

**Response to Questions from the Public
Licensee Performance Review Meeting
Unicoi County Courthouse – Erwin, TN
Held on April 7, 2011**

- 1. How does NFS meet the chemical concentration limits for discharges from the process stacks?**

NFS process off-gases are filtered through a chemical scrubber that removes various chemicals from the airborne effluents. The chemical discharges to the environment are the regulatory jurisdiction of Tennessee Department of Environment and Conservation (TDEC). For more information on the chemical component of the airborne effluents, please see the TDEC website (<http://www.tn.gov/environment/org/>) for contact information.

- 2. If the chemicals in airborne effluents are not caught by the scrubbers, then are they stopping at the fence?**

No. If chemicals contained in the airborne effluent are not captured by the chemical scrubber, then they are released to the atmosphere. The chemicals would be subject to dispersion and diffusion in the atmosphere; two scientific principles which affect how small particles and gases are transported in the air. Airborne chemicals would not be hindered by a fence.

- 3. When was NFS' main stack (No. 416) constructed?**

The main airborne effluent stack was constructed in approximately 1983.

- 4. The fish near the Indian Creek River used to be plentiful, however, from 2006 - 2011, their numbers were decreasing. In addition, there are five different species of river animals disappearing. What information does the NRC have regarding this?**

We have no information concerning changes in animal populations.

- 5. What is the status of the Building 234 (i.e. Plutonium Building) decommissioning?**

Nuclear Fuel Services had removed the physical structure of Building 234 as part of past cleanup activities in 2003. The materials removed were sent to off-site disposal sites during the time frame of 1999 to 2003 in various phases of facility decommissioning. In 2003, the licensee erected a large tent over the building footprint. As of 2011, the licensee has begun the cleanup of the contaminated soil beneath the building footprint. NFS' cleanup activities with regard to Building 234 do not require a formal decommissioning plan as agreed to by the NRC in a letter dated March 30, 2010. This cleanup activity is considered a source reduction activity that is authorized by the license.

6. What is the status of the Building 110 Plutonium Lab?

The Building 110 Plutonium Lab was decommissioned in the early 1990's and has been repurposed for other laboratory work. The original 110 Plutonium Lab was operated to support Building 234 operations during the 1970's time frame.

7. When was the plutonium facility shut down?

Building 234, the Plutonium Building, stopped operation in 1973.

8. Is NFS a fuel reprocessing facility and therefore subject to the requirements of 10 CFR Part 50?

No. The NFS license does not authorize the reprocessing of spent reactor fuel. The license authorizes the fabrication of new reactor fuel subject to the requirements in 10 CFR Part 70. Facilities licensed under Part 70 are not required to comply with the requirements of 10 CFR Part 50, except for facilities that fabricate reactor fuel containing more than trace amounts of plutonium.

The regulations in 10 CFR Part 50 apply to production facilities and utilization facilities. Under 10 CFR 50.2, a "utilization facility" is defined as "any nuclear reactor other than one designed or used primarily for the formation of plutonium or U-233." NFS does not operate a nuclear reactor.

In Part 50, a "production facility" includes any facility used for processing irradiated materials containing special nuclear material, with certain exceptions. One exception is facilities in which the only special nuclear materials contained in the irradiated material to be processed are uranium enriched in the isotope U-235 and plutonium produced by irradiation, if the material processed contains not more than 10^{-6} grams of plutonium per gram of U-235 and has fission product activity not in excess of 0.25 millicurie (mCi) of fission products per gram of U-235.

The NFS license requires that all uranium enriched in the isotope U-235 must contain no more than 10^{-6} grams of plutonium per gram of U-235 and has fission product activity not in excess of 0.25 mCi of fission products per gram of U-235. Therefore, NFS is not a production facility and the requirements of 10 CFR Part 50 do not apply.

9. Does NFS discharge plutonium to the river?

Yes. Trace amounts of plutonium are discharged in NFS liquid effluents and are in compliance with 10 CFR 20.1301. Specific concentrations of plutonium in the discharge waters can be retrieved from the recent NFS biannual effluent monitoring reports at the following link: <http://www.nrc.gov/materials/fuel-cycle-fac/fuel-fab/nfs-effluent-reports.html>.

10. Does an earthquake pose a significant risk to NFS?

No. The Integrated Safety Analysis (ISA) Summaries submitted by NFS provide the results of risk assessments for all potential accidents, including accidents caused by earthquakes. The assessments concluded that the risk of significant consequences from accidents caused by an earthquake is low. Strong earthquakes are rare in

northeastern Tennessee. If a strong earthquake occurred, it could cause releases of hazardous material and fires. NFS has identified controls which make these accidents highly unlikely or mitigates the consequences so that significant consequences are highly unlikely.

