

CHRONOLOGICAL TIMELINE OF THE BLEU PROJECT AT NFS
(From 1994-2009)

(This is a product of Erwin Citizens Awareness Network, P. O. Box 1151, Erwin TN., 37650)

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- 03/??/94 Tennessee Valley Authority (Hereafter TVA) Initiated Review on the use of Surplus High Enriched Uranium (Hereafter HEU) as a source of low enriched uranium (hereafter LEU) in response to a Commerce Business Daily inquiry and Federal Register notice from the Department of Energy (Hereafter DOE) for proposed disposition options for uranyl nitrate solutions at its Savannah River Site (SRS.) TVA performed feasibility studies specifically aimed at utilization of "off-spec" HEU as a source of enriched uranium for TVA reactors and began using discussions with commercial fuel vendors to interest in providing fuel fabrication services using such uranium. TVA provided input for DOE's consideration in evaluating the alternatives for HEU disposition in the Final Environmental Impact Statement (FEIS.) Federal Register, Vol. 66, No. 223, 11/19/01
- 06/28/96 Disposition of Surplus Highly Enriched Uranium Final Environmental Impact Statement, United States Department of Energy (Hereafter DOE), Office of Fissile Materials Disposition, DOE/EIS-0240, June 28, 1996
- 07/29/96 Record of Decision for the Disposition of Surplus Highly Enriched Uranium, DOE. Effective upon being made public, in accordance with DOE's National Environmental Policy Act (NEPA) Implementing Procedures and Guidelines (10 CFR Part 1021) and the Council on Environmental Quality (CEQ) regulations for implementing NEPA (40 CFR Parts 1500-1508.) DOE, Record of Decision for the Disposition of Surplus Highly Enriched Uranium, Final Environmental Impact Statement, pp. 1 & 2, 7/29/96, Billing Code 6450-01-P
- 1997 TVA and DOE signed a Memorandum of Understanding to fully investigate the commercial and technical viability of using up to 33 metric tons of "off-spec" HEU. Federal Register, Vol. 66, No. 223, 11/19/01
- 1997 NFS/Framatome/Siemens consortium selected by TVA for **Test** of conversion of DOE HEU into LEU fuel for TVA reactors. http://www.nuclearfuelservices.com/timeline_more.htm
- 1998 TVA requested formal proposals from all domestic commercial fuel vendors to provide services including HEU purification, down blending, conversion to uranium dioxide powder, and fabrication into fuel assemblies. A consortium composed of Framatome-Cogema Fuels in Lynchburg, VA, Siemens Power Corporation in Richland, WA, and Nuclear Fuel Services, Inc., (Hereafter NFS) in Erwin, TN provided the best proposal. Subsequent to the original proposal, Framatome-Cogema Fuels and Siemens Power Corporation merged into Framatome-ANP. TVA then initiated joint negotiations with DOE and the consortium to determine the most cost effective approach to complete the HEU disposition consistent with the Final Environmental Impact Statement (Hereafter FEIS) **assumptions**. These negotiations culminated in the TVA decision to enter into agreements with DOE and the commercial consortium. Federal Register, Vo. 66, No. 223, 11/19/01
- 1999 NRC Environmental Assessment (EA) for NFS License SNM-124 Renewal. Division of Fuel Cycle Safety and Safeguards, NMSS, ML05060028
- 02/14/01 *TVA: Blending of Surplus Highly Enriched Uranium from the DOE to LEU for Subsequent use as Reactor Fuel at the TVA's Browns Ferry Nuclear Plant. Action: Issuance of DOE's Record of Decision (July 29, 1996). This notice is provided in accordance with the Council on Environmental Quality's (40 CFR parts 1500 to 1508) and the TVA procedures implementing the National Environmental Policy Act (NEPA). On 2/14/01, TVA published a **notice of adoption** of the Final Environmental Impact Statement (FEIS),*

*before date means Loss of Containment

*“Disposition of Surplus Highly Enriched Uranium,” prepared by the U.S. DOE, Office of Fissile Materials. This FEIS was released by DOE in June 1996. TVA was not a cooperating agency on that FEIS. In February 2001, TVA re-circulated the FEIS to agencies and persons who had provided comments on the original DOE FEIS. EPA’s Notice of Availability for the recirculation of the FEIS appeared in the Federal Register on February 16, 2001. Subsequent to TVA’s adoption of the DOE FEIS and consideration of public comments received on TVA’s adoption of the FEIS, *TVA has decided to implement the actions related to the preferred alternative identified by DOE. The preferred alternative in DOE’s FEIS, as adopted by TVA, is Alternative 5, Maximum Commercial Use.**

TVA’s actions related to the preferred alternative include entering into an interagency agreement with DOE to obtain approximately 33 metric tons of HEU for blend down and subsequently to use the LEU in the form of nuclear reactor fuel at TVA’s Browns Ferry Nuclear Plant (BFNP). TVA actions related to the preferred alternative also include entering into contracts with a consortium composed of Framatome ANP, of Lynchburg, VA and Richland, WA and Nuclear Fuel Services of Erwin, TN to process and blend the uranium and to fabricate the fuel. Framatome ANP will process and blend the uranium at NFS and fabricate fuel at its facilities in Richland, WA. The first fuel covered by the contracts is expected to be loaded during the spring of 2005 and the last reload is expected to occur in 2015.

*TVA has decided to implement the actions described under the DOE preferred alternative (Maximum Commercial Use) because it would result in substantial savings to TVA ratepayers in nuclear fuel costs in the years 2005-2015, thereby aiding TVA in its mission of providing low cost, reliable power for the Tennessee Valley region without significantly impacting the environment. Implementation of the preferred alternative will involve gradually blending up to 85% of the surplus HEU to a U-235 enrichment level of approximately 4 percent for sale and commercial use over time as reactor fuel feed, and blending the remaining surplus HEU down to an enrichment level of about 0.9 percent for disposal as LLW and would take place over an estimated 15-20 year period. Three blending technologies (uranium nitrate hexahydrate (UNH) liquid blending; uranium hexafluoride (gas); or molten metal blending), and four potential blending sites (DOE’s Y-12 Plant in Oak Ridge, TN; DOE’s Savannah River Site in Aiken, SC., the Babcock and Wilcox Naval Nuclear Fuel Division Facility in Lynchburgh, VA and the NFS plant in Erwin, TN.) were considered in the FEIS. Federal Register/Vol. 66, No. 233/Monday, pp. 57997 & 57998, 11/19/01 (Note: TVA increased rates 6.1% in October 2003, 7.52% in October 2005 and 9.95 % in April 2006. If directors approve the midyear increase, TVA rates will have risen almost **three times as fast as inflation since October 2005**). TVA Board Members to Vote on Increase in Rates, Johnson City Press, 2/12/08; 3/05/08—Erwin Utilities Announces Rate Increase. With the TVA increasing its costs to distributors for electricity, Erwin Utilities is passing on that increase and adding a touch more for local needs. The public utilities board of directors is passing on the TVA 7% wholesale rate increase and the federal agency’s fuel cost adjustment of almost 4% and imposed a 1.9 percent local increase. The rate increase will generate \$300 million for TVA for fiscal year 2008. Johnson City Press, 3/05/08. (See 2/10/05)*

03/16/01

*Response to Public Comments Received on TVA’s **Adoption** of DOE’s FEIS.* During the public review period, four agencies (US EPA, NRC, Alabama Department of Environmental Management (ADEM) and TDEC, two organizations (Local Oversight Committee-Oak Ridge Reservation (LOC) and the Citizens for National Security (CNS); and three individuals responded with comments on *TVA’s notice of adoption of the DOE FEIS* for highly enriched uranium (HEU) disposition. On March 16, 2001, the EPA published their Availability of Comments on Environmental Impact Statements in the Federal Register in which the EPA expressed lack of objections with *TVA’s adoption* of, and no concerns with, DOE’s FEIS provided TVA follows the actions described in the FEIS. On March 8, 2001, the Alabama Department of Environmental Management (ADEM) responded the agency had no comments concerning the disposition of HEU into nuclear fuel assemblies for the TVA BFNP in Athens, Alabama. Federal Register, Vol. 66, No. 223, p. 57999, Monday, 11/19/01

- 03/28/01 TVA Board of Directors approved delegation of authority to enter into the Interagency Agreement with the DOE for obtaining surplus HEU and processing the HEU to LEU. **TVA determined** environmental impacts to be bounded by the actions analyzed in the DOE FEIS.
- Council on Environmental Quality (CEQ) regulations require that a Record of Decision (July 29, 1996) identify the environmentally preferred alternative (s). The analyses in DOE's HEU EIS indicated the environmentally preferred site for the blending facility would be the Savannah River site (SRS.) **TVA concludes** the minor environmental differences between sites would not serve as a basis for choosing among them. Location of the oxide conversion facility at NFS in Erwin, TN, where conversion of UNH liquid to uranium dioxide powder will occur with subsequent shipment of the oxide powder to the Framatome ANP Richland nuclear fuel fabricating facility, has less potential for environmental impacts than shipment of UNH liquid or crystals to the fabricating facility. Conversion of the material at NFS would result in fewer and safer shipments of a less soluble form of uranium. Federal Register, Vol. 66, No. 223, 11/19/01 (Note: Then why did the DOE's Record of Decision choose the Savannah River Site as the environmentally preferred site for the blending facility, according to NEPA and CEQ regulations? When did TVA become the EPA, NEPA and CEQ?)
- 04/05/01 *Erwin's NFS to Convert TVA Uranium.* The project, approved by TVA's board of directors, "culminates nearly six years of effort by the TVA and DOE to **test and promote this innovative nuclear recycling concept,**" NFS President Dwight Ferguson said. Ownership of the enriched uranium is being transferred from the DOE to TVA. The Greeneville Sun, 04/05/01
- 09/11/01 NRC officials said they plan to add a second on-site regulatory inspector. Elizabethton Star, 2/06/04
- 01/25/02 *Down blending Of Bomb-grade Uranium On Target For Erwin.* Elizabethton Star, 1/25/02
- 02/28/02 The first of three amendment applications was submitted to the NRC. The application contains a request to authorize NFS to store LEU bearing material at the Uranyl Nitrate Building (Hereafter UNB.) p.1-2, Environmental Assessment for Proposed License Amendments Regarding Down-blending and Oxide Conversion of Surplus HEU for Nuclear Fuel Services, Inc., (NFS), U.S. NRC, Division of Fuel Cycle Safety and Safeguards, NMSS, June 2002 (Hereafter June 2002, NRC EA)
- 03/19/02 "White House Memorandum to Heads of Executive Departments and Agencies requested sensitive information pertaining to homeland security be properly protected. U. S. NRC Communication Plan for the Withholding of Information concerning Nuclear Fuel Services and BWX Technologies, Inc., Revision 1, Background." ML072540300
- 05/01/02 *NRC Identifies Strengths, Shortcomings at NFS.* NRC's performance review encompassed a period from Jan. 14, 2002 to Feb. 16, 2002. The NRC challenged NFS to maintain management focus on quality, safety and safeguards of existing operations and decommissioning while implementing plans for down blending highly enriched uranium (HEU) into fuel for TVA's Watts Bar and Sequoyah nuclear plants as well as a new production line for U.S. Navy fuel. *The NRC noted deficiencies in areas of radiological contamination controls, testing and maintenance of electrical systems, and implementation of procedures. Douglas Collins, director of NMSS for NRC's Region II in Atlanta, said one area needing improvement was in implementation of the contamination program for workers. "In some areas there were instances where the NRC observed workers conducting radiological surveys which were not in accordance with procedures and, therefore, they could have missed contamination. We had instances where they didn't survey thoroughly enough to get all of the contamination and there was one instance where an individual did leave the area with contamination on them," he said.* Elizabethton Star, 5/01/02

- 05/??/02 In late May and early June, 2002, NFS contracted with SRA to perform a radiological survey of the 5-acre site that will be the location of the BLEU Complex. This facility will produce blended LEU (BLEU) from surplus HEU for use at Brown's Ferry Plant. One of the significant challenges of this survey was to account for the highly variable exposure rates from the adjoining Studsvik Processing Facility. <http://www.shonka.com/page=nuclear-fuel-services>
- 06/30/02 NRC Environmental Assessment (EA) for proposed License Amendment to SNM-124 regarding Down-blending and Oxide Conversion of Surplus High Enriched Uranium for NFS. [ML050540096](#)
- 08/03/02 *Planned NFS Erwin Operation Would Release 'Small Amounts' of Radioactive Items, NRC Says. "Environmental Assessment" (Hereafter EA) issued by the NRC on June 9 indicated a proposed new operation at NFS will result in the release of "small amounts" of both chemicals and radioactive materials to the atmosphere and indicated the NRC expects "no significant impact" from approval of a request for amendments to NFS' "materials license" to allow construction and operation of a uranyl nitrate storage building on the NFS site, and to increase the amount of Uranium 235 that can be stored there. NFS had announced earlier plans to turn 33 metric tons of bomb-grade uranium into fuel for TVA reactors at the Browns Ferry Nuclear Plant in Athens, Ala.*
- The EA indicated the amount of uranium and thorium NFS now released at the Erwin facility *will increase about 4 or 5 times current levels. The amount of plutonium and americium now vented also would increase. Hydrogen and nitrogen oxide emissions are expected to nearly double* and would put NFS in a position to exceed the amount of effluents it is licensed to emit under its current air pollution permit, and has prompted the company to seek a modification of its permit for the main stack. According to the NRC, **substantial increases for uranium, thorium and plutonium, attributable to the BLEU Preparation Facility, will be sent to NFS's wastewater treatment facility (hereafter WWTF) and discharged to the Nolichucky River. Uranium, thorium, and plutonium isotopes, and Technetium-99 will be discharged to the sewer. NFS has said it will discharge an estimated 6,300 gallons per day of water to the sewer containing non-radiological constituents such as arsenic, barium, cadmium, chromium, lead, mercury, ammonia nitrate, fluoride, chloride, selenium, silver and other materials. The estimates do not include domestic wastewater volume, considered to be about 10,000 gallons per day.**
- Operation of the BLEU Project is expected to produce radioactive, mixed waste, nonradioactive hazardous and nonradioactive nonhazardous wastes, according to the NRC. The NRC found the added emissions of radionuclides and non-radiological contaminants to air, water and soil "pose no significant impact to human health or the environment and do not warrant the preparation of an Environmental Impact Statement (EIS). [The Greeneville Sun, 8/03/02](#) (Note: No significant impact?)*
- 08/06/02 *Overall Asks NRC Hearing On NFS's Planned Expansion. [The Greeneville Sun, 8/06/02](#)*
- 08/08/02 NFS responded Tuesday to petitions filed with the NRC asking for additional environmental reviews of a proposed project at the plant. NFS said the NRC should dismiss the petitions. [Johnson City Press, 8/08/02](#)
- 08/10/02 *15 Citizens File Objection to Nuclear Fuel Services' Proposed Expansion Plans. [The Greeneville Sun, 8/10/02](#)*
- 08/15/02 *Overall Files Formal Request With NRC Seeking Local Hearing On NFS Permit.* Environmental groups, including one led by actress Park Overall filed a formal request with the NRC on behalf of a coalition of East Tennessee environmental groups. During a telephone interview this week, Overall said she, and other environmentalists, are concerned about the "cumulative effect" of the proposed uranium down blending operation and decades of NFS' nuclear submarine fuel manufacturing operations in Erwin. Overall says she is worried about what impact the NFS uranium down-blending operation may have on the Nolichucky River,

which her farm borders, and also contends the NRC should require a full EIS be completed before NFS is allowed to proceed with down-blending HEU for fuel for a TVA power plant.

Overall and the other petitioners cite several concerns in their request for an NRC hearing, including a contention that an Environmental Assessment (EA) prepared by the NRC's staff is "not sufficient because the potential impacts of the three activities to be licensed are significant and therefore warrant preparation of an EIS. Other concerns cited "the handling and processing of HEU, along with hazardous chemicals, poses hazards of explosions and accidental chemical and radiological releases that could have significant adverse impacts on workers, the public, and the environment" and "NFS-Erwin has a long history of contaminating the environment, thus raising significant questions about whether it can operate under the amended license in a manner that protects the environment". The hearing request claims the NRC staff "acted unreasonably" when it issued "a finding of No Significant Impact "(Hereafter FONSI) before taking a hard look at the safety of NFS' proposed HEU down blending operation.

- Marie Moore, NFS' safety and regulatory vice president, said "In Fact, no modification to our existing permit for liquid effluents is necessary at all. Thus, any claims the project will somehow negatively impact the Nolichucky River are completely unfounded". The Greeneville Sun, 8/15/02 (Note: "A separate pretreatment permit will be obtained for the BLEU Complex. (p.2-4) The BLEU Complex will have one outfall requiring a general NPDES storm water discharge permit. This outfall will discharge storm water run-off from the BLEU Complex to Martin Creek. (p.3-4) The Erwin Utilities pretreatment permit or the general NPDES storm water discharge permit have not been issued as of this supplemental report". (p.4-1) Supplemental Environmental Report for Licensing Actions to Support the BLEU Project, from NFS to Director, Office of Nuclear Material Safety and Safeguards, NMSS, U.S. Nuclear Regulatory Commission (NRC), 11/09/01, ML050130093—(Hereafter 2001 NFS ER) In the August 29, 2005 Table 3-Revised Organ Doses and Total Effective Dose Equivalent at the MEI Location, the organ totals changed from 7 organs to 23 organs after the BLEU Project started. The first BLEU shipment went out on 2/10/05. Revised Biannual Effluent Monitoring Report January through June 2005, from NFS to W.D. Travers, NRC, Attachment D., 8/29/05, ML060860092 (No Significant Impact?)

- 08/17/02 Overall Seeking U.S. Study On Environmental Impact of Possible NFS Plant Expansion. Overall said she had been told by U. S. DOE officials in Oak Ridge the only way she, or other members of the public, could view the 1997 EIS conducted by DOE "is to come to Oak Ridge and view it". She also said she was told copies of the study could not be made, although anyone wishing to view the study could take notes while reading it. In response to being denied a copy of the document, Overall said she is filing a request with DOE headquarters in Washington, D.C., to obtain a copy of the document. The Greeneville Sun, 8/17/02
- 08/26/02 NFS Letter Dismisses Request For Plant Expansion Hearing. The Greeneville Sun, 8/26/02
- 08/30/02 Actress Park Overall Says NFS 'Dodging Big Questions'. Overall said that East Tennessee should note that NFS's attorneys in Washington, D.C., have asked the NRC to deny standing to those with:
- ⇒ cancer
 - ⇒ with children in the school near NFS
 - ⇒ bikers and kayakers
 - ⇒ anyone who takes their water from the Nolichucky River
 - ⇒ anyone who lives on the river, and
 - ⇒ to everyone who asked for a fair and open hearing
- "They have claimed that absolutely none of us have standing and have asked the NRC to deny us all". Overall's response also claims an EA of the proposed uranium down-blending project prepared by the NRC," based on information prepared for them by NFS", indicates that environmental monitoring stations on the NFS property are inadequate for monitoring the new project. "Current environmental monitoring

stations do not provide adequate coverage of the expanded site area for the BLEU complex”, Overall quotes the EA. (p.4-6) In addition, the current monitoring program lacks adequate coverage for groundwater in the vicinity of the BLEU complex. (p.4-6) Further, it states, that elevated localized uranium contamination levels up to 308 pCi/l (picocuries per liter) have been measured near buildings adjacent to Building 333”. The EPA limit is 80 picocuries per liter, according to Overall’s response. Due to the predominant ground water flow, any breach of containment from Building 333 would add to the ground water contamination in the area. (p.3-16) Her response also alleges the NRC’s EA says that under the proposed action, both uranium and thorium air emissions are expected to increase by a factor of 4 to 5 times current levels (p.2-10.) “Perhaps the most disturbing aspect of this whole NFS expansion is a July 11 letter (to NFS), which states that during an on-site review of the proposed uranyl nitrate storage building at the BLEU Complex that NRC identified a number of omissions and technical deficiencies in the integrated safety assessment summary”. The Greeneville Sun, 8/30/02 (Note: All page numbers above came from the NRC June 2002 EA.)

09/10/02

Public Comments of Hearing held in the Courtroom of the Unicoi County Courthouse regarding NFS Renewal Application for a mixed hazardous waste permit on 09/10/02. **Comment:** Immediately following this hearing I had a conversation with two representatives of NFS. The following facts emerged from that conversation:

- Hazardous chemical agents (contaminants) are entering the soil and groundwater at the NFS site.
- NFS has assumed a direction for groundwater flow beneath the site.
- The speed at which the ground water and **contaminants are migrating off-site is unknown**.
- No contaminants are removed from the site using the bio-remedial technique.

