prevent them: “Based on the existing data and history of the site, the NRC staff expects future inadvertent releases of contaminants to the subsurface to be reasonably foreseeable, and that any future releases may result in groundwater contamination that exceeds the MCLs. With the exception of uranium, all of the contaminants currently present in groundwater at levels above their MCLs are expected to be mobile in groundwater.” This is of great concern.

The draft EIS states (on page 3-82) that: “The WEC has proposed to conduct a cultural resource survey within the CFFF site to identify historic properties in a manner that would further avoid or minimize potential future impacts (WEC 2021-TN7077). The cultural resource survey would be developed in coordination with the South Carolina SHPO.” Please provide the “cultural

resource survey” as part of the draft EIS record and keep the comment period open on the draft EIS until the survey is finalized and released and the public has had a chance to review and comment on it. Will professional archaeologists be involved in any cultural resource surveys? If not, why not?

Concerning the Denley Cemetery, located near to the main processing building: please discuss above-ground and groundwater contaminants at this site and how measurement of such contaminants might impact identified and as-of-now-unidentified graves. Please explain how unmarked graves at or near the defined cemetery boundaries will be identified. Will ground-penetrating radar or other such techniques be used to identify graves? Are any monitoring wells inside the area of burials? If so, why, and what is the impact of them to the cemetery?

We note that the Nuclear Regulatory Commission is conducting a systematic review of how its programs, policies, and activities address environmental justice, as recently posted in the Federal Register: *Systematic Assessment for How the NRC Addresses Environmental Justice in Its Programs, Policies, and Activities*, (Federal Register /Vol. 86, No. 129 / Friday, July 9, 2021). But the draft EIS belies that fact. The draft EIS, inexplicably, contains the briefest of “discussions” about Environmental Justice despite the fact that the facility is located in a predominantly and locally well-known African-American community known as “Lower Richland.”

Here’s the main, very limited EJ discussion from the draft EIS:

3.17.1.15 Environmental Justice 9

The CFFF site is located in and surrounded by census block groups that have minority and low-income populations exceeding the criteria described in Section 3.16 of this EIS. Therefore, the NRC staff closely evaluated the identified health and environmental impacts to determine if pathways could be established linking these effects with the locally affected populations. All the health and environmental impacts identified for the no-action alternative would be similar to the potential impacts from the proposed action and, thus, would be SMALL. Although MODERATE socioeconomic impacts would be expected under the no-action alternative, noticeable impacts would be felt by the existing workforce and businesses in the wider economic region. Only minimal socioeconomic effects on the immediate vicinity of the site would be expected because few workers or businesses are located in the vicinity, therefore socioeconomic impact pathways to minority or low-income populations were not identified. While the NRC staff found that potential impacts on groundwater resources can range from SMALL to MODERATE, there is low potential for known onsite contamination to move offsite. Further, as discussed in Section 3.16.3 of this EIS, the staff could not establish pathways linking these impacts on the local population. Thus, no disproportionately high and adverse health or environmental effects could be identified for this alternative.

And on page 3-124, concerning a 20-year license extension alternative the brevity continues:

3.17.2.15 Environmental Justice 1

The CFFF site is located in and surrounded by census block groups that have minority populations exceeding the criteria described in Section 3.16. Therefore, the NRC staff closely evaluated the identified health and environmental impacts to determine whether pathways could be established linking these effects with the locally affected populations. All the health and environmental impacts identified for the proposed action were SMALL. While the NRC staff found that potential impacts on groundwater resources can range from SMALL to MODERATE, there is low potential for known onsite contamination to move offsite. Further, as discussed in Section 3.16.3, the NRC staff could not establish pathways linking these impacts on the local population. Thus, EJ impacts for the 20-year license renewal alternative are bounded by the proposed action and no disproportionately high and adverse health or environmental effects could be identified for this alternative.