11. What impact does the tectonic plate shift have on ground water contamination?

Plate tectonics and associated shifting does not have an effect on the groundwater at NFS. Erwin, Tennessee is part of the North American plate; however Erwin is not located near the plate boundary where plate rubbing and excessive faulting might be expected. The Southern and Midwestern regions of the United States do experience intraplate earthquakes which is an earthquake that occurs within a plate. These earthquakes occur at the location of ancient rifts (places where the crust was stressed by being pulled apart), because these geologic structures may present a weakness in the crust where it can slip to accommodate tectonic strain. Erwin is not known to be located on an ancient rift.

In other areas of the country, earthquakes and associated faults have been known to disrupt groundwater. The disruption is only applicable if the groundwater aquifer is confined (the aquifer has an impermeable layer of rock above or below it). If a fault occurs through a confined aquifer, then groundwater can pass through the broken rock in the previously impermeable rock and change the groundwater aquifer characteristics. In Erwin, this kind of disruption is not applicable. The aquifer below NFS is not confined and the rock layer (bedrock) below the aquifer has many known natural fractures.

12. Who was the contractor that shored up the buildings for the seismic risks?

We do not know. When Nuclear Fuel Services requested authority to process uranium fluoride compounds in the new Commercial Development line, it confirmed that the building structure was upgraded to withstand a design basis earthquake. The NRC staff reviewed the information and inspected the structural supports added to the building. The review did not include the identity of the contractor. When Amendment 88 (ML090490664) was issued to approve the request, the NRC staff concluded that there was reasonable assurance that an earthquake would not cause a UF₆ release having a significant impact on the environment.

13. What happens to NFS if there is a loss of power?

NFS systems are designed to be fail-safe which means that if they are affected in an event, the equipment or system will default to a safe condition. For example, in the event of a loss of offsite power, the operations will simply stop (e.g. heaters shut down and valves close). This state is considered safe due to the physical characteristics of the operations. What is a Severity Level III violation?

The NRC assesses significance by assigning a severity level to all violations. There are 4 severity levels from I – IV. Severity Level I is the most significant and Severity Level IV is the least significant. Severity Level III violations are those that resulted in or could have resulted in moderate safety or security consequences (e.g., violations that created a potential for moderate safety or security consequences or violations that involved systems not being capable, for a relatively short period, of preventing or mitigating a serious safety or security event).

14. Do NRC fees from the licensee create a conflict of interest in regards to fair regulation? Ninety percent of the NRC's funding is recovered from the plants that it regulates.

No. The NRC operates with funds approved by the U.S. Congress that come directly from the U.S. Treasury. The fees collected have no effect on the approved NRC budget. The fees paid by licensees go directly to the U.S. Treasury; NRC inspectors and managers have no role in this process.

The fees for NRC services as covered by the Atomic Energy Act of 1954, as amended are specified in 10 CFR 170. Staff hours associated with inspection and licensing activities are billed directly to the licensee. The payment of these fees does not affect the scope or results of the licensing actions or inspections that are performed. In some cases, licensees are subject to additional fees in the event of declining performance as determined by the NRC assessment process.

NRC staff salaries are pre-established and are unaffected by the fees collected from the licensee. Cost of living adjustments, when approved for the federal government, are applied consistently throughout the government with pre-established criteria. Enforcement or the lack of enforcement has no bearing on NRC salaries. The number of annual inspection hours consists of a combination of routine core inspection activities and any additional inspections that are predicated on the performance of a given licensee. Consequently, the fees paid by licensees for NRC services increase as the number of inspection hours increase. In NFS's case, there was a significant increase in the annual inspection hours above and beyond the routine core inspection program between 2009 and 2011. The increase in inspection activities was driven by the need to conduct additional inspections in response to poor plant performance issues. These additional inspection efforts result in a direct cost to NFS. NRC salaries remained unaffected during this time period.

15. Is NFS authorized to process high enriched material from foreign countries, and if so how is it transported?

The NRC license authorizes NFS to receive, store, and process high-enriched uranium from any source. NFS has processed material from foreign entities and may continue to process material from foreign governments in the future as per their current license.

NFS and its customers transport the high-enriched material using secure transportation. In addition, all parties are required to comply with the Department of Transportation (DOT) requirements. Is NFS allowed to load and unload materials in the Industrial Park Facility?