From this information I draw the following conclusions:

- Contaminants are additively accumulating in the soil at the site.
- Given the non-homogeneous nature of mineral soils; the groundwater flow, the dispersion of the biochemical agent, the **contaminants cannot be fully known**.
- At some point in the future the **contaminants will**, to some degree, **migrate off-site**.
- **NFS under its current normal operating procedures and under its current operating permit has created and is continuing to create a hazardous site that will either exist in perpetuity or must be mitigated either now or in the future.**

Given these conclusions the following questions occur:

- Does the State of Tennessee wish to create such a site within its borders?
- **Are the residents of Northeast Tennessee willing to allow this to continue?**

*In my opinion the **answer** to both questions is in the **negative**. The permit should be denied. pp.1 & 14, Mixed Hazardous Waste Permit Renewal for NFS, Response to Comments, from Jamie L. Burroughs, Manager, Hazardous Waste Program, Department of Environment and Conservation (DEC), Nashville, TN to Ms. B. Marie Moore, Vice President, Safety and Regulatory, NFS, 9/30/02* Note: “Radionuclides of uranium and technetium-99 have also been detected at concentrations **above** the NRC Option 1 levels. Although ‘industrial land use’ action levels may be appropriate at this facility, the NRC Option 1 residential levels for radionuclides are frequently the primary regulatory driver for many soil cleanups”. p.32, Response to EPA Comments, Comments from EPA submitted prior to the public notice and requested to be included in the Response to Comments, Mixed Hazardous Waste Permit Renewal, NFS, from Jamie L. Burroughs, Hazardous Waste Program, Dept. of Environment and Conservation (DEC), Nashville, TN, to NFS, 9/30/02

09/13/02

NRC Judge Questions Completeness of Public Notice Published By Commission. The Greeneville Sun, 9/13/02

09/21/02

NRC Apparently Acknowledged It Failed To Give Proper Notice of NFS’s Erwin Expansion Plans. The Greeneville Sun 9/21/02

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- 10/11/02 NFS filed a second amendment request related to its proposed BLEU Project with a “non-proprietary version of the Integrated Safety Analysis summary” (Hereafter ISA). The Greeneville Sun, 12/16/02
- 11/01/02 *NRC Published Revised Notice on Nuclear Fuel Services’ Request To Amend Its License.* The Greeneville Sun, 11/01/02
- 12/23/02 *NRC Asked To Respond To Motion To Delay Action On Nuclear Fuel Service’s Request To Amend License.* “It is the staff’s position the scope of the hearing is limited to areas of concern related to the Feb. 28, 2002 license amendment application and cannot extend to areas of concern that relate to future license amendment applications”, counsel to the NRC staff wrote in a Nov. 18 memorandum. The Greeneville Sun, 12/23/02
- 01/11/03 *Nuclear Industry Expert: Levels of Radioactive Elements From Proposed NFS Operation Could Exceed Those Forecast*—A nuclear industry expert, Dr. Arjun Makhijani, wrote that in reviewing documents prepared by NFS and the NRC, he discovered an apparent conflict in the NRC-prepared EA of the BLEU project’s expected impact. Dr. Makhijani questioned why the EA prepared by the NRC used the lower of two sets of estimates for airborne discharges of radioactive materials for airborne discharges and liquid plutonium discharge estimates, without providing any explanation as to why it ignored the higher figures in the Request Additional Information (RAI) Response. “I find the discrepancies cited above, between the EA/Additional Information Letter and the RAI Response are significant for two important reasons:
 - “First, they indicate that releases from the proposed BLEU Project may be **significantly higher** than estimated by the NRC or NFS”.
 - “Second, they also demonstrate an unacceptably low level of scientific care and rigor by the NRC in preparing the EA, which undermines the credibility of the NRC’s low estimates for liquid and airborne releases from the proposed BLEU Project”. The Greeneville Sun, 1/11/03 (Note: The Information Tables above are on Page 5-5 and 5-6, June, 2002 NRC EA)
- 01/23/03 *Opponents Seek Injunction Against NFS’s Expansion.* The Greeneville Sun, 1/23/03
- 02/06/03 *NRC Board to Rule Once on Challenges to Three NFS Expansion Applications.* The Greeneville Sun, 2/06/03
- 04/10/03 *Citizens Question The Safety of Nuclear Fuel Services Plant.* The Greeneville Sun, 4/10/03
- 04/10/03 *License Performance Review (LPR).* NRC officials gave NFS an overall positive annual LPR on Wednesday, then faced questions about the review and other issues. **NRC officials told the group they would not consider licensing a plant that has not complied with new regulations implemented over the years.** Johnson City Press, 4/10/03
- 04/20/03 *NFS Cite 7 Years of O.K.’d Assessments on BLEU Project.* At the NRC’s public hearing of NFS’s annual Licensee Performance Review (LPR) on April 9, the agency reported that the company’s license amendment applications *did not include nuclear criticality safety analyses, fire hazards analysis and adequate commitments to management measures, according to the review.* Elizabethton Star, 4/20/03
- 05/02/03 *NRC: BLEU Project To Go On.* An emergency request to halt construction of buildings for use in a blended LEU complex at NFS was denied this week by the NRC. Johnson City Press, 4/02/03
- 05/28/03 NFS submitted additional information to support completion of the environmental review for the BLEU Preparation Facility (BPF). This information is needed to reflect revisions to the EA/FONSI that was issued for the Uranyl Nitrate Building (TAC No. L31567) dated July 18, 2002. The 2002 EA, pages 2-10 and 4-4

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states that the air pollution control permit for the main stack must be modified for BPF operations. NFS confirmed the permit was modified. A permit was issued by the TN Department of Environment & Conservation (TDEC) to modify an air contaminant source and includes the BPF (Recovery and Blending Process), material input changes for the fuel expansion project and removal of the Building 200 Complex Process Operations from the permit. Supplemental Information to Complete an Environmental Review for the BLEU Preparation Facility, from NFS to Director, Office of NMSS, NRC, 5/28/08, p.4, ML031560494 (Note: The EA/FONSI by the NRC is dated June 2002)

06/07/03 *NRC Staff Says It Can OK NFS Nuclear Materials Plans Without A Public Hearing.* The Greeneville Sun, 6/07/03

06/07/03 *Questions Plentiful As NRC Responds to BLEU Concerns:* NRC officials addressed concerns from area residents at an open meeting here Friday as its weeklong examination of a BLEU Project building at NFS came to an end. Jerry O'Conner, a local business owner, told the NRC officials that they were *his only hope to prevent and correct some things that were already wrong.* "I am sitting on nine acres of land below your plant and it's loaded," O'Conner said. "Before you go and give them your blessing (for Project BLEU) make sure it is not going to contaminate. By God I'm going to fight and I'm going to fight with every last drop in me!" The NRC officials said it was their purpose to ensure no contamination occurs, and that was the reason for the current standards. Johnson City Press, 6/07/03 (Note: "During the past six (6) months Impact Plastics has been collecting groundwater data from beneath their property located at 1070 Industrial Drive in Erwin, TN which is approximately 0.1 miles northwest of Nuclear Fuel Services. The data from these sampling events indicates the presence of various volatile organic compounds (VOCs) such as tetrachlorethylene (PCE), trichloroethylene (TCE), cis-1,2-dichloroethylene (cis-1,2-DCE), chloroform and vinyl chloride at elevated concentrations.

Also, samples collected for radiological parameters have yielded data for gross alpha, gross beta, isotopes of uranium, isotopes of plutonium, isotopes of thorium and technetium-99 at activities above those of collected background samples.

Impact Plastics was concerned that this data needed to be presented to the appropriate agencies as there are nearby active users of groundwater that may or may not know what contaminants could potentially be present in that groundwater. *Thus, at the request of Impact Plastics and in the interest of protecting human health and the environment, this data is being transmitted.* Letter with Report from Jimmy Wingfield, President, Schreiber & Associates, LLC., Engineering & Environmental Services, Johnson City, TN, 3/28/02 (Note: See 04/30/04)

07/10/03 *Nuclear Regulatory Commission OKs a License Amendment For NFS's Uranium Project.* The NRC has approved the first of three Special Nuclear Material (SNM) license amendments NFS needs to implement a new uranium down blending project. The license amendment approved on Monday *also increases the amount of radioactive uranium-235 NFS is allowed to possess at its Erwin plant. The project is **one of the first in the nation** to convert surplus HEU from the DOE into enriched fuel to power commercial reactors.* The Greeneville Sun, 7/10/03

(Note: (R) means word or text has been redacted. IR means Inspection Report)

07/21/03 *NFS Inspection Report: NFS commitments:*

- *The availability of Items Relied on For Safety (IROFS) and to establish a document control system for new facilities to create, control and track documents within the configuration management function associated with IROFS, procedures that included IROFS, and procedures related to training, quality assurance, maintenance, audits and assessments, emergency operations, and*

emergency response. This documentation included design requirements, engineering drawings and/or sketches, specifications for IROFS, and the ISA Summary.

- Maintenance of IROFS
- Training and Qualification that will provide all personnel on site with the knowledge and skills to safely perform their job function, effectively deal with hazards of the workplace and properly respond to emergency situations.
- Procedures Development and implementation to include "Safety Procedures" to conduct SNM operations and related support functions concerning operations related to IROFs and their supporting management measures.
- Audits and Assessments which included audits and periodic inspections, would be performed to determine that site operations, as well as off-site operations, involving activities related to the IROFS were conducted in compliance with regulatory requirements, license conditions, and written plans and/or procedures. The program also included requirements for external audits of specified safety functions on a three year basis.
- Incident Investigation and Corrective Actions: Inspectors reviewed NFS's Problem Identification, Reporting and Correction System (PIRCS), and noted it contained provisions to report, track, and trend abnormal events with corrective actions assigned through the corrective action program. Abnormal events were reviewed frequently by a multi-disciplinary committee to assign the appropriate level of investigation based on the seriousness and risk of the event.
- Other Quality Assurance Elements: In License Application Section 2.12.8, NFS committed to establish a quality system consisting of the organizational structure, procedures, processes, and resources needed to implement quality management, under the overall responsibility of the Quality Assurance function manager.
- Operator Training: Inspectors reviewed the operators' materials & tests, and observed on-the-job training (OTJ) of the operators. Operators demonstrated adequate knowledge of UNB procedures and demonstrated the ability to operate UNB systems safely. NFS planned to complete operator certification during the supervised initial receipt of material.

Conclusion: Management measure proposed for the UNB met regulatory requirements to maintain the availability of IROFS, and were adequately implemented. NFS's training program provided reasonable assurance that operators were able to operate the system safely. IR 70-143/2003-04, Inspection dates 6/02-6/06/03

07/26/03	<i>Erwin's Nuclear Fuel Services Gets Weapons-Grade Uranium From Plant in South Carolina. <u>The Greeneville Sun, 7/26/03</u></i>
09/17/03	EA/FONSI for License Amendment Request dated October 22, 2002, Blended LEU Preparation Facility (BPF.) <u>ML032390428</u>
10/23/03	NFS filed a request for an amendment to its SNM-124, to authorize processing operations in the Oxide Conversion Building (Hereafter OCB) and the Effluent Processing Building (Hereafter EPB.) This request is the third of three license amendment requests and will bring more than 33 tons of weapons-grade uranium into Erwin for down blending. <u>Elizabethton Star, 1/18/04 & 2/06/04</u>
10/25/03	<i>NFS Levied Fine by NRC for Violations of NRC Requirements Related to the Control and Accountability of Nuclear Material.</i> The NRC determined that NFS could not account for a substantial amount of nuclear material for a period of about 6 weeks in June 2001. <u>The Erwin Record, 10/25/03</u>
01/03/04	<i>Citizen Files Motion With NRC Asking Delay On Nuclear Fuels' Application For BLEU Project. <u>The Greeneville Sun, 1/03/04</u></i>

*before date means Loss of Containment

- 01/08/04 *NFS Opposes Extension for Public Response.* Elizabethton Star, 1/08/04
- 01/17/04 *NRC Approves Second License Sought By NFS For BLEU Project.* The Greeneville Sun, 1/17/04
- 01/26/04 *NFS Inspection Report.* Licensee stored multiple SNM (R) containers in a location (R) which was neither designated for storage nor approved by posted station limit card. (One Violation, with three examples was identified with implementing licensee's nuclear criticality safety (Hereafter NCS) program. IR 70-143/2003-010, Inspection dates 12/15/03-12/18/03, ML081440508
- 01/17/04 *NRC Approves Second License Sought By NFS For BLEU Project:* NFS announced Wednesday that the second of three proposed amendments to its operating license for the BLEU project has been approved by the NRC. Linda Modica, group chairman of the Sierra Club's State of Franklin Group, responded to the NFS press release in a written statement sent to The Greeneville Sun. *"In another disappointing, but not surprising, action by the NRC, our government has again failed to protect our environment, our health or our security. Instead, the **NRC is doing what it was created to do: promote the nuclear industry.** Locally, the federal government's action has resulted in barely noticeable regulation of NFS--a private company of unknown ownership that is working with the French company, Framatome, on new processes that could seriously damage the already degraded air and water of the Nolichucky watershed."*
- "The second license for BLEU is one of three that NFS is seeking from the NRC. In an action known by lawyers as 'segmentation', NFS has been dribbling out the three licensing applications over the past couple of years for the apparent purpose of making the BLEU process seem less damaging to our air, water, safety and health. If the public is a sitting duck and NFS is the hunter and the NRC is the shotgun, then segmentation is the duck blind that, to the unaware prey, makes the threat of getting your brains blown out seem to disappear. Despite the fact that BLEU is being operated purely for the profit of the unknown owners of this privately-held corporation, and despite the fact this profit is being paid by public agencies like the DOE and TVA, the company continues to use 'national security' as an excuse for not divulging BLEU's projected discharges into our air and water." The Greeneville Sun, 1/17/04 (Note: *"It approves NFS's **proposed** safety controls through the phase II process"*, David Ayres, fuel facilities inspector at NRC's Region II office in Atlanta, said Wednesday. *"The next step, once they are ready for us to go and inspect the new equipment, is for us to **verify all the commitments made to insure next.**" That won't take place for at least two months." The second amendment green-lights the BLEU Preparation Facility (BPF) enabling NFS to process approximately half of the BLEU Projects 33 metric tons of surplus HEU, with the other half being down blended at the Savannah River Site (SRS) near Aiken, S.C. *Ayres said the second amendment's approval authorized NFS to begin to start processing. The second license amendment request also **includes approval of safety systems installed pertaining to the BLEU Project.** Ayres said NRC would review safety systems in a readiness review to verify the second amendment request passed muster. "It will go through the same type of inspection that phase II and I went through," said Ayres. *"Once they iron out the safety controls and headquarters is satisfied with their plans and commitments we will do a readiness review inspection"*. NRC Grants Second License Amendment to NFS for BLEU Project, Elizabethton Star, 1/15/04***
- 03/11/04 *NFS Inspection Report.* Criticality alarm system has had 27 trouble alarms since Nov. 2003. Licensee failed to control unfavorable geometry bags with volumes greater than (R). Six plastic bags with volumes greater than 3.3 liters were opened and unattended in the 800 area. This had the potential for solution accumulation in excess of licensee's (R) volume limit. Inspectors determined in the event of a solution spill, the size and shape of the holes on five of the bags and lack of holes in the sixth bag would permit the accumulation of greater than (R) of solution. IR,70-143/2004-201, Inspection dates 2/23/04-2/27/04, 3/11/04, ML081440450

- 03/12/04 *NFS License Performance Review (LPR)*. Failure to maintain a control in the (R) process area according to configuration management led to a **fire**. A detailed criticality safety analysis was not performed when changes to existing equipment and procedure changes were made in order to process licensed material where more than a safe mass existed and double batching was possible (IR 2004-01); Mass (R) limits for (R) containers of (R) were **exceeded** when material was moved from one (R) area to another by operators who did not know the NCS requirements for the (R) area; (R) containers of (R) **exceeded** the (R) H/X ratio established by NCS for a (R) because no method of verifying the actual H/X ratio of the material prior to placing the material (R) had been established. LPR of Licensed Activities for NFS, Inspection dates 1/20/03-1/24/04 ML081440081
- 03/19/04 An administrative law judge for the NRC granted federal standing to only one of three petitioners seeking a public hearing about the BLEU Project. NRC Judge Alan S. Rosenthal granted standing to the State of Franklin Group of the Sierra Club. The Sierra Group included fellow environmental organizations the Friends of the Nolichucky River Valley, the Oak Ridge Environmental Peace Alliance, and TN Environmental Council, along with Kathy Helms-Hughes.
- In his order, Rosenthal writes, "It is beyond civil that Sierra has satisfied the area of concern requirement. Sierra's environmental concerns are germane, Rosenthal writes, and includes the same may be said of its three specified safety concerns." Pertaining to Sierra's petition regarding a potential accident involving HEU, Rosenthal writes, "there is little room for serious doubt that, were an accident of the kind postulated in the EA to occur, persons residing within a short distance of the Erwin site might well be threatened with injury". Elizabethton Star, 3/19/04
- 04/21/04 Officials from NRC's Region II office met with NFS administration to discuss the LPR to monitor activities at NFS from Jan. 20, 2003-Jan. 23, 2004. NRC said incidents occurred during the evaluation period where certain safety controls were not fully understood by workers. The review reported a detailed criticality safety analysis was not performed when changes to existing equipment and procedure changes were made in order to process licensed material. NRC officials acknowledged in February that NFS's growing operations (particularly the BLEU Project) were an impetus to add the second inspector and added **the programs' success lay in meeting NRC compliance**. Elizabethton Star, 4/21/04
- 04/21/04 *Nuclear Regulators Tell NFS To Increase Safety Education*. The Greeneville Sun, 4/21/04
- 04/30/04 *Memorandum to Richard Udell, Department of Justice (DOJ)*: "This memo sets out concerns and allegations expressed to me by two former employees of NFS, Erwin, a nuclear fuel reprocessing facility in eastern TN. I have reviewed materials in state agency files, on the NRC website and in a federal courthouse in an effort to confirm some of what they reported, but ultimate confirmation requires conversations with NFS officials and perhaps additional soil and groundwater sampling, even core drilling, which are far beyond our capabilities. We are providing this information to you in the hopes that DOJ and EPA can determine the truth of the allegations and take any steps necessary to protect public health and the environment".
- "The two former employees raising these concerns are willing to discuss them with federal or state officials. I believe you will find that these gentlemen have come forward strictly out of desire to protect their community from continuing exposures to hazardous and radiological wastes. Though not employed at NFS since the late 1980's, they continue to watch friends and former colleagues experience declining health, even death, which they suspect could be due in part to occupational exposures to hazardous and radioactive materials. Also, a neighboring business owner filed suit against NFS in federal district court in Greeneville, TN over ground water contamination that has migrated to his property from NFS".
- These former NFS employees "have described observing and participating in seemingly illicit burial of over 1000 drums of potentially hazardous waste of uncertain composition (believed to be spent solvent waste)

and of heavy equipment (bulldozer, backhoe, pick-up truck) that was contaminated with residual radioactivity, all in a pit dug 40-50 feet deep in the southwest corner of the site along the railroad tracks (opposite end of the facility from the North Site burial grounds). They described the heavy equipment, in particular, as “too hot” (radioactive) to be buried in the North Site burial grounds, even after repeated cleansing. The pit was filled in and a building built on top of it which they believe is now identified as the 310 Building. This occurred in the mid-1970’s, to the best of their recollection, and they believe that material is still buried there”.

“We are not able to determine whether the existence of this disposal site was ever disclosed to EPA, NRC or TDEC. Nor can we be certain of the extent of off-site migration of groundwater contamination, though there has been relatively extensive groundwater sampling in recent years, partly as an integral component of the RCRA corrective action and partly in connection with litigation filed by the adjoining business owner (Impact Plastics, Inc. et al v. Nuclear Fuel Services, Inc., Civil Action No. 2:02-CV-148 (E.D. TN at Greeneville). NFS has acknowledged that some contaminated groundwater was discharging to surface waters through Banner Spring Branch, a small stream that originates on site and flows into Martin Creek, a tributary to the Nolichucky river. See, e.g., North Site Characterization Report, prepared by NFS for NRC, p.43 (November 1997). In fact, NFS is encapsulating part or all of Banner Spring Branch in an enclosed culvert to avoid additional discharges of contaminated groundwater into the stream, which arguable could have constituted an unpermitted point source discharge in violation of the NPDES program of the Clean Water Act. See, e.g., 66 Fed. Reg. 3015 (re EPA CAFO permit) re discharges through direct hydrologic connection between groundwater and surface water requiring NPDES permit”.

“That disposal of drums and heavy equipment may or may not have been illegal at the time it was conducted, but it certainly bears investigating whether it is contributing to ongoing contamination of groundwater that is migrating off-site and may be discharging to surface waters. If contamination is seeping directly to the Nolichucky River or discharging into surface waters that feed the Nolichucky, it will certainly be diluted to levels that some will argue are of no concern. Interestingly, TVA is currently preparing an EIS for ways to address sediment accumulation behind Nolichucky Dam downstream of Erwin (7.5 miles south of Greeneville). TVA found elevated levels of beryllium, a heavy metal used in some processes at NFS, in three sediment samples taken from Nolichucky Reservoir. See Draft EIS, Nolichucky Reservoir Floor Remediation, ch. 3, p. 71. Even though the beryllium was found at “levels of concern”, TVA concluded without further study that it was due to its presence in local geology. Yet it was interesting to note that elevated levels of beryllium were found only at deeper sediment depths, possible indicating higher contributions in earlier years, perhaps from some source other than local geology”.

“There are other historic incidents which give graphic descriptions—spilled plutonium and thorium wastes; burial of wastes from the NFS plant in West Valley, NY; a full liter of mercury accidentally lost down the drain—as well as occupational exposures to radioactive and hazardous materials that continue to affect their health, as well as those of friends and former colleagues who worked or may still work at NFS. Again, it is not their intention to dredge up ancient history that has no bearing on current conditions. They sincerely believe, and I would concur, that these practices and incidents could still pose a threat to public health and the environment and need to be evaluated and cleaned up as necessary”.

“Equally if not more disturbing than the historic and ongoing contamination is the possibility that NFS or its corporate predecessors actively concealed some of these disposal sites from regulators and the public, withholding this information from EPA, NRC, TDEC and others. I trust that the corporate culture and management of Nuclear Fuel Services is vastly improved and more open today relative to the 1970’s, but an investigation of these alleged practices would still appear to be worthwhile”.

“I hope you will take advantage of the willingness of these former employees to come forward and help identify such past practices and sites that may be contributing to continuing contamination and threats to

public health and the environment". Letter from Richard A. Parrish, Senior Attorney, Southern Environment Law Center, 201 West Main Street, Charlottesville, VA, 22902, RE: Nuclear Fuel Services, Erwin, TN, to Richard Udell, Department of Justice (DOJ), pp. 1-5, April 30, 2004

- 05/10/04 Over two years later Department of Energy/Naval Reactors (DOE/NR—Letter from Patrick Card to Glenn Tracy) informed the NRC that documentation pertaining to the NRC licensees Nuclear Fuel Services, Inc. (NFS) and BWX Technologies, Inc. (BWXT), which had previously been made publicly available by the NRC, should be considered, at a minimum, Official Use Only (**OUO**) on the basis that it constitutes sensitive unclassified information (SUI). ML072540300 (See 3/19/02)
- 05/14/04 *Loss of Criticality Safety Controls.* Event Report 40750
- 05/17/04 *NFS Inspection Report.* From September 9, 2002 through January 12, 2003, operations which involved **more than a safe mass** of licensed material where double batching was possible were performed without a detailed criticality safety analysis. **Failure to develop a Pre-Fire Plan when two new projects were being designed, constructed and operated.** IR 70-143/2004-03, Inspection dates 3/07/04-4/17/04, ML081440458 (Five Months!)
- 06/14/04 *EA/FONSI (Finding of No Significant Impact for License Amendment Authorizing Operations at the Oxide Conversion Building and the Effluent Processing Building at the BLEU Complex.* ML041470176
- 06/18/04 Letter from Glenn Tracy to Patrick Card responding to his request to withhold documents currently available to the public in the licensing files for NFS, Inc., in Erwin, TN and BWXT in Lynchburg, VA, and treating them as Official Use Only (OUO). ML072900407
- 06/24/04 *Removable Surface Contamination Greater Than Limits.* Event Report 40840 CHECK THIS
- 07/15/04 *Nuclear Fuel Services Praises NRC's OK for Uranium Project.* The Greeneville Sun, 7/15/04 Note: The NRC issued a 92 page report supporting the latest licensing amendment as meeting federal safety standards. "NFS has constructed hazard analysis that identified and evaluated and **established safety controls** to provide reasonable assurance of a safe facility operations," the agency said. Nuclear Fuel Services In Erwin Begins 'Down blending' Uranium, The Greeneville Sun, 10/14/04
- 07/21/03 NFS Inspection Report:
As Low As Reasonably Achievable (ALARA) goal for Calendar Year (CY) 2003, based on NFS' calculations, was established to be a maximum of 1000 millirem per year (mrem/yr) whole body Total Effective Dose Equivalent (TEDE) to the workers. Regulatory limits are 5000 mrem/yr. NFS expected to lower the goal for the next CY. Regulatory dose limit to the public in 10 CFR 20.1301 is 100 mrem/yr. NFS' calculation TEDE for the complete operation of the UNB is 93 mrem/yr at the fence line behind the building. NFS established an action limit for the fence line of 80 mrem/yr for a member of the public. *In order to meet this goal, NFS will limit the amount of material stored in the UNB until additional surveys have been performed in order to refine the model for expected dose from the facility.* **NFS commitments:** (promise, legal responsibility, assurance, vow)
1. The availability of Items Relied on For Safety (IROFS) and to establish a document control system for new facilities to create, control and track documents within the configuration management function associated with IROFS, procedures that included IROFS, and procedures related to training, quality assurance, maintenance, audits and assessments, emergency operations, and emergency response. This documentation included design requirements, *engineering drawings and/or sketches, specifications for IROFS, and the ISA Summary.*
 2. *Maintenance of IROFS*

3. Training and Qualification that will provide all personnel on site with the knowledge and skills to safely perform their job function, effectively deal with hazards of the workplace and properly respond to emergency situations.
4. Procedures Development and implementation to include "Safety Procedures" to conduct special nuclear material (SNM) operations and related support functions concerning operations related to IROFSs and their supporting management measures.
5. Audits and Assessments which included audits and periodic inspections, would be performed to determine that site operations, as well as off-site operations, involving activities related to the IROFS were conducted in compliance with regulatory requirements, license conditions, and written plans and/or procedures. *The program also included requirements for external audits of specified safety functions on a three-year basis.*
6. *Incident Investigation and Corrective Actions: Inspectors reviewed NFS's Problem Identification, Reporting and Correction System (PIRCS), and noted it contained provisions to report track and trend abnormal events with corrective actions assigned through the corrective action program. Abnormal events were reviewed frequently by a multi-disciplinary committee to assign the appropriate level of investigation based on the seriousness and risk of the event.*
7. Other Quality Assurance Elements: In License Application Section 2.12.8, NFS committed to establish a quality system consisting of the organizational structure, procedures, processes, and resources needed to implement quality management, under the overall responsibility of the Quality Assurance function manager.
8. Operator Training: Inspectors reviewed the operators' materials & tests, and observed on-the-job training (OTJ) of the operators. Operators demonstrated adequate knowledge of UNB procedures and demonstrated the ability to operate UNB systems safely. NFS planned to complete operator certification during the supervised initial receipt of material.