On page 3-126, the NRC concludes this on Environmental Justice: “The NRC staff could not establish pathways linking these impacts locally affected population.” And, further, the draft EIS says “No disproportionately high and adverse health or environmental effects on low-income or minority populations.” Does this determination indicate that NRC monitoring of impacts to Lower Richland populations will be downplayed in the future? Are risks to the Lower Richland population the same as populations much further from the site?

A NRC staffer, Mr. Gregory Suber, working on the EJ review recently met with residents of Lower Richland. How will comments about Westinghouse made at the semi-public meeting with Mr. Suber and from an EJ virtual meetings on July 15, 2021 be incorporated into the EIS?

The draft EIS lists some avenues whereby WEC is supposedly engaged in some interaction with some in the Lower Richland community, something not in place until recently, and for which there is no binding agreement over a 40-year license extension. Has the NRC assessed the effectiveness and sincerity of these WEC programs or are they window dressing? The main question now before us is how the NRC is engaging the community? What person-to-person surveys or engagement in Lower Richland did the NRC engage in? Beyond the usual avenues to the wider Columbia, SC community, that is unknown. In spite of my engagement on Westinghouse issues for many years, I would add that I have never been made aware by WEC of any community meetings held by WEC.

Of great importance, the NRC must indicate in the EIS process how it is complying with the Executive Order of President Biden on Environmental justice in relationship to WEC, how this draft EIS process complies with the current NRC review of EJ policies and outline interactions toward that end with White House Environmental Justice Interagency Council and the White House Environmental Justice Advisory Council.

In the May/June 2021 “Key Developments, Highlights and News,” by WEC, this is stated:

“CFFF will begin the remaining defined Remedial Investigation (RI) fieldwork in July. It is believed this field work will complete the RI data collection and initiate the start of the Final RI report, a comprehensive summary that includes a risk assessment. The Final RI report is tentatively scheduled for submission to DHEC Spring 2022. Some of our RAI responses would be incorporated into the Final RI report, while others will be included in the Feasibility Study (FS). The FS will be completed after DHEC approves the Final RI Report. If the fieldwork identifies additional data collection needs, Westinghouse will continue to work with DHEC on additional work scope to close all data gaps to meet the requirements of the Consent Agreement.”

Given the importance of the above-mentioned documents to environmental impacts and remediation at the WEC site, I request that the draft EIS remain open for comment until the above-mentioned Remedial Investigation Final Report has been made public and the public has had a chance to review it. Likewise, the draft EIS should remain open until the Feasibility Study has been publicly released and the public has had an opportunity to review them and comment for the EIS record. I further request that the named documents be made part of the EIS record.

Concerning the public WEBEX meeting on the draft EIS on August 26, 2021

Predictably of Accidents, Review of Aging of Equipment in EIS?

The slides used for the August 26, 2021 NRC draft EIS webinar included this statement on the page labeled “groundwater”:

“Future inadvertent releases to the subsurface are reasonably foreseeable considering the uncertainties about past leaks and the potential for the risk of leaks to increase with the age of plant components.”

The draft EIS says this on page xiv: “While actions taken by the WEC in response to past contaminant releases have reduced the likelihood of future inadvertent releases with continued operation of the CFFF, future inadvertent releases of contaminants to the subsurface are reasonably foreseeable considering the uncertainties about past leaks and the potential for the risk of leaks to increase with the age of plant components.”

It is of concern that the NRC admits that “future inadvertent releases” will take place. How large could they be? It is impossible to predict the magnitude of any such events or their impact?

Impacts could be sizable, yet the NRC concludes that “The NRC staff found that impacts to groundwater would be small to moderate.”

How is such a conclusion possible? What was the scientific method used to determine that no future impacts would be “large” or of greater magnitude? It’s as if the NRC can gaze into the future and know that impacts will not be large. I challenge that conclusion and request this be addressed further in the EIS.

The draft EIS says this about the “small-moderate-large” impact scale, used for groundwater impacts and all predicted environmental impacts:

The NRC’s *Environmental Review Guidance for Licensing Actions Associated with Office of Nuclear Materials Safety and Safeguards (NMSS) Programs* (NUREG–1748) categorizes the significance of potential environmental impacts as follows:

SMALL: The environmental effects are not detectable or are so minor that they would neither destabilize nor noticeably alter any important attribute of the resource.