Yes. NFS is authorized to use the Industrial Park Facility to store low-level radioactive waste in approved shipping containers prior to loading onto railcars for shipment to a licensed disposal facility. The containers are packaged and sealed in accordance with Department of Transportation (DOT) regulatory requirements at the main NFS facility before they are moved to the Industrial Park Facility. The Industrial Park Facility is authorized for storage of low-level radioactive waste (LLRW) in DOT-approved shipping packages. The LLRW materials may only be in solid form as required by DOT and NRC regulations. Resource Conservation and Recovery Act (RCRA) hazardous waste is not

authorized for storage in the Industrial Park Facility. Transfers of shipping packages via highway and/or railroad are conducted per DOT regulations. NRC approved the Industrial Park Facility operations in License SNM-124 Amendment No. 11, effective 09/13/2000. The Industrial Park Facility is described in Appendix 10.1-A of Chapter 10, Part II, of the current SNM-124 License.

16. How many violations does NFS have for 2011?

As of August 16, 2011, the NRC has cited 3 Severity Level IV violations at NFS in 2011. Severity Level IV violations are those that are less serious, but are of more than minor concern, that resulted in no or relatively inappreciable potential safety or security consequences (e.g., violations that created the potential of more than minor safety or security consequences).

17. Inspection Report 70-143/2011-006 (ML110950103) described two process upsets that occurred in January 2011 in the column dissolvers of building 301 involving uranium tetrafluoride (UF₄). Why were these not reportable?

The process upsets described in the above inspection report did not meet the criteria for reporting to the NRC. The requirements for NFS reporting an event to the NRC are listed in 10 CFR Parts 70.50. 10 CFR 70.50, "Reporting Requirements," specifies the conditions under which a licensee is required to make a report at the NRC. From time to time, every licensee inevitably takes an action, or fails to take an action, that results in violating one of their procedures, their license, or some other requirement. When a violation occurs, a review is performed to determine if the violation meets the reporting requirements of 10 CFR 70.50. Although the process upsets were not reportable, the NRC resident inspectors were still able to conduct follow up inspections in a timely fashion. Even though these two violations fell below 10 CFR 70.50 reporting requirements, they met NRC Enforcement Policy requirements for citing a violation in an inspection report. The violations are described in Inspection Reports 70-143/2011-002 (ML111190234) and 70-143/2011-003 (ML112092311).

18. Inspection Report 70-143/2010-004 (ML110280474) discussed an issue that occurred on January 11, 2007 (Event Number 43090). Why is this being discussed more than four years later?

NFS addressed the issue in early 2007. A database error triggered an NRC re-inspection of this issue in late 2010. This issue was discussed and closed in a series of three inspection reports: 70-143/2007-001 (ML073060542), 70-143/2007-202 (ML081500187), and 70-143/2007-203 (ML081500188). The issue involved the failure of an in-line monitoring system for process discards. The in-line monitoring system is a safety control used to prevent excessive uranium transferring from the safe geometry vessels to an unsafe geometry container. If a sufficient amount of uranium accumulated in an unsafe geometry container, a criticality would then become possible under the appropriate conditions. This monitor does not measure discharges to the environment.

19. What would happen at NFS in event of a government shutdown?

In the event of a government shutdown, the NRC Resident Inspectors would be characterized as 'Essential Personnel' and continue to inspect full-time. Selected individuals from Region II and NRC Headquarters, including the emergency response

organization, would be characterized as 'Essential Personnel' and also continue to work full-time. Much of the staff in Region II and NRC Headquarters would be suspended in furlough status. The status of the inspections conducted out of Region II and Headquarters would depend on the length of time the federal government was shut down. The status of the resident inspection would largely be maintained. safety control used to prevent excessive uranium transferring from the safe geometry vessels to an unsafe geometry container. If a sufficient amount of uranium accumulated in an unsafe geometry container, a criticality would then become possible under the appropriate conditions. This monitor does not measure discharges to the environment.

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*see previous concurrence

☒ PUBLICLY AVAILABLE

☐ NON-PUBLICLY AVAILABLE

☐ SENSITIVE

☒ NON-SENSITIVE

ADAMS: ☒ Yes

ACCESSION NUMBER: ML112300125

☒ SUNSI REVIEW COMPLETE ☒ FORM 665 ATTACHED

OFFICE	RII: DFFI	RII: DFFI	RII: DFFI	RII: DFFI	HQ: NMSS	RII: DFFI	
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