Conclusion: Management measures *proposed* for the UNB met regulatory requirements to maintain the availability of IROFS, and were adequately implemented. NFS's training program provided reasonable assurance that operators were able to operate the system safely. IR 70-143/2003-04, Inspection dates 06/02-6/06/03, ML032030415

- 07/27/04 *Fire/Explosion in Off-Gas System.* Radiological hazard involved a quantity of HEU Event. Report 40901
- 08/21/04 *NFS Inspection Report. As part of the safety program, licensee **committed** to establish management measures to maintain the reliability of IROES. During review of the fire protection IROFS for the (R) system, it was noted the functional test of the (R) detection interlocks did not verify the (R) detector was in calibration **prior** to performance of the test. A test deficiency was identified in the IROFS test that prevented backflow from the operations areas into the (R) chemical areas. The inspectors identified several SRE tests were **inadequate** in that the tests did not properly verify the IROFS safety function and required **significant** modification. IR 70-143/2004-05, Inspection dates 3/29-6/18/04, ML081290542 (See NFS Commitments—7/21/03)*
- 08/24/04 *Official Use Only (OUO) policy began. Letter from NRC Chairman Kale Klein to Congressman Bart Stupak, Chairman, House Subcommittee on Oversight and Investigations; and, NRC News Release, September 4, 2007*
- 08/27/04 *From system startup in 1999 until May 14, 2004 an engineered control was unable to detect an undesired situation, was unable to implement corrective action without requiring human intervention and was not capable of performing the criticality safety purpose for which it was specified. Pre-decisional Enforcement Conference Agenda, NFS, 9/24/04, ML081500428 & ML081430457 (Six Years!)*
- 09/20/04 *NFS Inspection Report. Failure to perform SRE test in accordance with procedures. NFS *planned* to rewrite the SRE test to clearly set acceptable operating values for filters. **From August 2003 to April 2004,***

*before date means Loss of Containment

- stack (R) had frequently exceeded licensee established action points.** July 26, 2004 a **fire** occurred. August 3, 2004 a **fire** occurred. Fire (R) damaged equipment. IR 70-143/2004-04, Inspection dates 4/18-5/29/04, ML081500427 (9 Months!)
- 10/06/04 *Safety Related Needle Valves in Incorrect Position.* Potential Vulnerability to workers and public of a high consequence event involving failure of safety controls that were designed to prevent a **hydrogen explosion** in the BLEU Preparation Facility U-Aluminum Dissolution glove-boxes/dissolvers. NFS Event Report 41097 A previously unidentified failure mode for a piece of safety related equipment (SRE) during an Integrated Safety Analysis (ISA) review. The amount of material available was sufficient to form a **critical mass**. It was determined the merits of this case warrant the exercise of **discretion**. Enforcement Discretion, IR 70-143/2004-04, 10/06/04, Inspection dates 4/18-5/29/04, ML081500427 (License Violation?)
- 10/13/04 *Nuclear Regulatory Commission Approves Last of Amendments NFS Needs for Uranium Blending Project.* The Greenville Sun, 10/13/04
- 10/14/04 *Nuclear Fuel Services in Erwin Begins 'Down-blending' Uranium.* The NRC issued a 92 page report supporting the latest licensing amendment as meeting federal safety standards. "NFS has constructed hazard analysis that identified and evaluated and established safety controls to provide reasonable assurance of safe facility operations," the agency said. NFS was told by the NRC on July 30 the third license change had been approved. The Greenville Sun, 10/14/04
- 10/18/04 Third phase of the BLEU project approved for the Oxide Conversion Building (OCB) and Effluent Processing Building, (EPB) and determined to be adequate for commencement of operations. IR 70-143/2004-11, Inspection dates 8/16-09/03/04, ML081440452
- 10/19/04 *Environmental Groups Seek Revocation of NRC Permits For NFS's Uranium Project.* The Greenville Sun, 10/19/04
- 10/25/04 Licensee released waste effluent from the Caustic Discard hold columns without the demonstration that U-235 concentration was less than (R). IR 07000143-2004-207, Inspection dates 11/01/04-11/05/04, Report date 2/10/05, ML081440507
- 10/26/04 *Failure of Safety System Causing Unfavorable Geometry.* A **transfer** of low concentration HEU solution from favorable to unfavorable geometry initiated upon sampling data. *The solution was determined to be above the transfer concentration limit.* Event Report 41149
- 11/15/04 *Wet Offgas (WOG) Line Calculation Not Performed.* IROFS (R) was not reliable and available on (R) and (R) transfers to (R) which occurred on Oct. 28, Nov. 2, Nov. 11, 2004 and Nov. 15, 2004. Event Report 41197 (Four Transfers!) See 7/21/03
- 12/08/04 *Amendment 56. Revisions to Fundamental Nuclear Material Control Plan of LEU.* TAC L31844, ML072630218
- 12/13/04 *NFS Inspection Report. A fire resulted (R) due to the temporary manifold mixing the flammable gasses into the Inert gas line. One fire safety IROFS inoperable. IROFS out of service due to operational errors; Failure to follow criticality safety requirements for discard of waste containing (R) material. Failure to meet nuclear criticality safety limits for a transfer of liquid process waste. Failure to maintain configuration control of temporary equipment.* IR 70-143/2004-10, Inspection dates 10/03-11/13/04, ML081440453 (See 7/21/03)

- 12/17/04 *Criticality Control Event. Materials were transferred to a storage area without being transferred through a particular device as required by Standard Operating Procedure (SOP) which prevents a more reactive/incorrect material type from being transferred. Event Report 41274*
- 01/05/05 *Closed meeting between NFS and the NRC, Region II, to provide NFS the opportunity to discuss its performance and the results thus far in improving both safety culture and regulatory performance. Organizational initiatives, status of actions to improve safety and equipment performance, and root causes and commonalities among recent operational challenges associated with the BLEU project were discussed. Letter dated 12/16/04 from NRC to NFS, ML081500236*
- 01/06/05 *NRC staff representing the Offices of Nuclear Security and Incident Response and NMSS met with NFS and the DOE (R) at the NFS site in Erwin, TN. The purpose of the closed meeting was to discuss NFS procedures (R). It was agreed that NFS (R) and implement procedures (R). NRC staff will review any changes (R). (All remaining has been **redacted**). NFS Meeting Summary, RE: (R), 1/14/04, ML081500228*
- 01/07/05 *Faulty Programmable Logic Controller (PLC) for Oxide Dissolution Operation. The PLC for the Oxide dissolution operation had a negative holdup value. A negative holdup value in the PLC results in the PLC using an artificially high mass limit. Event Report 41316*
- 01/13/05 *Amendment 58—Approve Administrative Changes to Air Sampling and Bioassay Programs. ML072630198*
- 01/27/05 *Closed Meeting Summary from NRC. “The meeting afforded you the opportunity to discuss other issues including safety performance, operational performance challenges, (R), new initiatives in procedural improvements, management programs and core values. Meeting provided the NRC with an acceptable level of confidence of NFS’ plans to improve the facility’s performance in the above areas”. Letter to NFS from NRC, ML081370274*
- 01/27/05 *Unicoi Officials Ready to Deal With Derailment Hazards. Unicoi County Director of Emergency Management Ed Herndon said Wednesday, “Safety measures and evacuation plans are constantly reviewed in Unicoi County since 911 and especially since the Internet has alerted us to the fact NFS is on a **terrorists’ target list**”. Johnson City Press, 1/27/05*
- 02/02/05 *Letter to NFS from NRC, Region II, confirming discussion between NFS staff and NRC advising no objections of Oxide Conversion Building (OCB) introducing LEU into the OCB based on inspections of safety controls during inspections of Jan. 3-7 and Jan. 10-12, 2005. NRC staff reviewed equipment, startup test results, procedures, hazards and safety analyses and conducted interviews with AREVA/Framatome personnel who will be involved in the process, including employees in operations, technical support and management. ML081370404*
- 02/09/05 *From September 9, 2002 through January 12, 2003, operations which involved **more than a safe mass** of licensed material where double batching was possible were performed under temporary procedures which involved changes to existing equipment, without performing a detailed criticality safety analysis. The NCS controls in place to prevent double batching to produce more than a safe mass **were not sufficient** to adequately prevent credible changes in process conditions **that could lead to a criticality accident**. The main concern for criticality safety for this operation was preventing more than a safe mass from getting in (R). Solutions pumped (R) had a concentration limit that was not to be exceeded but administrative controls on concentration of solutions **did not work** and solution **above the limit** was (R) on at least one occasion. Response to Disputed Notice of Violation, IR 70-143/2004-03, EA-04-207, ML081360341 (Five Months!)*

- 02/10/05 *NFS Makes First BLEU Delivery.* “This project is helping TVA control its energy costs and improve the quality of air in the valley,” stated NFS CEO, Dwight Ferguson. Johnson City Press, 2/10/05 (See Note at 2/14/01)
- 02/10/05 *NFS Inspection Report.* March 9, 2004, Scenario 4.1.7 failed to ensure the introduction of the more reactive materials (R) would not result in a k-effective **exceeding** 0.95. Scenario 4.2.7’s analysis did not consider optimal placement of the more reactive material. IR 07000143-2004-207, Inspection dates 11/01-11/05/04, ML081440507
- 02/11/05 *NFS Inspection Report.* Double contingency (R) of the NCSE for the OCB Scrap Dissolver was not adequately established. Licensee released liquid waste effluent from the caustic discard (R) without the demonstration the U235 concentration was less than (R); **less than a safe mass** of enriched uranium was involved in the **transfer**. IR 70-143/2004-207, Inspection dates 12/13-12/17/04, ML081440512 & ML081440511
- 03/04/05 *NFS Cited for Failing to “Secure or Properly Attend” SNM.* Johnson City Press, 3/04/05 and Federal Register, Vol. 72, No. 145
- 03/22/05 *NFS License Performance Review (LPR).* Your prior corrective actions have not been effective. Our current review concluded improvements were needed in the development and documentation of nuclear criticality safety bases and the oversight of your (R) program. Items Relied on For Safety (IROFS):
- Licensee compromised an IROFS when they failed to demonstrate the concentration of the material in the (R) BLEU Preparation Facility was less (R) prior to discharge.
 - Licensee compromised an IROFS when they failed to control (R) unfavorable geometry bags that were open and unattended (R).
 - Licensee compromised an IROFS when they failed to remove an unfavorable geometry bag from the OCB process area after use.
 - Licensee compromised an IROFS when they failed to remove an unfavorable geometry bag from (R).
 - Licensee failed to verify the availability of a fire safety IROFS for the (R) system, Non Cited Violation (NCV).
 - Failure to follow fire safety procedures that involved new areas/modifications.
 - Improper implementation of Letter of Authorization (R) for the (R) was not properly implemented and led to a **fire (R)**.
 - The NCS evaluation (R) failed to adequately demonstrate a k-effective below 0.95.
 - An engineered control was not capable of performing the NCS purpose for which it was specified (Enforcement Discretion).
 - The NCS evaluation for the (R) operation had been modified to replace an active engineered control with an administrative control.
 - The (R) NCS evaluation lacked justification for replacing the engineered (R) control with an administrative sampling control in a human performance challenged operating environment. LPR, Inspection dates 1/25/04-1/22/05, ML081370278 (See 7/21/03 & 8/21/04)
- 03/24/05 *Loss or Degraded Safety Items-Equipment Piece for Storage Rack Not in Place for Safe Storage of SNM.* Event Report 41523 (Retracted 4/06/05)
- 03/30/05 *Judges Uphold Decision to Allow NFS to Convert Uranium for TVA.* “There is simply no basis in the record at hand for a determination on our part the staff’s environmental review failed to adequately consider the possibility of the occurrence of an accident with serious environmental consequences”.

Linda Modica, chairwoman of the local Sierra Club stated “When a new process proposes to increase plutonium discharges into the Nolichucky River by 5.8 million%, thorium discharges by 210,000%, and increase uranium by 16.6%, we believe the public’s interest were best served if that hard look was done by the regulators.” The Sierra Club said NFS’s own documents show the BLEU proposal “poses significant environmental hazards that must be studied carefully and reported to the public in an environmental impact statement (EIS). Hazards include chemical spills, radioactive gas releases, explosions and uncontrolled chain reactions.” Johnson City Press, 3/30/05

- 04/04/05 NFS Inspection Report. **From process startup in June 2004 to January 7, 2005** the safety related equipment process logic controller (SRE PLC) for the **(R)** process **was not capable** of performing the criticality safety purpose for which it was specified, in that the PLC was not capable of monitoring or detecting holdup of material in the process and would not properly control **(R)** material mass as required. IR 70-143/2005-01, Inspection dates 1/23-3/05/05, EA-05-032, ML081440195 (Eight Months!)
- 04/14/05 Letter to NFS from the NRC concerning closed meeting at NFS on April 14, 2005 to discuss the NRC evaluation of NFS’ performance in safety operations, radiological controls, facility support, licensing activities, and safeguards and *provided the NRC with an acceptable level of confidence of NFS’ plans to improve management oversight of safety performance.* Closed Meeting Summary (LPR), NFS, 11/28/05, ML081440084
- 04/22/05 Amendment 62: Request for Possession Limit Increase of U-235. (Approved by NRC 6/28/05, two months later). ML072630137
- 04/28/05 *Inadequately Controlled or Analyzed Pathway Material Accumulation. A solution accumulated in a HEPA filter housing on the building **(R)** roof. Analysis of the solution determined the liquid to be a caustic byproduct of the process. Further analysis indicated that approximately **3 grams** of U-235 were in the HEPA housing and filter. Further reviews of the system design identified potential pathways from the Uranium-Aluminum dissolution system that did not appear to be adequately controlled or analyzed. Event Report 41651*
- 05/16/05 NFS Inspection Report. Licensee identified an omission in environmental sampling requirements, in that insoluble activity in the BLEU complex sewer effluent was not analyzed. Monthly samples were required but not obtained for September, October, and November of 2004 and January, 2005. This non-repetitive, licensee-identified and corrected violation is being treated as a NCV. IR 70-143/2005-02, Inspection dates 3/06-4/16/05, ML081440509 (Four months is considered non-repetitive?)
- 05/23/05 An inspection completed by the NRC on Jan. 24, 2004 and an Office of Investigation (OI) was completed on March 3, 2005 concerning circumstances at NFS on December 31, 2003 that a process waste collection tank (WD tank) discharge valve to the Waste Water Treatment Facility (Hereafter WWTF), **(R)** was open when it was required to be locked closed. NRC staff concluded the violation was due to the deliberate misconduct of the process operator involved. *The violation was characterized as a Severity Level III. Notice of Violation, NFS, NRC (OI), Report 2-2004-003, EA-04-199, ML081500429 (Two years later!)*
- 05/31/05 Letter referring to the apparent violation (Hereafter APV) that occurred on May 31, 2005, when a NFS acting building manager transferred raffinate **(R)** waste into **(R)** without procedural authorization. This event occurred in the BLEU Preparation Facility. This letter also refers to an investigation completed by the NRC Office of Investigations (OI), March 29, 2006. Based on the evidence developed during the investigation, the NRC concluded the supervisor’s *actions were willful* and that the acting building manager involved in the transfer of **(R)** raffinate waste solution to the condensate waste storage area *has been involved in several previous examples of procedural non-compliance at NFS.* Confirmation of Closed Pre-Decisional

Enforcement Conference (NRC IR 70-143/2005-004) and NRC Office of Investigations, Report 02-2005-27, EA-06-141, 7/03/06, ML081500426

- 06/02/05 *NFS Inspection Report. Criticality Safety Inspection to review Event 41651 that occurred on April 7, 2005 involving the discovery of uranium contaminated caustic solution of the (R) dilution system HEPA filter housing. On April 28, 2005, the BLEU (R) dilution ventilation system had only one drain and no (R) so that double contingency for the backflow of solution into the (R) dilution process ventilation system is a violation (70-143/2005-203-01. The inspectors noted more than **three weeks** had been assigned to accomplish the corrective action even though an accumulation in a HEPA filter housing would violate Nuclear Criticality Safety (NCS) controls. IR 70-143/2005-203, Inspection dates 5/02/-5/04/05, ML081480315 (cover letter) and ML081480316 (report). (Reported to NRC over 3 weeks later on 4/29/05, ML081440517)*
- 06/22/05 *NFS, Environmental Assessment (EA and FONSI concerning request to increase possession limit (TAC L31887). This EA is limited to the proposed possession limit increase and any cumulative impacts on existing plant operations. Existing conditions and operations for the Erwin facility were evaluated by the NRC for the environmental impacts in a **1999 EA** related to the renewal of the NFS license and a **2002 EA related to the first amendment** for the BLEU Project which assessed the impact of the entire BLEU Project using information available at that time. A 2003 EA (FONSI) and a 2004 EA (FONSI) related to additional BLEU Project amendments confirmed the FONSI issued in 2002. The proposed action will not result in any new or modified accident sequences. The NRC finds the safety controls to be employed in the proposed action appear sufficient to ensure planned activities will be safe. NFS, EA and FONSI concerning Request to Increase Possession Limit (TAC L31887), ML081410186*
- 06/27/05 *NFS Inspection Report. On April 7, 2005, licensee attempted to rework (R) waste solution (R). The operation required manipulation of several manual valves, and the lineup was performed in such error the waste solution was pumped to the off-service column. The operation eventually filled the column, which overflowed into the (R), filled the process off-gas piping, and overflowed into the (R) dilution ventilation system on the roof. System was not shut down until April 28, and the event was reported to the NRC on April 29, 2005. (Over three weeks later). See NFS Event Report 41651 on 4/28/05 and 6/02/05.*
- During a routine stack sample collection on May 2, 2005, licensee determined the sample from the (R) dissolution stack (R), BPF Process Exhaust (R) indicated an initial elevated reading of 53,961.90 disintegrations per minute (dpm) for alphas, and 192,528.74 dpm for betas. The samples were held for 7 days and recounted by licensee to allow radon and its associated daughters to decay. After the 7-day recount, the alpha reading indicated 3,381.48 dpm and the beta reading indicated 1,267.10 dpm. NFS's **action limit for alpha is 130 dpm and 5,000 dpm for betas**. As of May 19, 2005, the alpha reading on the stack air filter was still above licensee's action limit of 130 dpm. A **fire** occurred in an area which had undergone extensive repairs and was in a startup mode. Equipment deficiency was identified as the cause of the fire. IR 70-143/2005-03, Inspection dates 4/17-5/28/05, EA-04-199, ML081440517 (Note: NFS exceeded their action limits for alpha's and betas three weeks or longer!)*
- 06/28/05 *Amendment 62-Approve Possession Limit Increase. ML072630137*
- 06/30/05 *NFS cited for failing to "secure or properly attend" special nuclear material (SNM). Johnson City Press, 6/30/05 and Federal Register, Vol. 72, No. 145*
- 07/01/05 *July 1, 2005 Email from Bill Gleaves, BWXT Project Manager, to Patrick Card, DOE/NR. Subject: Communication Plan—Withholding of information Concerning NFS and BWXT. Page 2 of the Communication plan stated "NOTE": The NRC will not reveal that most NFS and BWXT public information was removed from public access due to concerns raised by DOE/NR." ML072900428*

- 07/09/05 **Fire/Explosion** in Waste (Calciner) Furnace loaded with Low Level contaminated scrap materials. Air contacted the hot gases leaking from the calciner and the gasses were ignited. A pre-filter in the vent duct caught **fire**, the HEPA filter was damaged and part of the vent duct melted. Event Report 41839
- 08/02/05 Closed meeting at NRC's Region II Office in Atlanta, Ga., during which was discussed future licensed activities associated with processing SNM at the NFS facility. Specifically discussed was tentative projects that NFS is pursuing (**R**) involving taking possession and processing radioactive material. Letter from NRC to NFS, ML081360179
- 08/05/05 *NFS Inspection Report. Elevated isotopic analysis on a stack sample above licensee's action limit concerned an elevated result on a stack sample **above licensee's action limit**. The elevated stack sample result (**R**). An investigation was unable to state how much material might have been vented out the stack on May 2, 2005. The system normally operated continuously and no system isolation or lockout was utilized. The inspector questioned how NFS maintained control over the system. Poor maintenance practice **resulted in increased exposure**. IR 70-143/2005-04, Inspection dates 05/29/07/09/05, ML081480308 (See 6/27/05)*
- 09/09/05 *NFS Inspection Report. Use of positive bias resulted in a Upper Safety Limit (USL) greater than the **maximum** allowed k_{eff} limit of 0.95 for abnormal conditions. Failure to prohibit use of positive bias in calculating USL values for HEU operations. IR 70-143/2005-205, Inspection dates 8/08-12/05, ML081490101*
- 09/19/05 *NFS Inspection Report. July 8, 2005 a **fire** occurred in the (**R**) where the (**R**) developed an electrical fault. July 9, 2005, a second **fire** occurred in the (**R**). Some equipment damage occurred, including significant deformation of the PVC ventilation piping from the process. Due to confusion, the Fire Brigade did not respond to the scene. The event demonstrated this aspect of system operations also *increased the probability of a fire in the enclosure.**
- On July 25, the (**R**) process was in operation when hot (**R**) solution **overflowed** from the (**R**), into the enclosure overflow line and **onto the floor**. The hot solution caused the clear (**R**) lines to sag and deform. The event was caused by poor level control in the (**R**). Design of the enclosure overflows did not foresee the possibility that solution at an elevated temperature would overflow (**R**).*
- August 3, the inspectors observed open piping flanges and **visible** residue on pipes and on the floor (**R**). Surveys found transferable alpha contamination levels in the area **above** established **action limits** of 5,000 dpm/100 cm². Surface contamination levels on the floor, piping, and inside the flanges ranged from 12,488 dpm/100 cm² to 99,112 dpm/100 cm². IR 70-143/2005-007, Inspection dates 7/10-8/20/05, ML081480306*
- 10/05/05 Memorandum to those on Attached List from Robert C. Pierson, Director, Division of Fuel Cycle Safety and Safeguards, Subject: Update of Communication Plan for Withholding Information from the Public regarding NFS and BWX Technologies. ML072540300
- 10/08/05 *Criticality Alarm system Inoperable in the NDA/Loading Dock Area Due to Detector Failure (Safety Equipment Failure). Event Report 42047*
- 10/21/05 *Potential Degradation of Glove-box Overflow Drains Under Certain Vacuum Conditions (Loss or Degraded Safety Items). Notification to NRC on 11/10/05. Enclosure vacuum was not considered in the set-point analysis for these drains such that, under certain circumstances, the drains may not function as intended. The degraded safety scenario would involve HEU concentration solution entering the glove box. Event Report 42133*