MODERATE: The environmental effects are sufficient to alter noticeably but not destabilize important attributes of the resource.

LARGE: The environmental effects are clearly noticeable and are sufficient to destabilize important attributes of the resource.

What is the scientific basis of this scale? Is this “guidance” incorporated in law or regulation? Is the scale applied in a way so as to be interpreted in the same manner concerning past, present and future impacts?

Concerning the aging of plant components, the above statement about “aging” implies that risks increase with component aging. What analysis has been conducted as part of the EIS on the impacts of aging component, equipment and facilities? Impacts could be worse with equipment or fixtures that can’t be moved or can’t be or won’t be removed and replaced. How has the EIS taken this into account? Please include any aging-impact reviews as part of the EIS process. I request that an “aging analysis” be conducted and that the public be allowed to comment on it as part of the EIS record.

Concerning concrete durability in facility structures – EIS needs to address building aging

Have the condition, status or aging of buildings and facilities been taken into account in the draft EIS? If not, that needs to be analyzed.

I note that this article - *The problem with reinforced concrete* - <https://theconversation.com/the-problem-with-reinforced-concrete-56078> – reviews problems with reinforced concrete using steel rebar:

However, when embedded in concrete, steel is hidden but secretly active. Moisture entering through thousands of tiny cracks creates an electrochemical reaction. One end of the rebar becomes an anode and the other a cathode, forming a “battery” that powers the transformation of iron into rust. Rust can expand the rebar up to four times its size, enlarging cracks and forcing the concrete to fracture apart in a process called spalling, more widely known as “concrete cancer”.

Have the potential environmental and health impacts of potentially degraded buildings, especially those made of concrete, been reviewed? If not, why not? Are buildings more subject to tornado or hurricane damage with age? Has this been reviewed?

NRC “Event” Reported on August 24, 2021 – Contaminated Worker

I filed into the EIS scoping record a list of “events” reported by the NRC on a daily basis. I reaffirm my scoping comments and note a new event on August 17, 2021:

“Current Event Notification Report for August 24, 2021”

<https://www.nrc.gov/reading-rm/doc-collections/event-status/event/en.html>

“Fuel Cycle Facility

Event Number: 55412

Facility: Westinghouse Electric Corporation

RX Type: Uranium Fuel Fabrication

Comments: Leu Conversion (Uf6 To Uo2)

Commercial Lwr Fuel

Region: 2

City: Columbia **State:** SC

County: Richland

License #: SNM-1107

Docket: 07001151

NRC Notified By: Elise Malek

HQ OPS Officer: Kerby Scales

Notification Date: 08/17/2021

Notification Time: 19:15 [ET]

Event Date: 08/17/2021

Event Time: 02:30 [EDT]

Last Update Date: 08/17/2021

Emergency Class: Non Emergency

10 CFR Section:

70.50(b)(3) - Med Treat Involving Contam

Person (Organization):

NMSS_EVENTS_NOTIFICATION (EMAIL)

MILLER, MARK (R2DO)

GOTT, WILLIAM (IR)

Event Text

EN Revision Imported Date: 8/24/2021

EN Revision Text: MEDICAL TREATMENT WITH CONTAMINATION

"On August 17, 2021, at approximately 0230 [EDT], a Westinghouse employee was washing piping over a container of nitric acid in the Conversion Decontamination Area. The piping fell

into the container of nitric acid and employee reached into the container to retrieve the piping and received nitric acid burns to hands and left wrist. Appropriate treatment for exposure to nitric acid was provided by on-site medical response staff. With an abundance of caution, after review with on-site medical, the employee was transported to an off site medical facility [Prisma Hospital]. Per procedure the employee's hands and arm were wrapped in plastic, and the employee was transported to an off site medical facility accompanied by plant health physics personnel for evaluation.