- 10/28/05 *Discard of Caustic Solution to Waste Tank Without Sample and Analysis (Safety Equipment failure). Solution volume discarded without sampling was 270 liters. Event Report 42089*
- 10/31/05 *NFS Inspection Report. Failure to maintain configuration control of facility design modifications. IR 70-143/2005-08, Inspection dates 8/21-10/01/05, Events 41197 & 41839, ML081480305 (See 7/21/03)*
- 11/08/05 ***Exceeded Mass Limit Requirements (Unanalyzed Condition).** Failure of IROFS for Environmental Safety Program. Licensee failed to close and lock the block and bleed valves, and subsequently **released** approximately (R) of liquid waste effluent from (R) to unfavorable geometry tanks without confirmation of the U-235 concentration. Event Report 42131 (See 7/21/03)*
- 11/09/05 *NFS Cited for "Failure to Secure or Properly Attend" Special Nuclear Material. Johnson City Press, 11/09/05 and Federal Register, Vol. 72, No. 145*
- 11/16/05 *Amendment 65: Approval of Changes to Fundamental Nuclear Material Control Plan for HEU. ML072630118*
- 12/05/05 *Letter confirming meeting to discuss safety (R) improvements at NFS. Confirmation of closed meeting, NFS, 12/08/05, ML081360257*
- 12/07/05 *Apparent Loss of Natural Thorium Shipment. Event Report 42191*
- 12/16/05 ***NFS Inspection Report.** An APV was noted for failure to meet performance criteria relating to nuclear criticality safety. A poorly controlled modification of a process enclosure drain, such that the drain may not have functioned due to lack of control of the elevation of the drain, *since the IROFS mentioned were the only IROFS in an accident sequence leading to a criticality, and since those IROFS were subject to common cause failure, the potential consequences of this issue are severe.* Two examples of failure to provide adequate assurance that IROFS will be reliable and available to perform their function when needed. Inadequate design basis of process enclosure drains to a common cause failure. IR 70-143/2005-10, Inspection dates 10/02-11/12/05, ML081480307*
- 12/20/05 *Letter to NFS regarding closed meeting at NRC Region II Office in Atlanta, GA., to discuss safety and compliance challenges, new facility start-up challenges, and specifically NFS' Safety and Compliance Culture Policy, the NFS Safety and Compliance Conscious Work Environment Policy, and NFS' Business Process Improvement Initiatives. Letter to Kerry Schutt, President/General Manager, NFS, ML081360812*
- 12/22/05 *Safety Equipment Failure. Event Report 42226 (Note: This was not part of the Event Reports released, but was found in one of the Inspection Reports)*
- 01/05/06 *Loss or Degraded Safety Items (Monitor Setpoint Improperly Set). Event 42244*
- 02/03/06 *NFS Inspection Report. As of December 16, 2005, licensee relied on a safety limit of (R) a calculated single parameter limit from Table 1 of the consensus standard ANSI/ANS-8.1, for the concentration of (R) material in a non-uniform aqueous solution stored in unsafe geometry WWTF tanks without discussing or justifying the limit in criticality analysis for the tanks to demonstrate sub-criticality for normal and credible abnormal conditions. IR 70-143/2005-208, Inspection dates 12/12-12/16/05, ML081490103*
- 02/11/06 *Federal Public Health Agency To Host Meetings On February 16 to Hear Concerns On NFS Site. The Agency for Toxic Substances and Disease Registry (ATSDR) will host two public meetings in Erwin to gather community health concerns related to the NFS site. *ATSDR was asked to respond to community**

concerns related to possible health effects from chemical and radiological contaminant releases into the air, groundwater and surface water in the vicinity of the NFS site. The Greeneville Sun, 2/11/06

- 03/01/06 Closed pre-decisional enforcement conference at the Region II Office in Atlanta, GA. The purpose of the meeting is to discuss the APV associated with the failure to consider how credible abnormal process conditions could degrade or defeat the function of glove box drains (R). An addition issue associated with the APV involves the failure to report the glove box vulnerability to the NRC for approximately three weeks. Letter from NRC to NFS, Confirmation of Closed Pre-Decisional Enforcement Conference, 1/26/06, EA-06-01, Event 42133, ML081500553 (See 10/21/05)
- 03/06/06 37-liter spill of HEU at NFS (in the BLEU Commercial Processing Facility—NRC Event Report 42393 and ML071930389). *Covered up for 13 months with the help of the NRC.*
- 03/06/06 *NFS Inspection Report.* License Application Section 2.12 **requires** management measures to **ensure** IROFS are available and reliable to perform their function when needed. Event 42244 on January 6, 2006 involved the failure to adjust the set-point of the in-line monitor for the (R) discard system to the required value stated in the NCSE. This was a management measures failure in the area of configuration control. IR 70-143/2006-001, Inspection dates 12/25/05-02/04/06, Events 42226 & 42244, ML081490104
- 03/07/06 *Unanalyzed Condition of Criticality Controls. Event Report 42393*
- 03/08/06 *NFS Fails “Force-on-Force” Security Exercise. Federal Register, Vol. 72, No. 145*
- 03/09/06 *Fitness for Duty Report Involving Licensee Supervisor Failure to Adhere to a 5 Hour Alcohol Requirement. Event Report 42480 (NRC notification 4/06/06, nearly one month later)*
- 03/10/06 *NFS Inspection Report: (The spill of 37 liters HEU on March 6, 2006)
The Special Inspection Team (SIT) determined the events immediate safety consequences were **very significant** in that operators were unaware that their actions could result in transfer of high enriched uranium to the filter enclosure. In addition, identification after the event of an unsafe accumulation point (elevator pit) in the BLEU Preparation Facility (BPF) floor raised significant safety concerns because *solution leaks are a credible abnormal condition in the BPF, and the BPF floor is identified as an item relied on safety (IROFS) to maintain solution leaks in a safe slab configuration. There were no controls in place to prevent a solution leak from entering the elevator pit. The SIT specifically noted the problem identification and resolution, configuration management, and change control programs failed to prevent the event. These issues are indicative of inadequate internal processes and ineffective management oversight.**
- Event Description: On March 6, 2006, approximately 35 (37) liters of high enriched uranyl nitrate (HEUN) solution was inadvertently transferred to a filter enclosure *not currently approved for operation in the BLEU preparation facility (BPF)*. The filter enclosure was equipped with two independent safety-related drains whose intended function was to maintain a safe slab configuration within the enclosure by diverting solution to the building floor. The equipment, *which was not approved for use*, was connected to an inservice solution transfer line. This allowed an unintended transfer of solution to a process enclosure and led to the determination *the existing safety analysis was not completed for the operation of this enclosure.*
- Criticality Safety: During the BPF HEU spill event, sufficient fissile solution was transferred that could have resulted in criticality in either of two available collection points, and no NCS controls were available to prevent accumulation of a critical system at either collection point. The following apparent violations were identified:
- *Failure to verify proper installation of the tray dissolver filter enclosure drains prior to use of the system with fissile material (APV 70-143/2006-006-02)*

- Failure to meet the performance requirements of 10CFR70.61(d) for accident sequences related to handling fissile material in the tray dissolver system (APV 70-143/2006-006-03)
- Failure to meet the performance requirements of 10CFR70.61(d) for accident sequences related to fissile solution accumulation on the solvent extraction room floor (APV 70-143/2006-006-04)
- Failure to assume in NCS analysis for the tray dissolver system that fissile solution could be misdirected from the solvent extraction feed transfer line (APV 70-143/2006-006-05)

Root Causes and Contributing Factors: The root causes of the March 6 spill of uranyl nitrate solution included inadequate configuration control, change analysis and design requirements. More specifically, the configuration control program lacked requirements to **ensure** that unapproved systems were isolated from operational systems, and that configuration changes, such as not implementing the operational requirements (e.g., procedures, IROFS) of a system, received a safety review (APV 70-143/2006-006-06). Design requirements also lacked criteria to prevent misdirected flow.

- ⇒ Root Cause 1- Configuration Control Program Less Than Adequate
- ⇒ Root Cause 2- Change Analysis Less Than Adequate: The licensee's program for configuration control lacked a provision to evaluate the change associated with not finalizing the installation and operational safety verification of a processing system. Sometime after the BPF Tray Dissolver system was constructed and placed into configuration control in March 2004, licensee management decided not to complete final installation and operational safety testing. Through discussions with the ISA specialist, the inspector determined that no procedure existed to evaluate potential safety consequences of the unfinished system located in and SNM-bearing processing area. The ISA had been completed based on the ASSUMPTION that the BPF Tray Dissolver system would be completed and operationally tested to **ensure** IROFS were maintained and available.

Root Cause 3- *Design Development Less Than Adequate:* Licensee's design development guidance lacked any specific requirements to ensure that misdirected flow of SNM-bearing solution was prevented. The inspectors concluded the less-than-rigorous follow-up to the discovery of yellow solution in three different instances represented lost opportunities to possibly identify and correct the problem before the March 6 spill. The failure to report the events concerning the yellow solution in the 2M05 enclosure in accordance with the requirements of Section 5.1 of NFS-GH-65 is identified an Apparent Violation (AV 70-143/2006-006-08). IR 70-143/2006-006, Inspection dates March 13-17, 2006, ML072630328 (See 7/21/03 IR-NFS Commitments)

03/10/06 LAR 75: *Request to Incorporate Changes to chapter 3 of Snm-124 "Radiation Protection". SNM-124 amended to approve NFS changes to Chapter 3 "Radiation Protection". NFS requests change to Radiation Work Permit (RWP). Program to allow its health physicist to **waive** RWP requirements on a case-by-case basis. Region II inspection has no objection to proposed action. Effective 1/05/07, ML072630287*

- 03/13/06 *All Safety Items Unavailable (Potential Unsecured Accumulation Point Detected). Event Report 42411*
- 03/18/06 *Confirmatory Action Letter (CAL) No. 02-06-003 issued to NFS. IR 70-143/2007-002, 4/23/07, ML073060098 (Note: CAL cannot be located on NRC ADAMS).*
- 03/28/06 *NFS License Performance Review (LPR). A large number of deficiencies are in the BLEU processing operations, where your efforts to improve safety have either not been implemented or were not effective. BLEU operations continued to experience problems after the LPR period ended, such that a CAL was issued on March 18, 2006. Based on the performance information reviewed, the NRC found areas needing improvement in four of the five performance areas, including problems identified in the previous LPR period*

*before date means Loss of Containment

associated with implementing the criticality safety analytical process, implementing the safeguards program, Management oversight of operations, consistency in the implementation of the radiological protection program, the quality assurance transportation packages, the use of the corrective action program (CAP), facility configuration control, the reliability of the criticality alarm system, and control of strategic special nuclear material (SSNM). LPR for NFS, Inspection dates 1/23/05-02/04/06, ML07290009

- 04/14/06 *Failure Of Fitness For Duty Test (Non-licensed employee supervisor had a confirmed positive for illegal drugs during random test).* Event Report 42502
- 04/17/06 *NFS Inspection Report. Event 42393 involving an unintentional transfer of SNM from a (R) to an area not authorized to receive SNM with a subsequent overflow to the floor. Event 42411 involved discover of an unsafe geometry accumulation point, which was a pit under an elevator. On January 3, 2006 Licensee failed to comply with change control process during modifications to the (R) detector system in that:*
- *Failure to ensure that changes to the as-built condition did not impact the safety of the systems, structures and components, in that a failsafe feature of the system was defeated by a change in system components.*
 - *Failure to verify an active engineered control identified as SRE was properly installed upon completion of maintenance, in that the functional test did not test a system failsafe feature.*
 - *Failure to obtain work acceptance approval.*
 - *Failure to obtain review and approval for changes for work completed under a Minor 2 work request **prior** to use of equipment.*
 - *Failure to comply with configuration control program.*
 - *Licensee's external exposure had almost reached the ALARA goal set for the year 2005, due to handling of higher radiation level material in the down-blending areas. IR 70-143/2006-002, Inspection dates 2/05-3/18/06, ML081490105 & ML081490350*
- 04/21/06 *Notice of Violation and Proposed Imposition of civil Penalty. The (R) Facility (R) enclosure overflow system (designated as an IROFS) may not have functioned properly due to the elevation of the (R) drain. The NRC concluded that criticality is **NOT** highly unlikely under the expected and bounding process conditions that existed in the (R) enclosure, due to the failure to install the enclosure drains at the correct height. The NRC considers the potential consequences of this event to be significant. *The NRC further notes these enclosures are present throughout the NFS facility and their drains are the only protection against the accumulation in them (R).* Notice of Violation and Proposed Imposition of Civil Penalty, IR 70-143/2005-010, EA-06-018, Inspection dates 10/02/-11/12/05, Event Report 42133, Severity Level III Violation, ML081500190 (See 7/21/03 & 10/21/05. The NRC knew about these drains 6 months before the spill of 3/06/06)*
- 04/26/06 *LPR and Management meeting at NFS. The purpose of the first meeting is to discuss the performance issues pertaining to LPR from Jan. 23, 2005 to Feb. 4, 2006. The purpose of the second meeting is to discuss additional information and actions NFS is proposing for the safe restart of the BLEU Preparation Facility (Hereafter BPF), including corrective actions and program enhancements that have been implemented or planned as a result of the BPF event that occurred on March 6, 2006. Both meetings will be closed to the public due to the discussion of proprietary information and the sensitive nature of information to be discussed. Letter from NRC to NFS, 4/12/06, ML081440073*
- 05/04/06 *NFS Inspection Report.*
- *AECs not placed under configuration control.*
 - *Independent verifications or auditing configurations not performed*
 - *Work request involving modification of carbon dioxide **fire suppression system wiring never implemented.***
 - *Safety controls affecting two carbon dioxide system interlocks not tested.*
 - *Design guidance for engineers vague or **non-existent**.*

- **No guidance** on how to properly design a system to prevent backflow into a process vessel.
- **No guidance** to properly account for process upset conditions.
- Minor issues passed along to area owners and **assumed** to be addressed **if resources available**.
- **Adverse trend** regarding blockage resulting in routine actuation of an IROFS. Letter to NFS, IR 70-143/2006-07, Inspection dates 4/03-04/07/06, ML073060347

- 05/13/06 *NFS fails to "Secure or Properly Attend" Special Nuclear Material (SNM).* Federal Register, Vol. 72, No. 145
- 05/15/06 *Union Workers Went on Strike at NFS.* Johnson City Press article and discussion in May 30, 2007 closed NRC Commission meeting. ML071930389
- 05/23/06 Notice of availability of EA and FONSI concerning request for exemption from NFS, to exempt shipment of low-level radioactive waste contaminated with SNM from certain safety requirements. Memorandum to Michael T. Lesar, Chief, Fuels Review and Directives Branch, from Kevin M Ramsey, NMSS, ML061220658
- 05/24/06 *License Amendment Request 74: Use of Shipper's Quantities to Resolve Shipper-Receiver Difference.* Effective 8/08/06. ML072630252
- 05/31/06 *Criticality Evacuation Alarm Failure (Safety Equipment Failure).* Event Report 42612
- 06/09/06 *NFS Inspection Report.* Significant safety concerns raised due to solution leaks in BPF are a credible abnormal condition. IR 70-143/2006-06, Inspection dates 3/13-3/17/06, CAL #02-06-003, ML072630328
- 06/29/06 During a telephone discussion between Marie Moore of NFS and Carolyn Evans of NRC on June 27, 2006, the NRC became aware of an administrative oversight on their part concerning their failure to advise NFS of the availability of alternate dispute resolution (ADR) with the NRC. Ms. Moore advised of NFS's desire to pursue ADR in this case. The technique the NRC has decided to employ during a pilot program, which is now in effect, is mediation. Letter to NFS from NRC, ML081500431
- 06/30/06 NFS response dated March 24, 2006 to Confirmatory Action Letter (CAL) 02-06-003 and additional information NFS provided at the meeting at NRC Headquarters on March 27, 2006, that discuss details of NRC's response. *NRC continues to have **concerns about the information NFS provided to demonstrate the safe operation of the HEU fuel manufacturing processes**.* NFS's response mentioned differences between the BPF and (R) and stated that processes in (R) had been at steady state for over five years. NFS also stated that (R) has been expanded over the past several years, primarily with duplications of well understood processes. *The BPF has had numerous design problems associated with new types of process equipment during its relatively short operational life, many of the problems that have occurred were associated with relatively simple, well-understood processes.* The event that occurred on March 6, 2006 was basically a well understood process of pumping a uranium (R) solution from one (R) to another for use as feed material for the solvent extraction system. The lack of complexity as a design change should not be a key element in determining whether a change would impact safety.

The second significant difference NFS mentioned was that (R) has a more experienced staff, and to strengthen the experienced in BPF personnel reassignments were made in 2005 to augment the BPF operation. *The NRC noted there have been relatively limited reassignments of more experienced staff to BPF and will continue to review the effects of such reassignments on the safety performance in (R).* Another remaining issue is the amount of design guidance provided to the engineering staff for specific types of equipment with safety implications. The results of the inspections showed that specific design guidance was lacking for engineering staff and design reviewers for many basic systems, (piping, ventilation, electrical) as well as *key safety-related issues* such as backflow prevention.

NRC continues to have several concerns with the NFS configuration management program. Since the configuration management program is used throughout the facility, problems that surface during the BPF event could also affect (R). The NRC inspection of the BPF event and the subsequent inspection of (R) showed problems in a proper review, approval, documentation of the design, the as-built conditions, and the changes made to the facility. The fact that most electrical drawings are not included in the existing configuration management program is a **significant concern** since many safety controls are electrically actuated. The response to the CAL did not fully address the concerns with the site-wide configuration management program. The inspection found the independent review of P&IDs and the “vertical slice” of key operational areas in (R) consisted mainly of looking at six of the oldest P&IDs to see if they were accurate, assuming that these drawing would have the highest likelihood of inaccuracies because of their age. *The inspection found this was not an adequate review of the configuration management program to make broad conclusions regarding the program at NFS because the drawings reviewed were for areas that had minimal changes over the years and three of them were of utility systems that had no associated safety controls.* NFS’s statement implying the “vertical slice” also included a reassessment of the (R) safety controls was **inaccurate**. After discussion with safety management, the NRC and NFS determined this reassessment was for the BPF facility, not (R) as implied by NFS’ response. NFS discussed the various items and programs in place to identify and address abnormal conditions in the facility. Specifically:

- *The use of station limit cards (or no SNM allowed signs)*
- *The use of PIRCS and the oversight provided by the NFS’s Quality Control organization are examples provided for this assurance. The NRC had concerns about this response because;*
- *A station limit card was originally posted on the glove box in which the BPF event occurred, even though the station was not yet authorized for SNM.*
- *After discovery of some type of solution in the glove box in 2003/2004, the station limit card was replaced with a “no SNM allowed” sign, but subsequent discoveries of solution in the glove box were not noted as a problem. The PIRCS was not used to identify and correct the discovery of these events, and other concerns with the inconsistent use of the PIRCS program identified in previous routine inspections and the LPR.*
- *The oversight provided by the NFS Quality Control organization mainly deals with fuel quality issues, not quality of safety systems.*
- *The SIT inspection identified the NFS procedure for implementing the Integrated Safety Analysis (ISA) process allowed the posting of the station limit card prior to final release of the system.*

The NRC continues to be concerned with the use of generic procedures in some areas to cover activities such as draining of systems that contain SNM. Since the ISA that was submitted in response to the Oct. 2004 due date, NFS has discovered occasional unanalyzed, credible accident sequences in both BPF and (R). This, combined with the number of ongoing changes within BPF and (R) can lead to further unanalyzed conditions and unidentified credible accident sequences. NFS **has not** yet fully implemented management measures to **assure that IROFS will be available and reliable**. The inspection of the (R) conducted the week of April 3, 2006, revealed at least two problems associated with management measures in (R) stemming from apparent lack of program oversight. (R) The functional tests associated with this isolation valve were consolidated into one set of instructions and one of the key safety systems affected by the isolation valve was left out of the functional test instructions. Another instance involved the repeated plugging of a vent line that caused frequent actuation of the safety controls to shut down the affected operation. This repeated frequent challenge to a safety system **was not addressed for several months** and was not reviewed for its effect on the management measures associated with the control. NFS must be diligent against the problems that occurred in BPF from happening in (R). The NRC requests that NFS provide a supplemental response to CAL 02-06-003 within 30 days of receipt of this letter addressing NRC’s request for additional information noted above. Request For Supplemental Response to Confirmatory Action letter, to Dwight B. Ferguson, President/Chief Executive Officer, Nuclear, Fuel Services, Inc., from /RA/ Douglas M. Collins, Director, Division of Fuel Facility Inspection, ML081440078 (See 7/21/03)

- 07/07/06 *NFS Inspection Report.* Synopsis of NRC's (OI) report regarding NFS personnel **willfully** recorded incomplete and inaccurate information of **transfer of containers of SNM**—Event 42612. IR 70-143/2006-004, Inspection dates 4/30-6/10/06, ML073060562, OI case 2-2005-028
- 07/17/06 *Amendment 73: Exemption of Low-Level Waste Shipments from Certain Physical Security Requirements.* ML072630273
- 08/08/06 *Amendment 74: Authorize Use of Shipper's Quantities to Resolve Shipper-Receiver Differences.* ML072630257
- 08/22/06 Letter confirming conversation of August 17, 2006 between Marie Moore of NFS staff and William Gloersen of this office, concerning the pre-decisional enforcement conference scheduled for Sept. 5, 2006. The purpose of the pre-decisional enforcement conference is to discuss the APV associated with the inadvertent transfer of approximately **(R)** of HEU nitrate solution to a filter enclosure not approved for operation in the BPF on March 6, 2006. We note that you formally requested the issues related to this event be resolved under the NRC alternative Dispute Resolution (ADR) pilot program rather than the normal enforcement process. If we proceed with a conference using the ADR process, representatives of my staff will contact you to reach a mutually acceptable date and time for this conference. This meeting will be closed to the public due to the discussion of proprietary and sensitive material. EA-06-179, CAL No. 02-06-003, Events 42393 & 42411, ML081500425
- 08/28/06 *NFS Inspection Report:*
- ⇒ Safety Related Equipment (SRE) tags found on wrong equipment
 - ⇒ Testing of new sensors not complete.
 - ⇒ P&IDs for strip columns not updated to reflect new configuration.
 - ⇒ Level switches out of service for several months.
 - ⇒ Numerous S/X equipment labeled "0" instead of letter "O".
 - ⇒ *Roof Leaks-Standing liquid found on floor in DB. (Rain water from leaks in BPF roof).*
 - ⇒ Inlet line not captured on P&ID.
 - ⇒ SOP missing in-process logic controller.
 - ⇒ Two instruments on P&ID in wrong location.
 - ⇒ Safety Related Equipment (SRE) tests could not be performed.
 - ⇒ WR involving DB Loss-of-Function alarm changed categories multiple times before completion. IR 70-143/2006-11, Inspection dates 06/05-07/17/06, CAL No. 02-06-003, Events 42393 and 42411, ML073060416
- 08/28/06 Letter from NRC to NFS in response to request for ADR. The NRC considered NFS' request to use ADR in resolving the matter. The ADR program scope was based on investigations. Because inspections are a evaluation of a licensee's performance against established technical criteria the likelihood of significant disputes is smaller. *Consequently the NRC staff is **declining** to expand the use of ADR in enforcement of these types of situations at this time.* (Next 3 line **(R)**). Letter to NFS from James G. Luehman, Acting Director, Office of Enforcement, EA-06-179, ML081500565
- 08/31/06 *Residents Air Concerns About NFS—Federal Report Available For Public Comment Until October 15.* Johnson City Press, 8/31/06
- 09/02/06 *Emotions High At Meeting On Health Report For Area Near Nuclear Fuel Services At Erwin.* About 50 people, including current and former NFS employees, took part here Thursday evening in an emotionally charged public meeting regarding a federal public health assessment of the area around the NFS plant. The meeting was held at Erwin Town Hall and was the second of two scheduled by the federal Agency for

Toxic Substances and Disease Registry (ATSDR). It soon became apparent that many members of the audience were mainly interested in talking about cancer rates, radioactive material used by NFS, and the current labor dispute between NFS and the United Steelworkers Union.

Gene Wilson, who said during the meeting that he had been sworn in as a Unicoi County commissioner on Thursday, raised the cancer issue. He said that he had cancer and that his six year old granddaughter also has had cancer. Wilson said during a post-meeting interview that he feels there is a connection between what he believes to be high rates of cancer in Unicoi County and the NFS plant. He said he worked at the NFS plant for about 10 years in the late 1960's and the 1970's. Wilson said during the meeting that he was aware of a list of about 65 former NFS employees many of whom had died of cancer over the years. He continues to have health and safety concerns. "My main concern is the health of the people in this county (Unicoi)," Wilson said. "I can sit here and name you a hundred people who have died with cancer. You can't persuade me that NFS doesn't have anything to do with it."

Dr. Paul Chorp, Ph.D., who performed the public health assessment for ATSDR, said he had been informed by TDEC the "Railroad Well" north of the NFS plant does have some chemical contamination, but that TDEC does not believe the contamination originated from NFS. Dr. Chorp said he planned to follow up with TDEC about the Railroad Well issue. The well has been used as a public water source for Erwin. Dr. Chorp said that he hopes to arrange later this year for additional testing of water from wells and the Nolichucky River both above and below the NFS plant. Dr. Chorp said that chemical contamination had moved off the NFS property and to a point beneath an adjacent industrial park, and appeared to be moving toward the Nolichucky River, but the ATSDR did not believe the groundwater contamination posed a public health threat because the agency had been unable to establish a "pathway" by which area residents could come in contact with the polluted groundwater. ATSDR is barred by federal law from investigating health concerns related to the use of radioactive materials at sites under the jurisdiction of the NRC. The Greeneville Sun, 09/02/06 (ATSDR received data from TDEC on annual sampling of the Railroad Well located north of the site. For regulated contaminants, Tetrachloroethylene (PCE) was detected at 0.000856 mg/L and 0.00158 mg/L in 2006 and 2007, respectively. The established MCL for this contaminant is 0.005 mg/L. p. 16, ATSDR Report).

- 09/28/06 *First alternate dispute resolution meeting held at Cornell University. ML071990558*
- 10/02/06 *NFS Inspection Report. **Spill** in building 302 on 8/31/06. Failure of diesel generator to assume electrical load from Uninterruptible Power Supply (UPS) following loss of offsite power was never identified in PIRCS. Operability of diesel generator could have been affected for a period in excess of six months. License condition 6.3 requires emergency power for the criticality alarm system and emergency generators should be tested for operability on a weekly basis. IR 70-143/2006-010, Inspection dates 7/23/-9/02/06, ML073040515*
- 10/23/06 *BLEU Processing became fully operational again following approximately seven months of shutdown according to discussion in closed meeting, May 30, 2007. ML071930389 & ML073050171*
- 11/06/06 *Union workers begin to return to NFS. ML073050171*
- 11/07/06 *Letter referring to NFS correspondence dated August 14, 2006 in reply to the NRC July 21, 2006 Inspection Report (IR) and Notice of Violation. The violation concerned failure to have dual criticality accident alarm system (CAAS) coverage of an area in accordance with 10 CFR 70.24(a)(1). *Specifically the Notice was issued because NFS, CAAS for (R) which covers (R) of the Waste Water Treatment Facility (WWTF), had only one operable detector in service for the period of May 31, 2006 to July 15, 2006. The basis for the Notice is NFS' decision to place a detector in an "alarm" state for continued operation over an extended period of time without taking compensatory measures or replacing the inoperable detector. As specified in**

*before date means Loss of Containment

Section 3.2.4.2 of your license (SNM-124 "Criticality Detection and Evacuation Alarm System," the evacuation alarm system will meet the guidance established in ANSI/ANS 8.3-1986, "Criticality Accident Alarm System. Placing the detector in alarm status on May 31, 2006, after resetting it without success and not completing repairs on the detector until July 15, 2006, without implementing compensatory measures, neither met the requirements of 10 CFR 70.24 (A)(1) nor NFS' commitment to the ANSI/ANS standard. Upon reconsideration and consultation with the Office of Enforcement, the NRC has determined the cited violation is valid and requires corrective action to prevent recurrence. Response to Notice of Violation, 70-143/2006-205-01, EA-06-279 to Dwight B. Ferguson, President and CEO, NFS, Inc., from /RA/ Joseph G. Glitter, Chief, Special Projects and Technical Support Directorate, Division of Fuel Cycle Safety and Safeguards, NMSS, ML081490354

11/08/06

Response to NFS letter of October 31, 2006, providing supplemental information on existing and future options that NFS is pursuing to use the *depleted uranium (DU) it is planning to import with other radioactive materials from the (R)*. Based on the more definite descriptions of existing and potential future uses of DU outlined in your Oct. 31, 2006 letter, we now believe there is a reasonable expectation the DU to be imported (R) will be used and will not simply be managed (stored) for a period and disposed of as radioactive waste. The NRC thus concluded the import of radioactive materials including the (R) of DU (R) is authorized under an NRC general license pursuant to 10 CFR Part 110.27(a). We reiterate that should any of the materials imported (R) and/or Segrate (*sic*) under NRC general license not be used and require management or disposal as radioactive waste at a licensed facility, that would likely constitute a violation of NRC regulations, since imports of radioactive waste must be authorized by a specific NRC license.

"If you elect to pursue similar opportunities involving imports of radioactive materials that are no longer needed or useful to foreign entities, you will need to contact us to determine whether such transactions are authorized under NRC general import license provisions or whether they would require obtaining specific NRC import licenses. Given that each of these potential import transactions are likely to be unique, the details will need to be evaluated on a case-by-case basis as the licensing requirements will depend on various factors including domestic inventory and the extent to which options for use have or will materialize." Supplemental Information Requested by the NRC Concerning Disposition of Depleted Uranium (Reference: 21G-06-0174), 11/08/06, ML081370426 (See 10/19/07).

11/29/06

NFS Inspection Report. Diffuse nature of configuration management program contributed to BPF spill event:

- *Outdated configuration control boundary postings on in-service piping.*
 - *Signs were from previous method of identifying configuration control boundaries when equipment was installed in the area several **years** previously.*
 - *Configuration management did not **assure** all required aspects of facility changes be addressed. Failure to codify scope requirements of 10 CFR 70.72(a)*
 - *Configuration management NFS-GH-901 had been revised to control screening of facility changes **AGAINST** the requirements of 10 CFR 70.72(a).*
 - *Electrical SRE drawings had not been maintained nor updated with no independent drawing review and facility changes could have occurred without the drawings being updated.*
 - *The drawings had been issued for installation, but no post-installation "as-built" **verification** nor review had been done.*
- NFS had recently committed to NRC to place all SRE electrical component loop diagrams in the configuration management program by Dec. 31, 2008.* *The inspectors considered the lack of configuration control on the SRE drawings to be a **significant** configuration control weakness.*
- *33 Safety Related Equipment (SREs) required special test.*
 - *No procedure nor checklist guidance was specified nor available to aid the Process Hazards Analysis (PHA) review for loss of power.*
 - *Several health physics (HP) issues that met criteria not entered into PIRCS. IR 70-143/2006-*

*before date means Loss of Containment

019, Inspection dates 10/09-10/16/06, ML07325041

- 11/30/06 Second alternate dispute resolution meeting at Cornell University. ML071990558
- 12/01/06 *NFS LPR*. The NRC still has concern for the areas needing improvement noted in this report. All of the areas needing improvement **are repetitive** of areas identified in the last LPR. Two of these resurfaced primarily from the BLEU Preparation Facility (BPF) event of March 6, 2006. These areas are verification and implementation of equipment and controls identified in NCS analyses, and utilization of the problem identification and corrective action program. The other areas needing improvement are control of SSNM, and engineering design, verification, and configuration control. These issues are also indicative that further action to improve your safety culture is warranted. **Trends indicated inadequate response to certain recurring issues:**
- *Failure to maintain dual Criticality Accident Alarm System detector coverage at waste water treatment facility*
 - *Use of less than adequate configuration management system failed to ensure the safety impact of the partially installed and un-isolated change was addressed per requirements of 10 CFR 70.72*
 - *Failure to provide adequate procedures for the operation of the enclosure components*
 - *Failure to correctly implement the configuration control program during modification of an active engineered control, **in that a failsafe feature of the explosive gas detection was defeated***
 - *Electrical schematics of an active engineered controls not placed under configuration control and relied solely on **post** maintenance testing to verify proper configuration. Weakness identified in configuration management program. Licensee Performance Review (LPR) of Licensed Activities for Nuclear Fuel Services, (NFS) Inc., Docket 70-143, Inspection dates 02/05/06-10/13/06, ML071930522*
- 12/21/06 *NFS Inspection Report*. On October 23, 2006, the BLEU Preparation Facility (BPF) resumed operations following extended shutdown as a result of the March 6, 2006 spill of HEU.
- *System locks, personnel locks, and tags removed from the breaker on the 1E01 centrifuge. Shaft guard not reinstalled or extended to cover the shaft.*
 - *All required **fire protection features not completed prior** to startup of LA.*
 - *Failure to properly secure material prior to leaving it unattended. **Leak** at a flanged connection located with a **glove box**. Inadequate verification of construction activities or startup testing.*
 - *Criticality alarm detectors not working. IR 70-143/20060014, Inspection dates 10/15-11/25/06, ML073050171*
- 2007 NFS met the criteria established for discussion at this year's Agency Action Review Meeting (AARM) Update of NFS, Inc., Enclosure 4, 4/07/08, SECY-0800048, ML080580193 (Note: Only those plants with **significant** performance problems are discussed at AARM. The plants discussed are those whose performance had resulted in them being placed in either the multiple/repetitive degraded cornerstone or unacceptable performance columns of the NRC reactor oversight program (ROP) action matrix).
- 01/11/07 *Failure of Gama Spectrometer Waste Monitor*. (Only One Safety Item Available). Failure of this IROFS fails to meet the **minimum** performance criteria and may have been in a failed state for more than eight hours. Event 43090 (See 7/21/03)
- 01/26/07 *NFS Inspection Report*. **Non functioning fire damper and associated ductwork non-operational for over a year** replaced; December 15, 2006 electrical **fire** in a heat tract line. Inoperable Halon system (both tanks fully discharged) and required the addition of a manual portable fire extinguishing agent. Some SAS operators had not received the required portable extinguisher training. IR 79-143/2006-022, Inspection dates 11/26-12/31/06, ML073060497

- 02/21/07 *Confirmatory Order Effective Immediately For Program Improvements.* “The enclosed Confirmatory Order is being issued to Nuclear Fuel Services, Inc., as a follow-up to the Alternative Dispute Resolution (ADR) mediation sessions with the NRC Commissioner of September 28 and November 30, 2006”. “*We note that, pursuant to Section 223 of the Atomic Energy Act of 1954, as amended, any person who willfully violates, attempts to violate, or conspires to violate, any provision of this Confirmatory Order shall be subject to criminal prosecution as set forth in that section. Violation of this Order may also subject NFS to civil monetary penalty.*” (Next 3 lines **Redacted**) Letter from Victor M. McCree for William D. Travers, Regional Administrator, Region II, NRC, to Dwight B. Ferguson, Jr., President and CEO, NFS, Erwin, TN, 2/21/07 (See 5/30/07)
- 02/21/07 Confirmatory Order reflected an agreement between the NRC and NFS that “NFS will conduct via a third party, an independent safety culture assessment which shall include the 13 safety culture components discussed in the NRC Regulatory Issue Summary (RIS) 2006-13, dated July 31, 2006 and the commitments NFS made at the management meeting with the NRC on Sept. 18, 2006”. Modifications to NFS Erwin 2007 Independent Safety Culture Assessment Plan and Schedule, 7/31/06, ML072820542
- 03/01/07 *Potential Degradation of Safety Systems (Loss or Degraded Safety Items).* *Accumulation of fissile materials exceeding the controlled limit found in an enclosure. Failure of IROFS.* Event Report 43204, (Retracted 3/02/07)
- 04/10/07 Members of the tactical response team at Nuclear Fuel Services, Inc. have been granted authority by the Tennessee General Assembly to use deadly force in protecting the Erwin plant, its employees and its nuclear materials. The Erwin Record, 01/01/08
- 04/23/07 NFS Inspection Report:
On Feb. 22, a **fire** occurred in area 800. On March 1, an operational upset resulted in an *excessive amount of fissile material to accumulate in a portion of a glove box location in area 800. Accumulation of fissile materials exceeding the controlled limit found in an enclosure. On March 16, a caustic transfer was made from HEU to LEU side of BPF facility with elevated uranium (U) content. Testing of Nitrogen trickle flow system for U-AL in BPF operations not on calibration frequency. Management measures less than adequate.* IR 70-143/2007-002, Inspection dates 2/11-3/24/07, NFS Event Reports 43090 & 43204, ML073060098
- 04/27/07 NRC reports 2006 Abnormal Occurrences to Congress—includes NFS Spill of HEU on March 6, 2006. ML071080195
- 04/27/07 *NFS Inspection Report.* On January 11, 2007, licensee notified the NRC of an event involving the **(R)** condensate In-Line Monitor System (ILMS). During the routine 6 month calibration of the ILMS, NFS observed the calibration could not be completed. The in-line monitor is identified as an active engineered IROFS in the Integrated Safety Analysis (ISA), and the failure of this IROFS left only one IROFS in place. IR 70-143/2007-202, Inspection dates 03/26-03/30/07, Event 43090, ML081500187 (See 7/21/03)
- 05/09/07 *NRC Belatedly Reveals Uranium Spill At Erwin’s Nuclear Fuel Services In 06.* The NRC revealed in a new report to Congress *that a nuclear chain reaction accident nearly occurred 14 months ago at NFS in Erwin, TN. About 35 (37) liters, or just over 9 gallons of HEU solution spilled March 6, 2006, at NFS. The solution leaked into a protected glove box, then flowed onto the floor and into an old elevator pit at the plant. “Criticality,” or a nuclear chain reaction that releases radiation, was possible as the uranium pooled in both the box and the elevator pit, the NRC said. “Nobody got hurt. There was no danger to the general public,” NRC spokesman David McIntyre said Tuesday. “(But) they were lucky and we don’t like them to be lucky, we like them to be careful.” By definition, abnormal occurrences are considered “significant from the standpoint of public health and safety,”* NRC Chairman Dale Klein wrote in the 35 page report covering fiscal

fiscal year 2006. *The spill at NFS was one of three mentioned in the report.* The NRC decided a few years ago in the wake of 9/11 that operational details at this facility would be treated as sensitive, official use only information," McIntyre said. "So we don't publicly discuss the operational details of NFS." The DOE is far more open about incidents involving similar materials at the high-security Y-12 nuclear weapons plant in Oak Ridge, but spokesman Steve Wyatt refused to draw comparisons. NFS said in a statement the company spent months on reviews, safety assessments and procedural changes stemming from the spill. The thorough review resulted in a redesign of some process lines and additional engineered controls to enhance safety and process efficiencies. The operation has been trouble free since it restarted in October" company spokesman Tony Treadway said. The Greeneville Sun, 5/09/07 (See 2/16/08)

May/15/2007

*License Amendment Request (LAR) #79—Possession limit increase and storage of 17.4 Metric Tons of HEU. Federal Register Notice, 11/18/07, ML073190647. **Chronological Order:***

June 29, 2007—DOE/NNSA awarded a contract for 17.4 metric tons of HEU to a team consisting of NFS Wesdyne International (a subsidiary of Westinghouse Electric Company). p.4, DOE/EIS-0240-SA1, 10/11/07, and NNSA News Release, 6/29/07

July 30, 2007—DOE Awarded a Contract Friday to an Erwin Company to Convert 17.4 Metric Tons of Bomb-Grade Uranium. Johnson City Press, p.2A, 7/30/07

August 2007—Shipments of HEU began arriving at NFS and down blending is scheduled to be completed in approximately 4 years. NFS will down blend the 17.4 metric tons of surplus HEU to LEU at its facility in Erwin, TN and Wesdyne International will store the LEU at the Westinghouse fuel fabrication facility in Columbia, South Carolina (DOE 2007). p.4, DOE/EIS-0240-SA1, 10/11/07

⇒ *August 23, 2007—LAR #80—Approval of changes to Physical Protection Plan for Category 1, HEU. "In accordance with application dated 8/23/07 and supplemented by letters dated **12/04/07 and 2/11/08**, SNM-124 is hereby amended to approve the remaining changes to the Physical Protection Plan for Category 1, HEU. Some changes were approved previously in Amendment #78, issued on Oct. 18, 2007". **(TAC L32648) Amendment #80**, Letter dated August 23, 2007, **Effective 8/23/07**, ML080670163, April 1, 2008*

⇒ *August 23, 2007—LAR #78—Partial Approval of Changes to Physical Protection Plan for Category 1, HEU. **(TAC L32648)**. Partial approval being issued in response to NFS' request for an expedited review of the changes. Safeguards Evaluation Report for NFS, Cover letter dated August 23, 2007, Amendment #78, Effective 10/18/07, ML072760386*

Oct. 18, 2007—NRC published notice to the public that it can request a hearing regarding LAR #79 for the NFS possession limit increase and storage of 17.4 metric tons of HEU. **Deadline for hearing is 12/17/07.** Federal Register, Vol. 72, No. 201, pp. 59117-59118, 10/18/07

Oct. 30, 2007—NRC reviewing storage request. Company asks Regulators to let it keep more HEU onsite. Knoxville News Sentinel, 10/30/07

Nov. 7, 2007—NRC issued a EA/FONSI for possession limit increase and storage of HEU for Amendment #79. Federal Register, Vol. 72, No. 215, 11/07/07

Nov. 23, 2007—NRC approves NFS LAR #79 for possession limit increase and storage of HEU. **Effective 11/23/07, ML073190647** (This is third possession limit increase since 2003, Amendments #39--7/07/03 and #62--6/28/05 during the "OUO" period).

Nov. 26, 2007—*Petition seeks to stop NFS Uranium Plan*. Erwin residents announce, through a Johnson City Press article, the availability of citizens petitions opposing the HEU possession limit increase and storage of 17.4 metric tons of HEU. Johnson City Press, 11/26/07 (Petitions received over 600 signatures)

Nov. 30, 2007—*NRC OK's Uranium Storage Bid*. The public is notified via a Johnson City Press article that NRC had approved and granted License Amendment #79—over three weeks **prior to the deadline for citizens to request a hearing**. Johnson City Press, 11/30/07

Dec. 14, 2007—*NRC published Notice of Issuance of License Amendment #79 to NFS for HEU possession limit increase and storage*. Federal Register, 12/14/07 (**Note: Document DOE/EIS 0240-SA1 was written AFTER the contract was awarded to NFS in June 2007, and AFTER the first shipment arrived at NFS in August 2007.** DOE/EIS 0240-SA1, October 2007)

- 05/16/07 *Erwin Group Takes Issue With Report That NFS Chemicals Pose No Threat*. Vocal audience also displeased with lack of information on 2006 spill. Erwin Mayor Brushy Lewis said the company's decision not to disclose anything because of national security did not sound right. Johnson City Press, 5/16/07
- 05/22/07 Information on the names and qualifications of the contractors who will perform the Independent third party Safety Culture Assessment. This team of contractors is known as the NFS-Erwin Safety Culture Board of Advisors (SCUBA). Modifications to NFS Erwin 2007 Independent Safety Culture Assessment Plan and Schedule, ML072820542
- 05/29/07 *ATSDR (Agency For Toxic Substances and Disease Registry) Conclusion To The Final Public Health Assessment*: "There is a historical lack of both on-site and off-site sampling of atmospheric releases. ATSDR considers the site an Indeterminant Public Health Hazard. This category applies to sites where critical information is lacking (missing or has not yet been gathered) to support a judgment regarding the level of public health hazard from past exposure." "ATSDR (currently) ranks this site as 'No Apparent Public Health Hazard,' as there are no completed exposure pathways existing whereby the (contaminated) groundwater (beneath the NFS plant) would be used as a source of public water. The lack of knowledge about the karst formations is of concern for there is insufficient data to determine if the contaminants associated with groundwater in this area will impact public wells in the future. *Because the contaminants present in the groundwater are a mixture of many volatile organic compounds, health effects of mixtures may be an issue. No available studies directly characterize health hazards and dose-response relationships for exposures to "whole" mixtures containing 1,1,1-trichloroethane, 1,1-dichloroethane, trichloroethylthylene, and tetrachloroethylene. Interactions of heavy metals with other heavy metals or organic compounds are unknown at this time. CERCLA legislation directing ATSDR activities excludes the evaluation of radioactive materials released from this site. The conclusions of the public health assessment do not apply to the issues surrounding the use of radioactive materials at NFS.*" (p.25)
- Members of the Erwin community and surrounding cities and towns have expressed a variety of concerns to ATSDA ranging from impacts on environmental quality (air, water) in Erwin, other towns in Tennessee and North Carolina, perceived increases in cancer rates and self-reported cancer including colon, and multiple myeloma, thyroid disease, Alzheimer's Disease, multiple sclerosis, skin, and joint ailments. (p.24) ATSDR, 5/29/07, Public Health Assessment for Nuclear Fuel Services, Inc., Erwin, TN.*
- 05/30/07 *Nuclear Regulatory Commission Meeting at Rockville, Maryland-* NFS management and NRC Region II Officials met with NRC Commissioners. William Travers, Regional Administrator, Region II, *stated the issues occurring at NFS started in June of 2004 when the BLEU facility began operations.* (p. 8) The most significant event occurred in March 2006, (35 liters of high enriched uranyl nitrate spilled into a glove box, then onto the floor within a few feet of an elevator pit NFS was not aware of). This was **significant** and two severity level 2 Apparent Violations because the

configuration management controls that were **not** in place could have resulted in an *inadvertent criticality in either the glove box or elevator pit* (p.9) and ranked No. 2 on the INES Scale (p. 10) A number of enforcement actions occurred over the last year or so. *Eight severity level 3 issues were identified.* (p.12) Alternative dispute resolution (ADR) was offered to NFS. They accepted. *"We believe we've leveraged their willingness to agree that safety culture, configuration management, and areas of concern, including performance, procedural adherence, and corrective actions really were the issues that need to be resolved through a great deal of management attention."* (p. 13) *"There is a requirement for NFS to do a safety culture survey within two years, **but after that not for the life of the facility.**"* (p. 23)

The Executive Vice President of HEU Operations stated *"We at NFS have found our performance as described by the staff as being unacceptable in the past.* (p. 25) *Additionally, we found that **we were not putting safety first.**"* (p. 27) Closed session between NFS, NRC Region II and the Nuclear Regulatory Commission, 5/30/07, ML071930389

(Note: "The NRC had given NFS permission to leave the ponds in place until the **"End of Plant Life"- stated to be forty to fifty years from now** despite the fact that pond use was discontinued in 1978 under treatment requirements of the NPDES permit.