"Contamination was detected on the exposed area of the employee's skin during Health Physics surveys. Direct survey results were 1500 dpm/100 cm squared alpha for the left hand and 900 dpm/100 cm squared alpha for the right hand. All smear results of the exposed area were below clean area limits (<200 dpm/100 cm squared). Contamination surveys were performed in the ambulance and at the hospital and all results were below clean area limits indicating no spread of contamination during care for the employee. All potentially contaminated materials associated with the issue were collected and returned to the [Commercial Fuel Fabrication Facility] CFFF for disposal. Operator was provided with over the counter medication and released.

"The task that the employee was performing required a chemical suit, chemical gloves, fresh air bubble hood, chemical boots, and required taping the gloves to the sleeve of the acid suit jacket with chemical tape. After inspection of employee's personal protective equipment, it was noted that chemical tape was not applied to the gloves which enabled the nitric acid solution to enter the left glove and acid suit sleeve when employee reached into the nitric acid container."

NRC Regional staff was notified."

Will this event be reviewed by the NRC?

Will the NRC make comments to Westinghouse or prepare a written report for public review?

What does the event say about the ease by which workers can be exposed without proper PPE?

Will the myriad of pathways to worker exposure, including the one in the event, be reviewed in the final EIS?

Will the impacts of proper and improper use of duct tape (or other tape) be reviewed?

Concerning the recently released NRC document *Audit of the NRC's Material Control and Accounting Inspection Program for Special Nuclear Material*

As the documents, released in March 2021, states: "The audit objective was to assess the effectiveness of the NRC's inspection program for the accounting and control of special nuclear material at fuel fabrication facilities."

The document states that “Starting in 2021, the inspection frequency at Cat III facilities will decrease from once a year to once every 2 years.” This reduction in inspections is of concern and must be addressed in the draft EIS as reduced inspections could have implications for the MC&A program at WEC, which is a Category III facility.

The document says: “The Nuclear Regulatory Commission (NRC) is responsible for protecting the health and safety of the public and the environment by licensing and regulating the civilian uses of radioactive materials.” What is the connection between MC&A and safe operation of the WEC facility? Can this be accomplished with only one MC&A inspection n every two years? The draft EIS must discuss this.

Given their oversight of WEC’s MC&A program, what role does the NRC’s Office of Nuclear Material Safety and Safeguards (NMSS) have in the EIS process? What is coordination with Region II’s Division of Fuel Facility Inspection (DFFI)?

Ignored & Avoided: Role and waste production of of WesDyne/Westinghouse Government Services LLC in TPBAR

I will expound on this issue in another document submitted for the public and EIS record, but to summarize - all items below can be documented - with a clear understanding that what is known about TPBAR production is not clear and could appear to be contradictory. Entities involved in any aspect of TPBAR work at the Westinghouse facility, including waste management, appear to be hiding under a NNSA claim that the work is “classified.”

- It appears that WesDyne International LLC fabricates Tritium-Producing Burnable Absorber Rods (TPBARs) for production of tritium in the military-commercial Watts Bar unit 1 reactor (known as the Watts Bar Nuclear Bomb Reactor) operated by the Tennessee Valley Authority;
- It appears that WesDyne, which has evidently absorbed Westinghouse Government Services LLC, is registered with the South Carolina secretary of state;
- Though operating in Richland County, South Carolina, WesDyne is not on the registered business list of businesses operating in Richland County;
- WesDyne appears to pay no business taxes in Richland County and the list of amounts of taxes paid does not include WesDyne (or Westinghouse Government Services);
- At various public meetings, in response to my oral questions from the floor, NRC officials have said that activities of WesDyne are regulated by DOE’s National Nuclear Security Administration (NNSA);
- NNSA, the nuclear weapons part of DOE, is not a regulatory agency;
- The NNSA-WesDyne contract, part of which has been obtained by a Freedom of Information Act request, states that the contractor is “responsible for ultimate disposal of waste products;”
- BUT, there are indications from DHEC that the TPBAR work has been taken over by Westinghouse Electric Company (WEC) and that the TPBAR work is covered under existing WEC permits;

- Though being asked by stakeholders to analyze the operation of WesDyne in the draft EIS, the NRC has totally ignored the matter and in the Scoping Process Summary Report claims, without a single word of justification or explanation and with no documentation, that WesDyne is “outside of scope” of the draft EIS;
- Waste from WesDyne operations are therefore not covered in the draft EIS;
- The South Carolina Department of Health & Environmental Control (DHEC) says that WesDyne produces hazardous waste and that it goes to the fuel fabrication side of the Westinghouse facility. Thus, what is the role of WEC in managing that waste?
- DHEC affirms that neither WesDyne nor Westinghouse Government Services have no stand-alone air permit and no National Pollutant Discharge Elimination System (NPDES) permit, both of which are required, and says that TPBAR fabrication is being done under the WEC environmental permits. Is this the case?
- Irradiated TPBARs are transported to the DOE’s Savannah River Site, where tritium gas is removed from the highly radioactive rods;
- NNSA currently conducts about 2 processing campaigns per year of TPBARs but that is planned to go up to 8 to 10 “extractions” per year by 2026 which means TPBARs production at WesDyne will increase dramatically, meaning more waste will be produced. How will this waste be managed?
- Tritium gas is packaged in reservoirs and shipped to the DOE’s Pantex facility in Texas or Department of Defense facilities for insertion into nuclear warheads. TPBAR waste at SRS is handled as low-level nuclear waste and “disposed of” in the “E-Area Intermediate Level Vaults;”
- Irradiation of TPBARs in Watts Bar units 1 & 2 is an NRC-licensed activity;
- It appears that there is no NRC inspection of TPBAR fabrication work - perhaps being done under some form of generic Quality Assurance program - no accounting for management and disposal of TPBAR waste and thus no NRC reports of any kind about TPBAR activities taking place under the roof of the WEC facility. How is this possible and why aren’t these activities covered in the EIS?
- The draft EIS must clarify who regulates TPBAR operations and what wastes it produces and how that waste is managed. This information must not be classified and must be included in the EIS record.

Something is very fishy about TPBAR fabrication and waste streams from that part of the WEC facility. The TPBAR issue and waste from it demands explanation from the NRC.

It thus appears that WesDyne is essentially unregulated and its operation for nuclear-weapons related activities inside WEC facilities makes the Westinghouse facility a dual-use civilian-military facility. Does the NRC allow such dual use civilian-military activities at facilities it regulates? If so, under what law or regulation? Please discuss and provide document for the EIS record.

Even if some form of confidential agreement is in place between NNSA, Westinghouse, WesDyne and/or the NRC, such operation clearly crosses the imaginary red line between civilian and military nuclear operations and poses a risk to international nuclear non-

proliferation norms. Thus, what NRC non-proliferation policy allows TPBAR fabrication, a nuclear-weapons related activity, in a civilian facility?

It is inexplicable that waste from the TPBAR operation are unregulated. If the TPBAR production is operating under WEC air and NPDES permits and if the waste from TPBAR production goes to WEC, the TPBAR operation and its wastes **MUST BE ANALYZED IN THE DRAFT EIS.**

It's time for the NRC to come clean about the part of the WEC facility engaged in the secretive TPBAR production. The amount of hazardous waste generated, air discharges and discharge of any form of waste water must be revealed and quantified. How those waste are processed and disposed of must be discussed and documented in the EIS.

Given that the NRC has dodged the issue of TPBAR production and associated waste production, I request that the EIS be left open until such time as waste streams from Westinghouse Government Services/WesDyne are revealed and the public has had time to review and comment about them as part of the draft EIS..

Conclusion: The draft EIS provides ample information to deny a 40-year license extension. I request that the 10-year license-extension alternative be analyzed and that any license extension be no longer than 10 years. As discussed, the NRC must address the waste streams produced by TPBAR fabrication at the Westinghouse facility. Based on various comments of mine about the comment period in the text above, I request that the comment period be extended as appropriately requested.