"The 3 ponds in question are known to contain sludge and sediment contaminated with uranium, thorium, plutonium, lead, and nitrates. Formal characterization of sediments to qualify and quantify contaminants will no doubt result in a more extensive listing. *These ponds have a direct connection to ground water, and are adjacent to a major spring source (Banner Spring Branch), and are of dubious integrity if subjected to a major twenty year storm event and are upriver of Jonesborough's domestic water intake.* *"It is obvious this project has the same regulatory pitfalls as do clean-up projects at DOE including unidentified RCRA/CERCLA implications and EPA entanglements".* Letter from TN Department of Health and Environment, Office Correspondence, Subject: Pond Decommissioning at NFS, June 5, 1986 to Dr. Michael Bruner 7/7/07

06/07/07-
07/07/07

NRC staff briefed the House and Senate staffers concerning the spill of 35 (37) liters of HEU at NFS on March 6, 2006 and the NRC policy for withholding information from the public. Report to Congress on Abnormal Occurrences, Fiscal Year 2007, U. S. NRC.,NUREG-0090, Vol. 30, 04/30/08, ML081300424

07/03/07

Chairman of the House Energy Committee, Congressman John D. Dingell sent a letter to NRC Chairman Commissioner Dale E. Klein, telling him the public's rights were violated (Under Section 189 of the Atomic Energy Act) when the Confirmatory Order was issued on 2/21/07, stating the public had a right to request a hearing, but did not know because the Confirmatory Order itself was Official Use Only (OUO). As a result, the NRC reissued the Confirmatory Order on July 18, 2007. U. S. House of Representatives, Committee on Energy and Commerce, Subcommittee on Oversight and Investigations to The Honorable Dale E. Klein, Ph. D., Chairman, U. S. Nuclear Regulatory Commission, 07/03/07, ML071870030

07/06/07

Secrecy at Nuclear Agency Is Criticized by Lawmakers. A factory that makes uranium fuel for nuclear reactors had a spill so bad it kept the plant closed for seven months last year and became one of only three events in all of 2006 serious enough for the Nuclear Regulatory Commission to include in an annual report to Congress. After an investigation, the commission changed the terms of the factory's license and said the public had 20 days to request a hearing on the changes. No member of the public ever did. No member of the public could find out about the changes. The document describing them, including the notice of hearing rights for anyone who felt adversely affected, was stamped "official use only," meaning that it was not publicly accessible. "Official use only" is a category below "Secret". Documents in that category are not technically classified but are kept from the public. The agency would not even have told Congress which factory was involved were it not for the efforts of Gregory B. Jaczko, one of the five commissioners who identified the company, Nuclear Fuel Services, Erwin, Tenn., in a memorandum that became part of the

public record. Such secrecy by the NRC is now coming under attack by influential members of Congress. These lawmakers argue the agency is withholding numerous documents about nuclear facilities in the name of national security, *but that many withheld documents are not sensitive and say the agency must rebalance its penchant for secrecy with the public's right to participate in the licensing process and its right to know about potential hazards.*

*Additional details of the 2006 event are coming to light now because of a letter sent Tuesday to the NRC by the House Energy and Commerce Committee chairman, Representative John D. Dingell, and the chairman of the oversight subcommittee, Representative Bart Stupak, who both say the commission "went far beyond" the need to protect security information by keeping documents about NFS, a private company, from the public. The congressmen said the agency has removed hundreds of otherwise innocuous documents relating to the NFS plant from public view. As laid out by the commission's report to Congress, the event at NFS was discovered when a supervisor saw a yellow liquid dribbling under a door and into a hallway. Workers had previously described a yellow liquid in a "glove box," a sealed container with gloves built into the sides to allow a technician to manipulate objects inside, but managers had decided it was ordinary uranium. In fact, it was highly enriched uranium that had been declared surplus from the DOE and sent to the plant to be diluted to a strength appropriate for a civilian reactor. In a puddle, the uranium is not particularly hazardous, but if it formed a more spherical shape, it could become a "critical mass," a quantity and shape of nuclear fuel sufficient to **sustain a chain reaction, in this case outside a reactor.***

According to the letter sent by the lawmakers, the puddle, containing about nine gallons, reached to within four feet of an elevator pit. Had it flowed into the pit and reached a depth of several inches, it would have been in a shape that might have supported a chain reaction. The letter from the congressmen said the agency's report suggest *"that it was merely a matter of luck that a criticality accident did not occur."* In a telephone interview, Mr. Jaczko said, *"Ultimately, we regulate on behalf of the public, and it's important for them to have a role."* He said he thought other information about NFS that should be public had been marked "official use only."

Generally, the Nuclear Regulatory Commission does describe nuclear incidents and changes in licenses. But in 2004, the Office of Naval Reactors, part of the DOE, reached an agreement with the commission that **any** correspondence with NFS would be marked "official use only." The plant makes submarine fuel. The memorandum that declared such correspondence to be "official use only" was itself designated "official use only." The New York Times, July 6, 2007, by Matthew L. Wald

- 07/07/07 *Officials Say Sale of NFS a Possibility. The Erwin Record, 7/07/07*
- 07/18/07 NFS Confirmatory Order reissued to Nuclear Fuel Services, Inc., for numerous issues including, a failure of NFS to meet the performance requirements of a July, 2000 Confirmatory Order Modifying License involving its safeguards, contingency plan and the inadvertent transfer of HEU nitrate into an enclosure that was not approved for operation, published in Federal Register, Vol. 72, No. 145, Monday, 07/30/07, ML071930389 (Note: NFS was reissued a Confirmatory Order (CO) in 2007 for not complying with a CO from 2000—7 years later?)
- 07/31/07 *Federal Documents Outline NFS Violations. The NRC and NFS agreed in 2006 that "a deficient safety culture" at the company's plant appeared to contribute to a recurrence of violations of the company's license requirements. According to NFS spokesman Tony Treadway, **many of the problems occurred while NFS built, licensed and operated several new facilities and process lines** "involving countless new procedures requiring extensive employee training."*

During alternative dispute sessions, the NRC talked about the violations and NFS's overall enforcement history, the federal agency said. Because of the number and repetitiveness of the violations, the two sides

acknowledged that past handling of violations through the enforcement policy did not lead to NFS's development of corrective measures *that could prevent recurrence*, the NRC said. Johnson City Press, 7/31/07 (See 5/30/07)

- 08/??/07 Shipments of surplus High Enriched Uranium (17.4 Metric tons) to begin arriving at NFS. DOE/EIS-0240-SA1, (p. 4), 10/11/07
- 08/09/07 *Nuclear Fuel Services Exploring Possible Sale: The Greeneville Sun, 08/09/07*
- 08/17/07-08/27/07 Six individuals request hearing concerning the Uranium Spill at NFS Plant on 03/06/06, Confirmatory Order issued to NFS and the "OUO" policy, plus 26 license amendment changes issued during the "OUO" period, before the Atomic Safety and Licensing Board. Nuclear Regulatory Commission, Before the Presiding Officer, In the Matter of Nuclear Fuel Services, Inc. (Note: All requests denied on December 23, 2007)
- 08/21/07 *Public Kept In Dark About Handling of Nuclear Fuel at NFS. Timeline of actions, sanctions involving NFS of Erwin, TN.*
- Aug. 24, 2004—NRC staff recommends all documents regarding NFS be marked "Official Use Only" and removed from public domain for national security.
 - March 4, 2005—NFS cited for failing to "secure or properly attend" special nuclear material (SNM).
 - May 31, 2005—NFS cited when acting building manager "willfully transferred solvent extraction waste solution" to a condensate waste storage area.
 - June 22, 2005—NFS cited when supervisor "willfully failed to wear a full face respirator while performing maintenance and repairs" as required under radiation work permits.
 - June 30, 2005—NFS cited for failing to "secure or properly attend" SNM.
 - Aug. 01, 2005—NFS cited when two security officers "willfully failed to conduct a vehicle search."
 - Nov. 09, 2005—NFS cited for failing to "secure or properly attend" SNM.
 - March 6, 2006—NFS cited for potentially deadly spill of HEU solution, *including failure to notify the NRC within required time.*
 - March 8, 2006—NFS fails "force-on-force" security exercise.
 - May 13, 2006—NFS fails "to secure or properly attend" SNM.
 - May 15, 2006—United Steelworkers strike NFS over contract.
 - Feb. 21, 2007—NRC issues order resolving citations. No fine, but NFS is required to review and improve "safety culture". Order not disclosed publicly.
 - June 10, 2007—Labor strike ends, new contract approved.
 - July 18, 2007—NRC Order for NFS program improvements and citations since 2005 becomes public. The Greeneville Sun, 8/21/07, Source: NRC
- 08/22/07 NFS submittal of Redacted Version of Amendment request to Increase U-235 possession limit. ML072550155
- 08/22/07 *Commission's Actions Prove Gravity Of Spill.* The Associated Press reported this week that the NRC has cited NFS for nine safety violations since 2005. The most serious of these citations was for a potentially dangerous spill that occurred at the Erwin plant last year. While these incidents have earned NFS a reprimand from the NRC, which issued an order last month demanding improvements be made at the plant, no fines have been levied against the company. The question to the NRC is: What will it take before the federal agency fines NFS for a safety violation? *Must there be a deadly radioactive leak before the agency makes an offender pay for such lapses?*

It has been equally disturbing to learn the public was never informed of these violations. NFS was shielded by national security when it came to revealing details of last year's leak of material, which NRC investigators say could have resulted in "criticality," or a sustained nuclear chain reaction that releases radiation. It's

troubling to learn news of the accident might have never been made public had it not been for an entry by the NRC in an annual report it is required to make to Congress. It's no wonder that some members of Congress and activists from the Sierra Club find it disturbing that NFS and the NRC have kept the details of the accident a secret from the plant's neighbors.

Since 2004, the NRC has removed more than 1,740 documents from its archive. Some of these records include basic safety violations the agency has identified at NFS. Federal officials—citing national security in regard to the company's work with the Navy have sealed every document related to NFS and BWXT in Lynchburg, Va., the only two companies licensed by the agency to manufacture, possess and store HEU. Under the NRC policy, all the documents were stamped "Official Use Only," including information about the policy itself. Even so, the agency's commissioners listed the 2006 NFS leak in its report to Congress as one of three "abnormal occurrences" of license holders cited during the year. *Apparently, the NRC leaders were so concerned by the incident in Erwin that they voted to skirt the "Official Use Only" rule so that NFS would be identified in the report as the site of the uranium leak. "This action speaks volumes as to the seriousness of that spill, and it calls into question the NRC policy that allowed the company to remain mum on its true safety record. People who live near the plant in Erwin are entitled to know this information". Johnson City Press, 8/22/07*

- 08/25/07 *Sierra Club Asks For Hearing By Nuclear Regulatory Commission On Nuclear Fuels' Operations: The Greeneville Sun, 8/25/07 (Note: Request Denied)*
- 08/31/07 *License Amendment Request for Processing UF6 in the CD Line Facility at NFS. NFS states that "sublimation of the UF6 creates new types of accident sequences that have not been previously described in an Integrated Safety Analysis (ISA)". Federal Register, 12/03/07, Vol. 72, #249, pp. 74352-74354, ML073090651 (New Commercial Development (CD) line for Uranium Hexafluoride (UF6) already being inspected at NFS as of Oct. 10-15, 2007, IR 70-143/2007/207, 11/05/07, ML073040221.) "Uranium Hexafluoride is a very dangerous material. If it comes in contact with water, even water vapor in the air, it forms (1) Hydrofluoric acid, which dissolves glass and is a dangerous irritant. It can cause pulmonary edema, respiratory damage, and severe burns." (2) Uranyl fluoride is a heavy metal toxin that can cause kidney damage". Courtesy Dr. David Close, East Tennessee State University, 1/13/08*
- 08/31/07 OOU policy of August 2004 is overturned to make publicly available many documents relating to the agency's oversight of NFS and BWXT that were previously withheld for security reasons. NRC News Release, 9/04/07, SECY 04-115, SRM-SECY-07-0129
- 09/04/07 *Dingell, Stupak Applaud NRC for Eliminating Blanket Secrecy Policy at NRC licensed Fuel Cycle Plants. The Nuclear Regulatory Commission (NRC) announced today it has reversed its 2004 secrecy policy relating to enforcement actions and licensing documents at the nation's two category 1 fuel cycle facilities-- Nuclear Fuel Services (NFS) in Erwin, TN, and BWXT, Inc., in Lynchburg, VA. Both plants process highly enriched uranium for the DOE's Naval Reactor's programs and approximately 1,900 documents and 45 license amendments relating to this work had been designated "Official Use Only" under an August 31, 2004 NRC policy (SECY 04-155). The "OUO" policy blocked public notice of licensing changes and enforcement actions, thereby preventing the public from exercising their due process rights to a hearing under Section 189 of the Atomic Energy Act.*
- NRC's policy reversal, outlined in an August 31, 2007 Staff Requirements Memorandum, follows a July 3, 2007 letter from Representatives John D. Dingell and Bart Stupak to NRC Chairman Dale Klein, urging the Commission to reconsider its "Official Use Only" secrecy policy regarding these two facilities—a *policy that was itself kept secret*. Dingell and Stupak also questioned whether the NRC **inappropriately** withheld information for 13 months from Congress and the public about an accident at the NFS plant. "While we are pleased the Commission voted to tear up its blanket secrecy policy and implement a more reasoned

approach, the NRC still needs to explain more clearly why it chose not to seek fines or penalties in the case of the near criticality event at NFS,” said Stupak. “By NRC’s own admission, the licensee’s loss of control over highly enriched uranium solution was one of the most serious safety violations at an NRC licensed facility in 2006, and we want to be sure the NRC is actually holding its licensees accountable in a manner proportional to the severity of the offense.” News Release, House Committee on Energy and Commerce, Subcommittee on Oversight & Investigations, U. S. House of Representatives, 9/04/07

09/06/07

Despite Law, NRC Was Mum on Nuke Monitoring, Storage Changes at NFS: Under a controversial national security secrecy policy the agency is now moving to scrap, the Nuclear Regulatory Commission failed to tell the public about 45 license changes it has approved at two nuclear fuel cycle facilities since June 2004, including rolling back or altering water and air monitoring at Nuclear Fuel Services plant in Tennessee and allowing that facility to increase nuclear material storage. The commission, citing concerns about release of potentially security-sensitive information, also did not disclose it approved numerous changes to nuclear material control and inventory requirements and security procedures at NFS in Erwin, TN and BWX Technologies (BWXT) fuel facility at Lynchburg, VA, according to NRC documents provided to Congress.

NRC documents show a license change approved for the NFS plant on Sept. 13, 2004 to “remove sampling requirements for Banner Spring Branch.” A Jan. 13, 2005 license change permitted “administrative changes to NFS air sampling and bioassay programs” and a June 28, 2005 change granted a “request for possession limit increase”, which refers to the amount of nuclear material that can be kept at the plant. *By failing to disclose those and other license changes, the NRC not only kept local communities in the dark about operational changes at NFS and BWXT, it also appeared to violate legal requirements under the Atomic Energy Act that the public be allowed to review and comment on NRC license changes.*

NRC revealed the spill more than a year after it happened in its annual report on abnormal occurrences” in the nuclear industry. The report on 2006 was sent to Congress and publicly released May 5, 2007. The NRC’s belated disclosure of the incident and its sweeping secrecy policy, drew bipartisan rebukes from several members of Congress. *Following the torrent of congressional criticism, NRC commissioners agreed that much of the information the commission has withheld about NFS and BWXT does not appear to be security-sensitive.* They subsequently ordered NRC staff to draw up options for release of information about the two plants after a review to redact any data that was clearly security-sensitive. The NRC’s decision to release the documents follows widespread puzzlement—even among NRC commissioners and staff—as to why the blanket OUO policy was carried out for NFS and BWXT, covering even commercial activities at those facilities. The March 2006 uranium spill occurred during NFS “down-blending” operations to convert surplus HEU from DOE into low-enriched uranium fuel for use in TVA commercial power plants. The NFS down-blending operations were extensively and publicly discussed by the NRC in 2003 proceedings. The Energy Daily, 9/06/07

09/14/07

“Since 2004, the NRC had had a policy that directed the staff to treat most NFS documents as “Official Use Only”. Effective August 31, 2007, the Commission changed this policy by a staff requirements memorandum SRM-SECY-07-0129. The staff is directed to now apply NRC guidance for Sensitive Unclassified Non-Safeguards information (SUNSI) to key regulator documents related to Category 1 fuel facilities, to prepare and release redacted versions of documents, and to prepare and release redacted versions of documents containing SUNSI. This new directive affects a subset of historical documents issued after Jan. 1, 2004. The staff will redact and reissue the following NFS documents:

- License amendments and order
- Inspection Reports
- Licensee Performance Reviews
- Inspection Reports
- Licensee Performance Reviews
- Enforcement actions other than orders

*before date means Loss of Containment

- Event Reports, and
- Other documents staff determines to be relevant to give the public a record of NRC oversight of the licensed facility.

"We anticipate that previously withheld NFS license amendments and Orders will be redacted and released in September 2007. The remainder of the retrospective NFS key documents will be screened for SUNSI as soon as possible, but expect the job will not be completed until May 2008. (SUNSI: As defined in the NRC Policy for Handling, Marking, and Protecting Sensitive Unclassified Non-safeguards information. "SUNSI" means information of which the loss, misuse, modification, or unauthorized access can reasonably be foreseen to harm the public interest, the commercial or financial interests of the entity or individual to whom the information pertains, the conduct of the NRC and Federal programs, or the personal privacy of individuals.) Letter to B. Marie Moore, VP, Safety and Regulating, NFS, Inc., from Kevin Ramsey, Project Manager, Fuel Manufacturing Branch, Office of Nuclear Material Safety and Safeguards, 9/14/07, ML072570107

- 09/19/07 Nuclear Fuel Services, Inc., requests all petitioners requesting hearing before the Atomic Safety and Licensing Board concerning the "OUO" policy, 26 license Amendments and Confirmatory Order, *be denied*. Nuclear Regulatory Commission, Before the Presiding Officer, Docket No. 70-143, 9/19/07
- 09/21/07 NRC Staff's Response to all petitioners requesting hearing before the Atomic Safety and Licensing Board concerning the "OUO" policy *should be denied* because of lack of standing. Nuclear Regulatory Commission, Before the Atomic Safety and Licensing Board, In the Matter of Nuclear Fuel Services, Inc., Docket No. 70-143-CO, 9/21/07 (Note: A violation of rights by the NRC is considered insufficient standing?)
- 10/05/07 *NFS Inspection Report*. Leak test of valve in the fuel process could not be performed as written-instructions were missing specific steps. Two additional leak tests in the fuel process could not be performed as written. Leak tests performed last year although they could not be performed as written. Quality Control samples for Solid Waste Management Units (SWMU) were not collected at the time of the inspection nor during past sampling activities of Survey Units 11 and 17. **Transfer** of waste solution into a storage area without procedural authorization. IR 70-143/2007-006, Inspection dates 7/29-9/08/07, ML072780519
- 10/18/07 NRC published notice to the public that it can request a hearing regarding the License Amendment Request #79 for the NFS possession limit increase and storage of HEU in Erwin. Deadline for hearing is December 17, 2007. Federal Register, 10/18/07 (See May 15, 2007)
- 10/19/07 Edlow International Company makes notification of upcoming shipment to Nuclear Fuel Services, Inc., of 22,224 tons HEU, LEU, Depleted Uranium (DU), Thorium and Natural Uranium.
- | HEU | LEU | NATURAL | DEPLETED | THORIUM |
|----------------|------------------|---------------------|-------------------|-------------|
| 1,326.555 Kgs. | 329,504.275 Kgs. | 10,044,346.549 Kgs. | 8,778.452.900 Kgs | 118,498.000 |
- ETA Erwin, TN., Dec. 5/6 2007. Letter from Edlow International Company to U. S. Nuclear Regulatory Commission, 20952-2738, 10/19/07, REF: NFSX-1172, ML073610337
- 10/30/07 *NRC Reviewing Storage Request. Company Asks Regulators to Let it Keep More HEU Onsite*—The NRC is reviewing the request and intends to document its findings in separate safety and environmental reports. Company spokesman Tony Treadway said the increase is needed in part because of a contract awarded earlier this summer by the NNSA, part of the DOE. He also said the company wants to have the same limits as BWX Technologies in Lynchburg, Va. "From a competitive environment situation, we want to be on the

same playing field when we seek additional contracts.” Knoxville News Sentinel, 10/30/07 (See May 15, 2007)

- 11/13/07 *A worker at the NFS plant was sent to the hospital for evaluation after being sprayed on the neck Thursday with what company officials called a radioactive “caustic material.”* The Erwin Record,01/01/08
- 11/16/07 *NFS Inspection Report. **Overflow** of the BLEU Processing Facility (BPF) scrubber blowdown tank on Oct. 16, 2007. Manual by-valve associated with the blowdown line found cracked open. **Spill** event in Area 500 that occurred in a transfer line required shutdown of production on Oct. 17. Several intermittent failures occurred on the BPF raffinate inline monitor between 10/13 and 10/18. Degrading Multichannel Analyzer (MCA) circuit board. *Spare MCA board failed Safety Related (SRE) Testing.* IR 70-143/2007-007, Inspection dates 9/09-10/20/07, ML073230801*
- 11/19/07 *Relaxation of Section V.3.B. of Confirmatory Order dated 2/21/07.* ML073231216
- 12/5-6/07 *22,214 tons of HEU, LEU, Natural Uranium, Thorium and DU arrived in Erwin from Italy.* ML073610337 (See 10/19/07)
- 12/11/07 *County Tapped For Water Grant. \$500,000 Community Development Block Grant approved to upgrade the Railroad Well Water Treatment Plant in Erwin. Funding for the \$1,450,300 project will include \$950,300 in local funds. The funds were provided by the U. S. Dept. of Housing and Urban Development and were allocated under a procedure authorized by the Tennessee General Assembly. The grants were approved by the ECD Loan and Grant Committee following an application by each county.* The Erwin Record,12/11/07 (Association: ATSDR Report)
- 12/13/07 *All Petitioners requesting they be heard by the Atomic Safety and Licensing Board regarding the July 18, 2007 Confirmatory Order and 26 new license amendments granted to NFS during “OUO” period **are denied** a hearing.* U. S. Nuclear Regulatory Commission, Memorandum and Order, Office of the Secretary Rulemakings and Adjudications Staff, 12/13/07, Served 12/14/07
- 12/21/07 *Nuclear Regulatory Commission Denies 6 Requests For Hearing.* Fresh from having a hearing request turned down on one issue related to the NFS plant in Erwin, the Sierra Club has filed a request with the NRC for the holding of an “oral hearing” in the Erwin area concerning the NRC’s decision to allow NFS to store additional HEU in Erwin. An NRC administrative law judge, on Dec. 13, denied hearing requests from the Sierra Club and several individuals regarding an NRC Order related to actions required by NFS in the wake of a 2006 spill of HEU solution at the Erwin plant. A copy of the new hearing request, filed electronically Dec. 17, notes the National Radiation Committee, “acting on behalf of the national Sierra Club, respectfully requests an oral hearing before the Atomic Safety & Licensing Board (ASLB) panel to be held in Tennessee within the community affected by NFS operations. The “specific matter” to be addressed at the oral hearing is the recently granted amendment to SNM-124 license “allowing NFS to receive and store greater quantities of HEU weapons-grade U-235” than previously allowed. The Sierra Club requests an oral hearing from the ASLB because of what it charged was the arbitrary and capricious manner by which NRC staff awarded NFS an amendment to its SNM license prior to allowing interested parties to exercise their right to be heard.
1. *The national Sierra Club, on behalf of its members in the Erwin Area, as well as other concerned citizens, requests the opportunity to have NRC staff explain in public--rather than hiding behind their desks serving boiler plate responses to the public’s concerns and filtering them through NRC’s bureaucracy—why it continues to run roughshod over American citizens’ rights to participate in their government’s decision-making .*

2. *The Sierra Club requests an oral hearing on the apparent **violation by NRC staff of citizens' Fifth Amendment due-process rights, as well as possible violations of the Administrative Procedures Act (APA) and the National Environmental Policy Act (NEPA).***
3. *An oral hearing is requested so that the ASLB can hear the concerns of the Sierra Club and the Erwin community regarding the disregard for worker and public health and safety demonstrated not only by NFS, which is taking more than three years to institute a safety culture in Erwin, but also by the NRC which continues to allow NFS to run the BLEU process despite its continued failure to operate safely and in accordance with the safety requirements of (its license).*
4. *On Nov. 8, 2007, NFS had yet another accident when a worker was sprayed with a radioactive, caustic liquid and required emergency medical attention at Unicoi County Memorial Hospital. This latest accident occurred even though NRC Deputy Region II Administrator Victor McCree promised that NRC will continue enhanced oversight at NFS to verify sustained improve performance. The Greeneville Sun, 12/21/07 (Note: NFS spokesman Tony Treadway said it is not unusual for the NRC to grant changes to a license before the public comment period is finished. He said that was the case when the NRC allowed NFS to start the BLEU process). Sierra Club Committee Wants Hearing on NFS Uranium Storage Plan, Johnson City Press, p. 4A, 12/19/07*

12/28/07 *NFS Inspection Report. A **spill** occurred in BPF operating area; Clog within the U/AL system; SNM sprayed into cup operator was holding and *splattered back up into the operator's face and body who had to be decontaminated and taken to the hospital emergency room.* No specifics on how to locate an obstruction. Pressure gage would have aided operator in locating the obstruction but the needle for the gage had broken and fallen to bottom of face plate. Additional smears not taken to define extent of contamination outward that **exceeded licensee applicable limits.** IR 70-143/2007-008, Inspection dates 10/21-12/01/07, ML073620551 and corrected report dated 1/4/08, ML080080165*

12/31/07 NRC published a notice of opportunity to request a hearing on NFS's License Amendment Request regarding the Processing of UF6 in the "new" CD (Commercial Development Line). Deadline for requesting a hearing is Feb. 29, 2008. Federal Register, 12/31/07, pp. 74352-74354

01/04/08 In June, 2007, the Energy and Commerce Committee uncovered NRC's Policy of official secrecy with respect to all non-classified NRC licensing, enforcement, and safety matters concerning the two HEU processing facilities in VA and TN. Ironically, the NRC policy itself was labeled "official use only" and redacted from public disclosure. As a result, Erwin Citizens Awareness Network (ECAN's) development was finally inspired by a July 3, 2007 letter to the NRC from Representative John D. Dingell and Representative Bart Stupak, U. S. House of Representatives, Committee on Energy and Commerce, when they stated the NRC had "denied the public its due process rights as mandated by Section 189 of the Atomic Energy Act when it withheld public notice of NRC's Feb. 21, 2007 Confirmatory Order that modified NFS's Special Nuclear Materials License." Erwin's Citizens Awareness Network (ECAN), P. O. Box 1151, Erwin, TN. 37650 (Add mission of ECAN?)