Thank you for consideration of these comments and for a full response to them in any final EIS that might be issued.

Tom Clements
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Two Nuclear Weapons Facilities in S.C. Play a Key & Intertwined Role in the Dangerous Preparation for Nuclear War: Savannah River Site (Aiken, SC) & “Dual-Use” Westinghouse Nuclear Plant (Columbia, SC)

Honor the Lessons of Hiroshima and Nagasaki and Take Action – August 6, 2021

The **U.S. Department of Energy’s Savannah River Site (SRS)** has long played a key role in **U.S. planning for nuclear war** and that ominous mission that threatens our security continues. Don’t be tricked by politicians and war profiteers who claim the massive U.S. nuclear stockpile of about 4000 weapons is just for “deterrence,” when, in fact it’s always been the basis for a U.S. policy of threatening annihilation and fighting a full-scale nuclear war.



Beginning in the mid-1950s through the 1980s, SRS operated five nuclear reactors to produce plutonium and tritium used in all U.S. nuclear weapons. (See K-Reactor at left, now used to store 11.5 metric tons of surplus plutonium.) That work, which generated massive amounts of nuclear waste, has changed but related work continues as the government-contractor alliance at SRS helps maintains the U.S. on a constant footing to engage in the madness of nuclear war, threatening global and national security.

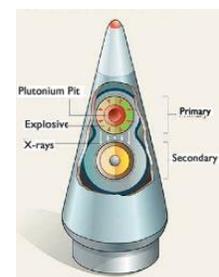
Now, **SRS is the sole DOE site to processes and package tritium** - a gas used to boost the explosive power of nuclear weapons - for use in all nuclear warheads produced by DOE and held by the Department of Defense, which is DOE’s client. Tritium is produced via irradiation of special rods - produced at the Westinghouse plant in Columbia, SC - in the Watts Bar military-commercial reactor operated by the Tennessee Valley Authority.

Those highly radioactive rods are taken to SRS, where they are processed in the Tritium Extraction Facility (TEF) and the tritium stored until its placement into small “reservoirs” - photo at right - that are inserted into a nuclear warhead. The highly radioactive waste from this process is placed in the “E-Area Intermediate Level Vaults,” above-ground concrete “disposal” facilities for so-called low-level nuclear waste.



Tritium has a short radioactive “half-life” - 12.3 years - so demand for the gas that boosts the explosive power of a weapon is continuous. SRS is now conducting about 2 “campaigns” per year to process the tritium rods, but that could increase to 8 to 10 “extractions” per year by 2026, greatly increasing worker and public health risks of tritium processing at the site. The goal appears to be to replenish all the tritium in the reservoirs in all the deployed and reserve weapons, to give them maximum firepower, for anticipated war that many politicians plan and war profiteers, such as Northrop Grumman and Raytheon, count on to fill their overflowing bank accounts.

On the plutonium front, a similar alliance of DOE’s National Nuclear Security Administration and for-profit contractors are now pushing a **proposal to produce plutonium “pits” at SRS in the proposed Plutonium Bomb Plant**. Pits are the ~3-kg plutonium core of all U.S. nuclear weapons, which causes the nuclear fission reaction that triggers a thermonuclear explosion. This proposal is part of the Biden/Trump plan to spend up to \$2 trillion on nuclear weapons in the next 30 years. The first pits are for a ICBM given the purposely misleading name “Ground Based Strategic Deterrent.” The second new pit would be for a new Submarine Launched Ballistic Missile.



new



DOE has proposed locating the pit plant in the **abandoned plutonium fuel (MOX) building**, a project terminated in 2018 after \$8 billion was wasted on construction. DOE estimates that conversion of the MOX plant into a nuclear weapons factory could cost up to \$11.1 billion, but based on past performance that cost will rise, which is exactly what the contractors are after.

The intent is to have the facility producing 50 pits/year by 2030 but that has been delayed for up to five years. Given the complexity and cost of the project, creation of a large amount of new nuclear waste and lack of need for new nuclear warheads that would use the pits, it is hoped Congress will eventually terminate this

provocative project. If pursued, the total amount invested in MOX and pit plant construction alone could be \$20 billion, making this one of the most expensive buildings in U.S. history.

DOE has failed to analyze the array of environmental impacts of pit production at SRS and across the DOE complex and has brushed aside Environmental Justice concerns at both SRS and the Los Alamos National Lab, a DOE site also being considered for expanded pit production. Several public interest groups, including [SRS Watch](#), filed a lawsuit on June 29, 2021 demanding that a **Programmatic Environmental Impact Statement (PEIS)** be prepared. The groups are being represented by the South Carolina Environmental Law Project (SCELP), which has set up a website with information on the PEIS lawsuit and the plutonium pit issue: <https://www.scelp.org/cases/plutonium-pits>.

Mini ACTION: Contact [Mr. Jason Armstrong, Manager of NNSA's Savannah River Field Office](mailto:jason.armstrong@nnsa.srs.gov), jason.armstrong@nnsa.srs.gov, and briefly tell him as a SC resident that you do not support the dirty, dangerous and costly plutonium pit-production "mission" at SRS and instead support continued negotiations to universal nuclear disarmament, as required by the Nuclear Non-Proliferation Treaty (NPT).

Our Local Nuclear Weapons Facility: Westinghouse Nuclear Fuel Plant near Columbia, SC



Only 10 miles from downtown Columbia, SC, and largely unknown by the public, the **Westinghouse Fuel Fabrication Facility**, located on the road to the Congaree National Park, plays an essential role in the U.S. nuclear weapons industry. This ["dual-use" commercial-weapons facility](#) operates in the shadows of the for-profit security state.

Westinghouse Government Services, LLC, a duly registered company with the SC secretary of state, appears to be operating under the same roof as the Westinghouse fuel fabrication facility, where uranium rods are fabricated for foreign and domestic nuclear power plants. Westinghouse Government Services, previously known as WesDyne, produces specialized rods that are irradiated to produce tritium gas for nuclear weapons. The Nuclear Regulatory Commission claims it does not regulate the facility and the SC Department of Health and Environmental Control says it has issued no permits to the facility and that waste goes to the fuel plant. Westinghouse, DOE and the NRC may have secret agreements in place that they think allows them to flaunt regulations. But it looks like a cover-up.

The facility produces [Tritium Producing Burnable Absorber Rods \(TPBARs\)](#) that are transported to the **TVA's military-commercial Watts Bar Nuclear Bomb Reactor (WBNBR)** in Athens, TN, where the fresh, non-radioactive rods are irradiated and the lithium in them produces tritium gas. The highly radioactive rods are shipped back to SRS for processing, where the tritium is removed and placed in canisters for insertion into nuclear warheads, in order to boost the explosive power of the weapons.

SRS currently processes about 2 batches of TPBARs per year but, according to the DOE's National Nuclear Security Administration, that will go up to [8 to 10 "extractions" per year by 2026](#). This means there will be much more production activity at Westinghouse Government Services and more TPBAR processing at SRS, which means more risk of worker exposure to tritium (a big [concern of the Defense Nuclear Facilities Safety Board](#), which oversees DOE operations). Keeping all U.S. nuclear weapons at maximum firepower is indeed ominous, yet Biden persists.

The NRC claims it does not regulate Westinghouse Government Services' TPBAR operations. A [Draft EIS](#) (<https://www.nrc.gov/docs/ML2120/ML21209A213.pdf>) released by the NRC on July 30, 2021, on the [unjustified 40-year license-extension request by the Westinghouse fuel plant](#), inexplicably excludes hazardous waste streams from TPBAR production even though the waste, according to DHEC, is passed to the fuel-fabrication side of the facility.

Mini ACTION: File a brief comment on the Draft EIS stating that waste streams coming from Westinghouse Government Services must be regulated by the NRC and the facility must be licensed by the NRC. Ask that a full explanation be given about management of waste streams from TPBAR production: WEC_CFFF_EIS@nrc.gov.