01/05/08 *Safety Equipment Failure of the Criticality Alarm System.* Two of 18 detector pairs did not generate an alarm signal in all modes. In the event of a criticality, 2 detector pairs may not have generated an alarm signal. NFS Event Report 43883

01/07/08 Subpoena issued to Daryl M. Shapiro, Esq., by U. S. Nuclear Regulatory Commission Office of Investigation. Commands Mr. Shapiro to appear at the NRC headquarters on Jan. 9, 2008 to provide testimony. **NFS in the subject of a Federal Investigation into alleged regulatory violations** and hired Mr. Shapiro as outside counsel to investigate those alleged violations and to provide counsel on addressing the findings of his investigation. The OI investigation began over 19 months ago. *Counsel for NFS and Daryl M. Shapiro, Esq., request the Commission to quash the Subpoena by NRC Office of Investigations (OI).*

In the Matter of Subpoena issued to Daryl M. Shapiro, Esq., in NRC Investigation No. 2-2006-017, Motion to Quash the Dec. 3, 2007 NRC Office of Investigations, 1/07/08, ML080150036 (See 3/09/06, 1/07/08, 3/27/08, 5/12/08, 1/7/09 and 1/15/09)

- 01/10/08 *NFS Seeks NRC OK To Amend Its License.* Company wants to process Uranium Hexafluoride (UF⁶) in new commercial development line. NFS expects the project to last “for several years”. Johnson City Press, p. 4A
- 01/15/08 *Inadequate inspections on Thru-Wall Piping Penetration Sleeves (Unanalyzed Condition).* The documented inspection was **not adequate** to verify the continued reliability and availability of the sleeve. *The discussion in the supporting safety analysis was insufficient.* During the two year review of the Safety Related Equipment (SRE) test, it was determined the test could not be performed as written and that the test did not verify the continued reliability and availability of the sleeves. Event 43937, Reported to NRC 1/28/08
- 01/18/08 *Procedural Violations Reported At NFS Plant:* The Greeneville Sun, 1/18/08
- 01/21/08 *NFS Lands Another Contract With U.S. Department of Energy Facility.* Johnson City Press, 1/21/08
- 01/28/08 *NFS Inspection Report.* An operations supervisor directed discharge of waste material to waste treatment tanks *that did not meet discharge criteria.* On Dec. 8, **contamination** was found in one of the on-site warehouses; No postings to identify area as controlled. IR 70-143/2007-009, Inspection dates 12/03-12/31/07, ML080290115
- 01/28/08 *Inadequate Inspections On Thru-Wall Piping Penetration Sleeves. Event Report 43937.* Since 2004, NFS failed to adequately test eight of the eleven process sleeves due to the inability to visually verify the condition of the process pipe and sleeve. This **visual verification** was prevented by the installation of fire grout between the process pipe and sleeve. The inspectors noted that in eight out of a total of eleven sleeves (and penetrations) a fire sealant material (grout) covered the outside of the pipe such that it was not possible to determine the condition or existence of the sleeve. *Long term corrective actions include a redesign of all the sleeves, relocations of others, and an update to the ISA.* IR 70-143/2008-01, Inspection dates 01/01-04/05/08 ML081270020 (Four Years!)
- 01/30/08 *The Groundwater Treatment Facility treats groundwater and discharges it to the NFS Sanitary Sewer. When operating, daily grab samples are obtained from the Groundwater Treatment Facility. The grab samples are composited monthly and analyzed for insoluble radioactivity. **The Groundwater Treatment Facility did not operate during 2006.***
- NFS Storm Water Runoff :* Quarterly storm water quality inspections were conducted. Annual storm water sampling was conducted on *March 20, 2006* for Outfall A and Outfall B. All attributes sampled were within NPDES permit limits *with the following exceptions on both outfalls: Nitrate/Nitrite as Nitrogen, Total Recoverable Magnesium, and Total Recoverable Aluminum.* The nitrate/nitrite as nitrogen and magnesium attributes have **Exceeded the permit limits since 1998.** *These exceedances have been identified to the State of Tennessee Division of Water Pollution Control.* Research has demonstrated that the nitrate/nitrite as nitrogen and the magnesium are due to naturally occurring background levels in surface water and groundwater in the vicinity of the NFS site. This was identified **to** the State of Tennessee in 2003 and a request was made by NFS to modify the permit limits. The State of Tennessee agreed with the research, but has not modified the permit limits. **The origin of the aluminum attribute still remains unidentified as it has since 2003.** (Five Years!)
- BLEU Complex Storm Water Runoff:* Annual storm water sampling was conducted on *April 17, 2006.* All attributes were within NPDES Permit limits *with the exception of Total Recoverable Magnesium, Total*

*before date means Loss of Containment

Recoverable Aluminum, and Nitrate/Nitrite as Nitrogen. This was identified to the State of Tennessee with the same explanation as in 13A.3.1 Redacted Version of Annual Update to Part II of SNM-124 Reflecting Changes Made during Calendar Year 2007, Letter from B. Marie Moore to NMSS, Director, Appendix A, Chapter 13, p. 3-4, January 30, 2008, ML082660148, by Cover Letter 9/12/08 (Note: Two Years! These effluents reports are for 2006-reported two years later!)

01/30/08

NFS License Performance Review (LPR). The NRC noted an upward trend in the number of procedural violations identified during this review period including eight violations in a five month period. This increase in violations appears to be an indicator of declining regulatory performance in this area. The review revealed the need for improvement in management oversight to ensure adherence to operational radiological protection, and engineering procedures, and is particularly noteworthy as it is a longstanding area needing attention at NFS, as indicated by two of the previous three LPR's. At least one of these procedure violations involve failure to adhere to procedures implemented as a corrective action following the March 2006 incident involving the spill of HEU solution.

Several recent licensing requests have not adequately supported licensee's desired operational needs. Ineffective planning and quality resulted in documents that required multiple changes before providing sufficient information to support NRC's licensing activities. Examples include the following:

- ✓ The request to increase its possession limit for HEU (TAC L32637)
- ✓ The three revisions of the Fundamental Nuclear Material Control Plan for HEU submitted in July, November and December 2007 (TACs L32644, L32656 and L32662)
- ✓ The major revision of the Physical Security Plan for HEU (TAC L32648)
- ✓ The request to establish a Chief Nuclear Officer (TAC L32647) to improve in both human performance and the related components of *safety culture*

Program Areas Needing Improvement:

- ✓ Management oversight to ensure adherence to operational, radiological protection and engineering procedure
- ✓ Failure to follow procedure due to storage and use of flexible pipe sections without formal approval from the nuclear criticality safety group
- ✓ Failure to implement criticality alarm response procedures following a false alarm
- ✓ Two examples of failing to follow procedures, one involving the use of an unapproved work request for operations, the other which led to the contamination and chemical exposure of an operator
- ✓ Three examples of failing to follow Special Work Permits (SWPs) by not using the appropriate personnel protective equipment
- ✓ Two examples of failing to follow SWP radiological control requirements
- ✓ Licensee implemented operational procedure changes without the required reviews **and training**
- ✓ Licensee failed to implement the "toll-gate" process that **requires** documented design goals and meetings to determine the requirements for engineering projects. (LPR), Inspection dates 7/29-12/31/07, ML080300451

02/12/08

*NFS Partner Wins Major Contract. AREVA, a French-owned company partnered with NFS, of Erwin in the down blending of highly enriched uranium, announced last week that it has won four major contracts. The main change created by AREVA's new contract is that it will be providing fuel for one additional reactor at Browns Ferry, with delivery from 2010 to 2012. By 2009, the BLEU project in Erwin is expected to end. Its facilities will be used for other projects, such as the down blending of **17.4 metric tons of material in partnership with Westinghouse**. The main purpose of that endeavor will be to create a strategic reserve of fuel materials for commercial power plants. The original contract for the BLEU project, which went into operation in 2004, called for NFS to down blend **33 metric tons of stockpiled HEU**. The total later increased*

to **40 metric tons** when TVA acquired additional material that was released by the federal government. The Erwin Record, 2/12/08

02/16/08 Team of expert consultants was assembled to serve as the NFS Safety Culture Board of Advisors (known as the SCUBA Team) to characterize any needs for improvement in safety culture and establish an initial baseline of information on the NFS-Erwin organizational culture that can be used **to support trending activities in the future**. The SCUBA Team identified areas where NRC “regulatory expectations” (as implied by the information presented in NRC Regulatory Issue Summary 2006-13) were either not being met or were being minimally met. *The SCUBA Team identified that most components of the NFS-Erwin Safety Culture **failed** to meet Safety Culture Components. Nine did not meet regulatory expectations as set forth or implied by NRC RIS 2006-13) with three meeting minimum regulatory expectations and one partially meeting regulatory expectations. NFS-Erwin Site 2007 Independent Safety Culture Assessment Results Report, 15NO80037, GOV0155504, SCUBA REPORT, 2/16/08 (Note: The 2007 Independent Safety Culture Assessment Result Report (not made public until May 2008) states: “The Team observed degraded conditions, some of which create industrial-personnel safety risk (p. 32) and concluded an embedded tolerance of degraded conditions raised significant concerns regarding the current general safety culture and the potential for carryover effects on nuclear safety. (p. 28) NFS has a reactive approach to preventive maintenance and tends to operate equipment until it fails. (p. 33) One contributing factor includes a value system that encourages putting production ahead of procedural compliance. Organization standards are principally focused on getting tasks completed **to support production**. Observations and interviews indicated very little supervisory time is spent on establishing, and reinforcing safety performance standards, including procedural compliance. (p. 41) The site has a history of NRC violations associated with procedural adherence deficiencies, and procedural non-compliance continues to be an area for improvement. **An immediate intervention is necessary** to address and correct this continuing problem. (p. 42) There are multiple examples where degraded conditions have become a way of life and operations personnel have learned to live with and accommodate these degraded conditions. Stated another way, **Safety Related Equipment and Items Relied on for Safety are run to failure**”. (p. 57) NFS-Erwin 2007 Independent Safety Culture Assessment Results Report, 15NO80037, GOV0155504, SCUBA Report, 2/16/08*

02/20/08 Copy of Supplement Analysis dated October 2007, DOE/EIS-0240-SA1 discovered on DOE Website for Disposition of Surplus Highly Enriched Uranium which states the following: (**Latent Cancer Fatality-LCF**)

*Council of Environmental Quality (CEQ) regulations require Federal agencies to prepare a supplement to an environmental impact statement (EIS) when an agency makes substantial changes to a proposed action that are relevant to environmental concerns, or when there are significant new circumstances or information relevant to environmental concerns bearing on the proposed action or its impact. CEQ also **recommends careful re-examination of EIS's that are more than 5 years old**. Supplement analysis evaluates the potential impact of continued program implementation, and considers potential environmental impacts. It proposes new end-users, new disposal pathways, and down blending additional quantities of HEU. (p.1)*

- *Original 1996 HEU/EIS Record of Decision (ROD) specifically analyzed down blending and subsequent management of a nominal 200 metric tons of surplus HEU. (p.1)*
- *Contract for down blending 17.4 metric tons HEU (Bomb-grade) was awarded to NFS on June 29, 2007 (p.4)*
- *NNSA was established by Congress in 2000, (5 years after the 1996 HEU/EIS), as a separately organized agency within the Department of Energy responsible for enhancing national security through the military application of nuclear science. NNSA News Release, 6/29/07*

- *In October 2007, DOE/NNSA made changes and issued a Supplement Analysis for the Disposition of Surplus HEU (DOE/EIS-0240-SA1) **12 years after the original 1996 HEU/EIS**, which involves changes the public in Erwin and surrounding cities and counties do not know about. DOE/EIS-0240-SA1, October 2007*
- *Transporting 290 metric tons from NFS to Columbia, S.C. for storage is an issue and a concern, and transporting LEU, in the form of UF⁶, to foreign countries is another change and concern (new end users). (p.4)*
- *An additional 28 tons HEU are presently unallocated, but expected to be down-blended between 2008 and 2030 (p.2). Another 50 metric tons is proposed to begin in 2008 and be down-blended over the next several decades. (p. 5)*
- *HEU feedstock now **enriched to 80% U-235**, instead of 50% (original 1996 EIS). (p. 7)*
- ***Additional chemicals**, triuranic octaoxide, or uranium trioxide will now be considered for use in down blending. (p. 7)*
- *Standard dose-to-latent-cancer-fatalities-risk has been revised. The resource areas likely to be impacted include human health risk, facility accidents, transportation risk, and waste management. Also, potential impacts occurring as a result of sabotage or terrorism. (p.8)*
- *Change results in a **50% increase in risk to workers and a 20% increase in risk to the public** from the same radiological exposures reported in the HEU/EIS. **Additional radionuclides U-233, 234, and 236** added to already existing U-235 and U-238.*
- *Increases in the offsite population dose in a 50 mile radius would also increase because of the larger dose-to LCF-risk factor used in this SA for both workers and the public. (p. 9-10)*
- *This SA's calculated offsite population risk is equivalent to the following increased annual risk of an **Latent Cancer Fatality** occurring in the total offsite population: **1 in 71 for NFS**; 1 in 357 for Y-12; 1 in 416 for SRS; 1 in 4,545 for BWXT (p. 11 footnotes for Table 4.2-2). The largest calculated MEOI dose from down blending activities would occur at NFS primarily due to the much closer proximity of the MEOI (p. 11)*
- *Radiological Doses from an Earthquake have **increased 1,766%** (p. 14); (NFS sits on 2 fault lines with 5 fractures, per 1999 NRC EA). A criticality could be purposefully created, or high explosives could be used to damage building in the same way as an earthquake. The resulting radiological release and consequences to workers and the public would be similar, regardless of the nature of the initiating event (p. 21)*
- *Consultation with Union of Concerned Scientists, Nuclear Physicist, stated the LCF ratio should be no more than one tenth of one percent, per NRC rules. Federal Register, Vol. 51, No. 162, Aug. 21, 1986. DOE/EIS-0240-SA1, October 2007, ML081070196*

(Note: 1996 DOE Final Impact Statement states on p. E-8 "In order to perform the dose assessments for this EIS, different types of data must be collected and/or **generated**. In addition, calculation **assumptions** have to be made. Dose assessments were performed for members of the general public and workers dose assessments for members of the public were performed for two different types of receptors considered in this EIS: a maximally exposed offsite individual and the general population living within (50) miles of the facility. It was **assumed** the maximally exposed individual (MEI) was located at a position on the site boundary that would yield the highest impacts during NORMAL operation of a given alternative. If more than one facility was assumed to be operating at a site, the dose to this individual from each facility was calculated. The doses were then summed to give the total dose to this individual. A (50) mile population

dose was calculated for **each** operating facility at a site. These doses then were added to give the total population dose at that site". (Note: Studsvik was not in Erwin in 1996, therefore the DOE did not have the correct dosage assumptions!)

To estimate the radiological impacts from **normal** operation of HEU blending facilities, additional **assumptions** and factors were considered as follows:

- No prior deposition of radionuclides on ground surfaces was assumed.
- For the maximally exposed offsite individual, the annual exposure time to the plume and to soil contamination was 0.7 years (NRC 1977b:1.109-68).
- For the population, the annual exposure time to the plume and to soil contamination was 0.5 years (NRC 1977b:1.109-68).
- A semi-infinite/finite plume model was used for air immersion doses. Other pathways evaluated were ground exposure, inhalation, ingestion of food crops and animal products contaminated by either deposition of radioactivity from the air or irrigation, ingestion of fish and other aquatic food raised in contaminated water, swimming and boating in contaminated surface water, and drinking contaminated water. *It should be noted not all pathways were available at every site.*
- For atmospheric releases, it was assumed that ground level releases would occur for all HEU blending facilities. For site-dependent facilities, reported release heights were used and **assumed** to be the effective stack height. Ignoring plume rise makes the resultant doses conservative.
- *The calculated doses were 50-year committed doses from 1 year of intake.*
- **Re-suspension of particulates was not considered because calculations of dust loading in the atmosphere showed this pathway was negligible compared with others.**

At NFS annual average doses to workers for no action were based on measured values received by radiation workers during 1993. The average no action dose received by a worker at this site in future years was **assumed to remain the same** as the average during these earlier years. The total workforce **dose** in future years was calculated by multiplying the average worker dose by a projected future number of workers. (p. E-10) "*For the public, the health effects expressed in this EIS are the risk of fatal cancers to the maximally exposed individual and the number of **fatal cancers** to the (50 mile population from exposure to radioactive-released from **any** site over the **assumed** operational period. Although health risk factors are statistical factors and therefore not strictly applicable to individuals, they have been used in the past to estimate the incremental risk to an individual from exposure to radiation. Therefore, the factors of 0.0005 and 0.0004 per rem of individual committed effective dose equivalent for a member of the public and for a worker, respectively, have also been used in this EIS to calculate the individual's incremental fatal cancer risk from exposure to radiation."*) (p. E-10) Disposition of Surplus Highly Enriched Uranium, Final Environmental Impact Statement, Volume I, Appendix E, Human Health, US. Department of Energy, Office of Fissile Materials Disposition, June 1996

(Note: Page E-9 and E-10 of the 1999 DOE/EIS states: To estimate the radiological impacts from **normal** operations of HEU blending facilities, additional assumptions and factors were considered:

- **No prior deposition of radionuclides on ground surfaces was assumed.**
- **Re-suspension of particulates was not considered because calculations of dust loading in the atmosphere showed that this pathway was negligible compared with others.**

(Note: Since a fraction of the 4.5 acre construction site will involve soil that has radionuclide concentrations **above** naturally occurring soil concentrations, radioactive fugitive emissions were established for the elevated portion of the construction site. The total estimated volume of soil to be disturbed during construction of the BLEU Complex (90,000 ft³). The average excavation depth by the elevated area involved (11,500 ft²) resulting in a volume of 5,308 ft³. Excavation for the BLEU Complex is estimated to last 90 days, once construction begins. Table 1 details the dose assessment resulting from fugitive dust emissions due to the BLUE Complex construction activities. Fugitive dust emission from the BLEU Complex construction activities will have a negligible impact on radiological dose (0.0112 mrem). This estimation does not factor

wet suppression techniques that will be used to minimize fugitive dust. As stated in the NFS Supplemental Environmental Report (ER), 2001 submitted to NRC Nov. 11, 2001, wet suppression or equivalent methods will be used to control fugitive dust emissions and silt fencing with straw bales or equivalent will be used as necessary for erosion control. *The dose estimate for fugitive dust emissions was not included in the gaseous release estimate because it is a short duration one-time release estimate due to construction activities rather than operations of the BLEU Complex.*) Additional Information to Support an Environmental Review for BLEU Project, 01/15/02 from NFS to NRC, Director, Office of Nuclear Material Safety and Safeguards, p.8, p. 9 "Since NFS has multiple radionuclides at the site and has identified more than one surrogate radionuclide relationship, NFS needs to commit to addressing each surrogate relationship". Technical Review of License Amendment Request to append Chapter 5 of The North Site Decommissioning Plan, paragraph four (4), Memorandum to Philip Ting, Chief, Fuel Cycle Licensing Branch, from Julie Olivier, Backup Project Manager, Fuel Cycle Licensing Branch, Office of (NMSS),10/11/02, SUBJECT: Nuclear Fuel Services, Inc., Meeting Summary (TAC NO. L31033) 9/13/00, ML0037779150 ("Outside contaminated control areas the surfaces (asphalt, soil, etc.) have been permitted to become contaminated to the limits specified in the license. The contamination is **re-suspended** into the atmosphere and also discharged from plant environs through surface water runoff.") Atlanta Journal and Constitution, 11/29/81

- 02/24/08 *Utility Company Seeks Funds For Projects.* Erwin Utilities asking federal government for money for sewer lines, water treatment facility. In an effort to add a layer of protection to one of the wells that supplies water to the community, Erwin Utilities is approaching the federal government for help for a third time. *The Public utility company wants to build a water treatment facility that would filter water coming from what is known as the Railroad Well near the National Guard Armory.* During a visit last week from Senator Lamar Alexander, Brown sought his assistance in getting the \$1.1 federal appropriation. He said Erwin Utilities is seeking one particular grant from the U.S. government for a third time. "This project is tied to our Railroad Well water treatment plant upgrade and protection project". "It's a vital water source for our community." Brown said later that one way to protect the well is to remove any dangers to it. Johnson City Press, 2/24/08 (Association: ATSDR Report)
- 02/27/08 Response from Union of Concerned Scientists concerning DOE/EIS-0240-SA1 and the meaning of 1 in 71 Latent Cancer Fatality (LCF) at Nuclear Fuel Services, Inc. "A 1 in 71 latent cancer risk means that a population of 71 persons exposed to that amount of radiation would likely result in one additional cancer incidence due to that exposure, over and above the number of cancers caused by other means. So, **a population of 710 persons would likely see 10 additional cancer incidences, etc.**" ucsusa.org (Note: The combined population of the city and the county is just under 18,000. p. 2, Community Profile, The Erwin Area, Embarq Phone Book, 2008. The projected population in the 50 mile radius of NFS is 1,287,973 extrapolated from the 2000 census. p.10, Table 4.2-1 "Comparison of Key Blending Site Radiological Impact Parameters", DOE/EIS-0240-SA1, Supplement Analysis, Oct. 2007).
- 03/01/08 *NRC Officials Claim No Knowledge of Cancer Mentioned In a Footnote. Footnote Raises Fear of Higher Danger of Getting Cancer, But Meaning is Disputed, NRC Will Investigate.* The Greeneville Sun, 3/01/08 (See 2/20/08)
- 03/02/08 *Sierra Club Disagrees with NFS over Cancer Rate Report.* A U. S. Department of Energy Report that discusses the disposition of HEU has the Sierra Club and some people in the community disagreeing with Nuclear Fuel Services on the company's contribution to cancer rates. "With a population of 5,700 NNSA's analysis *implies* that NFS' blended low-enriched uranium facility will cause 80 latent cancer fatalities per year in Erwin--80 more cancer deaths per year than would have otherwise occurred," said Modica, chairwoman of the club's Radiation Committee.

NFS spokesman Tony Treadway said Randy Shackelford, nuclear safety manager for NFS, contacted the report's author. The number NFS obtained is "there is a 1 in 85 million chance someone within 50 miles of

NFS will contract a latent cancer because of the down blending”. Modica said the figure Treadway cited was not in the report, and stated she quoted figures that were in the report, and that if she made a mistake it was unintentional, but she didn’t think she made any mistakes.” Modica highlighted a portion of the report that said the latent cancer fatality risk for NFS workers is up 51 percent since 1996. Johnson City Press, 3/02/08 (Note: Ms. Modica repeated what the DOE/NNSA, DOE/EIS 0240-SA-1 footnote exactly stated and implied (p. 11, Table 4.2-2) not her “personal assumptions”). See 02/27/08

- 03/04/08 *Reports Author Says Cancer Claim Incorrect—Sierra Club Rep. Contends NNSA Analysis Shows Increase In Fatality Risks.* The NRC officials said they were **unaware** of the report and unable to comment, but has promised to study the DOE analysis and report back with its own findings. The Erwin Record, 3/04/08
- 03/05/08 *Nuclear Official Disputes Concern Of Cancer Risk Raised At Last Meeting.* A spokesman for the DOE’s National Nuclear Security Administration (NNSA) on Tuesday said Erwin residents face little **additional risk** of contracting cancer as a result of a HEU down blending operation at the NFS plant. At a Feb. 28, LPR meeting held by the NRC, Linda Modica, chairman of the Sierra Club’s Radiation Committee, distributed what she said was an alarming document. The information Modica distributed referred to a footnote in an Oct. 2007 NNSA report. The footnote in question actually said—“This SA’s (Supplement Analysis) calculated offsite population risk is equivalent to the following increased annual risk of an **latent cancer fatality** (LCF) occurring in the total offsite population.”
- *This Supplement Analysis (SA’s) calculated offsite population risk is equivalent to the following increased annual risk of an latent cancer fatality (LC) occurring in the total offsite population.*
 - *1 chance in 357 for Y-12 (the DOE’s Y-12 National Security Complex in Oak Ridge)*
 - *1 chance in 4,545 for BWXT (a fuel fabrication plant similar to NFS in Lynchburg, Va.)*
 - *1 chance in 416 for SRS (the DOE’s Savannah River Site)*
 - ***1 chance in 71 for NFS—**The Greeneville Sun, 03/05/08*
- 03/12/08 Mr. Robert C. Pierson, NRC, sent letters to Mayors Gregg Lunch, Johnny Lynch and Don Williams Lewis stating the 1 in 71 Latent Cancer Fatality (LCF) risk associated with the down blending of HEU at NFS was really 1 in 71 “years,” and, went on to say “it is less than the risk of a person being struck by lightning, which is about 1 in a million.” Earlier, the DOE author of the DOE/EIS-0240-SA1 had stated the risk was “One in 85 million.” ML080700118, ML08070043 & ML080700092
- 03/18/08 *Letter by NRC Backs NNSA Findings, But ‘71 Years’ Comment Adds to Confusion.* The NRC has weighed in on a controversial report about cancer risks from operations at NFS but that report has only added more confusion to an already complicated matter. According to a letter sent to Unicoi County Mayor Greg Lynch by Robert Pierson, director of the NRC’s Division of Fuel Cycle Safety and Safeguards, cancer risks from NFS’ down blending of HEU are miniscule, but the letter went on to say cancer rates shouldn’t be expected to increase over a time period of 71 years. This explanation is the first time anyone has compared the risk in terms of years—specifically 71 years, which immediately drew the ire of the National Nuclear Security Administration (NNSA). Kevin M. Ramsey, a senior project manager at the NRC said the 71 years was added to its explanation to help the public understand that the risk is “**basically zero.**” The Erwin Record, 3/18/08
- (Note) Radiation Exposure: NRC acknowledges that: “exposure to **any** level of radiation is assumed to carry with it a certain amount of risk. In the absence of scientific certainty regarding the relationship between low dose exposure and health effects, and as a conservative **assumption** for radiation protection purposes, the scientific community generally **assumes** that **any** exposure to ionizing radiation may cause undesirable biological effects and that the likelihood of these effects **increase as the dose increases.**” Regulatory Guide 8.13--Instructions Concerning Prenatal Radiation Exposure, Draft issued as DG-8014; Know Nuclear in the Tennessee Valley, Nuclear Waste Papers, Keathley University Center, 09/27/08, p. 3

“Radiation can cause a variety of ill-health effects in people. The most significant ill-health effect to depict the consequences of environmental and occupational radiation exposure is induction of cancer fatalities. The National Research Council’s Committee on the Biological Effects of Ionizing Radiations has prepared a series of reports to advise the U.S. Government on the health consequences of radiation exposures. The latest of these reports provides the most current estimates for *excess mortality from leukemia and cancers other than leukemia expected to result from exposure to ionizing radiation*. pp. E-4, E-5. Disposition of Surplus Highly enriched Uranium Final Environmental Impact Statement, Appendix E, Human Health, Health Effects, DOE, June 1996

03/25/08 *Explanations Add Up To Big Fat Zero.* The Erwin Record, 3/25/08

03/27/08 *The Matter before the Commission on a Motion to Quash a Subpoena issued by the NRC Office of Investigations (OI) was denied.* During March 2006, the NRC received an allegation that an NFS executive may have violated provisions of the NRC Fitness-for-Duty regulations. On March 31, 2006 the NRC referred the allegation to NFS and requested NFS conduct an internal review of the events in question and report the result of that investigation to the NRC.

NFS hired an outside counsel, Mr. Daryl Shapiro, to conduct the investigation and prepare a report responding to the NRC request. In an undated letter, Mr. Dwight Ferguson, NFS Chief Executive Office, responded to the NRC request, attaching a report prepared for NFS by Mr. Shapiro. The report summarized information collected during the investigation.

OI opened an investigation into whether NFS or the executive in question deliberately violated any NRC regulations. Certain NFS employees made sworn statements that contradict some of the statements in the Shapiro Report. The contradictions are re-enforced by documents produced by NFS. *Violations of these regulations may be referred to the Dept. of Justice as possible criminal violation of federal statutes.* Mr. Shapiro’s testimony is to be taken within two weeks from the date of this Order. Nuclear Regulatory Commission, In the Matter of Daryl M. Shapiro, NRC Investigation No. 2-2007-17, CLI-08-06, Memorandum and Order, Docketed 3/27/08, Served 3/27/08, ML080870303 (See 3/09/06, 1/07/08, 5/12/08, 1/07/09, and 1/15/09)

04/03/08 *Agency Downplays NFS Risk of Cancer--Sierra Club Official Assails Report as Garbage.* Johnson City Press, 4/30/08

04/07/08 *NFS was discussed at last year’s AARM meeting, and Region II and NMSS recommend the status of the NFS improvement actions be discussed this year due to the unique aspects of NRC oversight at the facility. In particular the establishment of a Safety Culture and Configuration Management Improvement Oversight Panel that is evaluating NFS implementation of the Feb. 21, 2007 Confirmatory Order. NFS’s current performance, as indicated by the number of violations identified since mid-2007, has not significantly improved since the last license performance review (LPR) and continue to indicate NFS needs to improve its management oversight to ensure adherence to operational, radiological protection, and engineering procedures. This area for improvement is longstanding as indicated by two of the previous three LPRs. Update of NFS, Inc., Enclosure 4, AARM-Agency Action Review Meeting, NMSS, 4/7/08, SECY-0800048, ML080580192 (See Note on 2/16/08, Independent Safety Culture Assessment Result (SCUBA) Report*

04/24/08 *NFS Inspection Report.* On or before April 4, 2008, NFS failed to show in the nuclear criticality safety analysis for the BLEU Preparation Facility Centrifuge Bowl Cleaning Station the normal conditions related to moving centrifuge bowls or demonstrate that k_{eff} would be less than 0.90 for all normal conditional associated with centrifuge bowl cleaning. The inspectors determined this study was **not sufficient** to demonstrate that k_{eff} was less than 0.90 since no mass controls had been established. Failure to demonstrate the

adequacy of subcritical margin under all normal conditions associated with BPF centrifuge bowl cleaning. IR 70-143/2008-202, Inspection dates 3/31-4/04/08, ML081070390

- 04/28/08 **Report Shows NFS Needs To Work On Safety Culture:** Nuclear Fuel Services is **not meeting safety expectations in nine of 13 categories** and the company is only partially or minimally meeting the expectations in the other four areas, an independent review commissioned in the wake of a 2006 liquid uranium spill at the NFS facility has concluded. Management of NFS released the results of the report, which was conducted by a Safety Culture Board of Advisors, during a meeting with NRC April 22. NFS was required to hire an outside board to conduct the assessment as the result of a settlement between NRC and NFS of several violations related to the HEU spill in 2006. Despite improvements, however, *the independent assessment identified problems in the safety culture at all levels of the plant. “The board found we require **significant** improvement in our values, standards and expectations”, NFS Executive Vice President Tim Lindstrom said. “Specifically management and supervision lacks a questioning attitude when it comes to safety issues.” Management **has not always placed safety first** in decision making, the assessment found. “The board found that in general our decision making was not placing safety as the number one priority, that **we would make decisions based on production requirements rather than focusing on safety first** as a decision making point, Lindstrom said. Nuclear Fuel Cycle Monitor, Volume 27, No. 18, 04/28/08, p. 8-9*
- 04/28/08 *NFS Needs To Wipe Out Any Tolerance For Allowing Degraded Conditions At The Company’s Fuel Cycle Facility, an Independent, Third Party Found in Conducting a Safety Culture Assessment (SCUBA). The assessment was undertaken to fulfill a requirement in a February 2007 Confirmatory Order (CO) from the NRC, which identified NFS’ weak safety culture as contributing to a “recurrence” of violations at the facility. The Confirmatory Order was issued 11 months after a near-criticality event at NFS’s BLEU facility. At the April 22 meeting at NRC headquarters, Tim Lindstrom, NFS’ executive vice president and general manager, said SCUBA determined that over time, NFS developed a process for workarounds which became “proceduralized” and created a distraction for the workforce. In the past, Lindstrom acknowledged, the company did not emphasize decision-making based on safety as the top priority. It was not unusual for decisions to be based on productions requirements, he said. SCUBA stressed the need for NFS to better communicate that safety should underpin operational decisions. Platts Inside NRC, Article, 4/28/08*
- 05/01/08 First NRC Inspection Report of AREVA, who now **manages** the BLEU (Blended Low Enriched Uranium) Project. NFS-Erwin Site 2007 Independent Safety Culture Assessment Results Report, 15NO80037, GOV015504, SCUBA Report, 2/16/08, p.3
- 2008 *AREVA was voted one of the world’s most irresponsible corporations at the 2008 Public Eye awards in Davos, Switzerland, largely due to its uranium mining record in the Niger. The company is held responsible for the failure to inform workers of the health risks, radioactive contamination of the air, water and soil, and “suspicious deaths among the workers, caused by radioactive dust and contaminated groundwater”. Public Eye People’s Award and Global Award to AREVA at: <http://www.publiceye.ch/>, Beyond Nuclear Fact Sheet, Beyond Nuclear at NPRI, Nuclear Power and France: Setting the Record Straight, Updated 9/16/08, www.beyondnuclear.org (Association: NFS)*
- 05/05/08 *NFS Inspection Report. Since 2004, NFS failed to adequately test eight of the eleven process sleeves due to the inability to visually verify the condition of the process pipe and sleeve. The inspectors noted that in eight out of a total of eleven sleeves (and penetrations) a fire sealant material (grout) covered the outside of the pipe such that it was not possible to determine the condition or existence of the sleeve. These sleeves are considered IROFS. The inspectors also noted that the SRE annual testing required a visual verification the HEU pipe was intact and the sleeve was present. Due to the in-installation of the fire grout, this was not possible. Following a review of this issue, licensee noted the ISA addressed the issue of the fire grout. Licensee (NFS) determined the issue to be closed.*

*before date means Loss of Containment

On January 16, 2008 the inspectors noted PIRCS ITEM #12283, written by a process engineer who had a concern regarding a similar sleeve located in a wall between buildings 302 and 303. In this case, the SRE test for this particular sleeve could not be performed as written and management decided to discontinue future operations through this sleeve. Following several discussions between the NRC and licensee, NFS determined the event to be reportable on Jan. 28, 2008, as *an unanalyzed condition where the performance requirements of 10 CFR Part 70.61 were not met.* NFS also concluded the discussion in the supported ISA was insufficient. Long term corrective actions include a redesign of all the sleeves, relocation of others, and an update to the ISA. IR 70-143/2008-001, Inspection dates 01/01-04/05/08, EA-06-179, Events #43883, 43937,44104, NMED #080012, 080056 and 080185,5/5/08, ML081270020 (4 Years!)

05/12/08 Under the Freedom Of Information Act, 5, U.S.C., Section 552, and Privacy Act, 5 U.S.C. 552A, request for copies of all correspondence between the law firm Pillsbury Winthrop Shaw Pittman, Attorney Daryl Shapiro, the NRC staff and the Commission, regarding an investigation and report on allegations involving the chief executive officer of Nuclear Fuel Services in Erwin, TN. 5/12/08, ML081350030 (See 3/09/06, 1/07/08, 3/27/08, 1/7/09 and 11/07/09)

05/12/08 NRC releases Event Reports for Nuclear Fuel Services, (NFS) and BWXT Facilities for 2004-2007, which were previously withheld for security reasons. Fifty-Eight (58) Event Reports were posted 5/12/08 on the NRC Website home page at the Event Reports link. Some sensitive information (primarily building identifiers) has been redacted. NRC NEWS, U.S. Nuclear Regulatory Commission, Office of Public Affairs, Washington, DC.

05/19/08 Safety analysis of Nuclear Fuel Services plant in Erwin, Tenn., has found the nuclear materials processor and fuel fabricator fell short of industry "best practices" safety and performance standards in nine of 13 areas.

Among the reports released were **two fires**, failure of safety controls to "prevent a hydrogen explosion" in the highly enriched uranium down blending portion of the facility, criticality system alarm failures and failure of other monitors and systems. Just weeks after the March 2006 spill, two incidents were reported involving drug and alcohol related incidents. In the first case, an unidentified facility supervisor was found in violation of fitness for duty due to "failure to adhere to five-hour alcohol abstinence requirements." In the second incident, just eight days later, a "non-licensed supervisor" tested positive for illegal drugs. Knoxville News Sentinel, 5/19/08 See 1/07/08, 3/27/08, 5/12/08, 1/7/09, and 1/15/09

05/22/08 NFS Safety Evaluation Report: "Since 2002 a growing number of **significant** violations occurring at the NFS facility, in Erwin, TN have been reflected in successive Licensee Performance Reviews (LPRs). Despite numerous root cause investigations and corrective action plans, NFS continued to experience chronic noncompliance issues. Civil penalties and other sanctions imposed by the NRC did **not** have the desired effect for improving overall compliance with regulatory requirements. The normal enforcement process did **not** result in adequate improvement. It was the conclusion of the NRC Headquarters and RII staff and management to focus NFS resources on actions that would improve the licensee's program and reduce repeat violations.

One such issue was a spill of HEUN solution on March 6, 2006, resulting in multiple violations, including the failure of the existing configuration management system to evaluate, implement, and track changes in accordance with 10 CFR 70.72(a).

The proposed strategy recommended use of the Alternate Dispute Resolution (ADR) process, which required the licensee to develop an improved Configuration Management (CM) program based on benchmarking they have done, and to amend License SNM-124 to implement the program.

The goal of the CM program is to ensure that accurate and current documentation matches the facility's physical/functional configuration, ensuring that items relied on for safety (IROFS) are available and reliable, and the facility complies with regulatory requirements. The licensee **commits** to a CM program in accordance with the requirements of 10 CFR 70.62(d), 10 CFR 70.64, and 10 CFR 70.72. The licensee **commits** to implementing the CM program for new processes throughout facility design, construction, testing, and operation after June 30, 2008. Safety Evaluation Report—Configuration Management Program Amendment (TAC L32632), for NFS, 5/22/08, ML080980319 (See 7/21/03—NFS commitments to IROFS)

- 05/22/08 *Amendment #82—Approval of NFS, Inc. Configuration Management Program (TAC L32632). This Amendment is a requirement of a Confirmatory Order dated February 21, 2007. Safety Condition S-53 for compliance dates has been added to read as follows:*
- S-53: For existing processes (designed, installed, or in operation prior to June 30, 2008) the Configuration Management program will be applied in accordance with the following schedule: (1) apply throughout BLEU Prep Facility—September 2008; (2) apply throughout Navy Fuel Operations—June 2009; (3) apply throughout NFS—December 2010. Letter to B. Marie Moore, Vice President, Safety and Regulatory, NFS, from Robert C. Pierson, Director, Office of NMSS, NRC, 5/22/08, ML080980314
- 06/17/08 Reply from William H. Tobey, U. S. Department of Energy, to Erwin Citizens Awareness Network in reply to letter dated May 16, 2008, stating changes in DOE/EIS-0240-SA1 were not significant and therefore, DOE is not required to prepare a supplemental EIS, *stating no significant environmental or health impacts have resulted, or would result*, from the DOE's surplus HEU disposition activities at NFS in Erwin. DOE believes the conclusions are justified and DOE does not have the authority to conduct or sponsor health assessments for private facilities but DOE is committed to ensure the program is conducted in compliance with the National Environmental Policy Act (NEPA). Letter from William H. Tobey, Deputy Administrator for Defense Nuclear Nonproliferation, DOE, 6/17/08 (Note: Copy of this letter received 10/08/06 from NRC)
- 07/11/08 *Item Relied on for Safety (IROFS) Discovered Inoperable.* On July 11, 2008, it was identified the calibration gas used to functionally test the NOX (nitrogen dioxide, nitric oxide, etc.) detector had expired. It was determined the NOX detector (IROFS BPF-43) has been in a degraded condition since the last functional test (Jan. 08). Event 44344 (See 7/21/03)
- 07/14/08 *Item Relied on for Safety (IROFS) Discovered Inoperable.* NOX (nitrogen dioxide, nitric oxide, etc.) is IROFS BUND-17 for the LEU portion of the BPF. On July 11, 2008 it was identified the calibration gas used to functionally test the NOX detector has expired. The calibration expiration date was September 2007. The prior functional test of the NOX detector was performed on January 11, 2008. Event 44345 (See 7/21/03)
- 08/12/08 *NFS Sold To VA Company.* The Erwin Record, 8/12/08
- 08/26/08 *French Firm Rakes In TVA cash--Some Critical Of AREVA Nuclear Contracts.* Electricity ratepayers' dollars in Western North Carolina as well as federal tax money are increasingly going to a company owned largely by the French government: the nuclear power conglomerate AREVA. The company holds U.S. Dep. of Energy contracts for nuclear-related projects at major facilities such as Hanford, Wash., Yucca Mountain, Nev., and others, including Erwin, Tenn., and Aiken, S.C.
- TVA officials have confirmed that over the last few years the agency, which serves TN and parts of WNC and five other states, has awarded at least \$239.2 million in contracts to AREVA for services that include furnishing radioactive fuel to its nuclear plants and for plant repairs. The French concern has spent \$7.9

million on lobbying since 1998. TVA officials said they could not provide information last week about contracts with AREVA beyond three that totaled 239.2 million because the information was filed in different locations and was not easy to pull together. Citizen-Times.com, 8/26/08 (Association: AREVA manages the BLEU project at NFS)

- 09/30/08 *NFS Reported a Fitness For Duty Issue Under 10 CFR 26. Event 44532* This issue will be followed up under a future security inspection and will remain open. IR 70-143/2008-003, Inspection dates 7/06-10/04/08, ML083040312
- 10/02/08 Three members of a Nuclear Regulatory “Commission oversight panel met for more than two hours on Wednesday afternoon with Nuclear Fuel Services, Inc., officials to discuss efforts to improve the company’s “safety culture.” The NRC ordered NFS on Feb. 21, 2007 to improve its safety culture after a series of safety violations at its Erwin plant. During a question and answer session an audience member asked how long it takes to *implement* a safety culture program. David Ayers, an NRC official, said “that depends on how much work there is to do” and noted the NFS’ plan to address improving its safety culture covers a four-year period, adding “Safety culture is something you need to do beyond setting up the program.”
- Ayres held up a copy of the 144-page independent safety culture assessment (SCUBA Report) and noted “it does not paint a pretty picture.” “Even though there are a lot of things in here (the independent safety culture assessment), 80 percent don’t involve NRC requirements. ***This goes above and beyond regulatory requirements to reduce the number of violations and provide long-term safety.*** Ayers said the NRC wants NFS to work on all the problem areas outlined in the report. The Greeneville Sun, 10/02/08
- 10/02/08 The general manager of Nuclear Fuel Services on Wednesday stuck to the company’s contention that it would not be satisfied simply with regulatory compliance but rather was focused on continuing to improve. “We’re not trying to make a safety culture, we have a culture. And our culture has been one of regulatory compliance.” The Johnson City Press, 10/02/08
- 10/07/08 *NRC, NFS Discuss Plant Safety During Public Meeting:* In their ongoing effort to regain the public’s trust, representatives of NFS and the NRC held an open meeting Thursday (Oct. 3) to share the result of a recent safety assessment on NFS operations. NFS General Manager Timothy Lindstrom and his staff promised to continue safety improvements at NFS. His declaration to “improve in all areas” comes more than two years after a dangerous HEU spill on 03/06/06, which could have caused a criticality and chain reaction.
- In the weeks and months following NFS’s accident, Erwin residents expressed no concern over the incident. They could not, because neither NFS nor NRC publicly reported the accident. *After NFS notified the NRC about the spill, NRC classified the accident report as “Official Use Only.” Thirteen months later, however, NRC would reveal the NFS accident in a congressional report. The impetus for NRC’s disclosure over a year later, came from NRC Commissioner, Gregory Jaczko. Commissioner Jaczko brought the NFS spill to light by mentioning NFS in an internal NRC memo that eventually became public.*
- After learning of the concealment, congressional workers questioned NRC staff about why the agency failed to notify Congress or the public of the NFS spill immediately after it had occurred. *NRC staff replied that the Dept. of Energy had requested NRC to classify all correspondence with NFS.* NRC staff created memorandum SECY-04-0155, which directed agency staff to designate all future correspondence to and from NFS that is related to Naval Reactors programs as “Official Use Only” for security reasons. *The Department’s concern was that certain information in NRC’s correspondence with NFS, if made public, could contribute to a terrorist attack on the NFS facility.*
- In a July 2007 letter Congressman John Dingell, Chairman of the Committee on Energy and Commerce, pointed out that in withholding the NFS accident report, “NRC went far beyond the narrow objective” set by

the DOE” and urged “NRC to make every effort to withhold from public view only those documents that contain security sensitive information, and restore to the public view all other documents that been withheld as a result of the August 2004 “OUO” policy. On May 12, 2008, NRC publicly released the NFS accident report that had been classified nearly two years earlier.

In spite of good will gestures and proposals to rebuild trust, *some Erwin residents remain skeptical in NFS’s ability to operate safely and in the quality of NRC’s judgment to regulate nuclear industry.* As a result of their suspicion, Barbara O’Neal and other Erwin concerned residents formed the Erwin Citizen’s Awareness Network (ECAN). The mission of the grassroots organization is to research and investigate issues involving the nuclear industry that are believed to adversely affect our health, safety and environment, and to share that information with the public. Attending Thursday night’s public meeting on NFS’s safety performance, O’Neal and other members of ECAN came armed with binders of NRC documents and home-schooled educations in nuclear management. Implicitly challenging the Commission’s safety approval of the Erwin facility, O’Neal and her colleagues asked specific, highly-technical questions concerning the environmental impact of NFS operations. *Despite their initial conclusions from two years ago, NFS and NRC officials can now see that the 2006 Uranium spill did reach “criticality” after all, causing a chain reaction that continues to threaten their work with the fallout of a skeptical public.* The Beacon, 10/07/08

10/17/08 *Inadvertent Transfer of Un-Sampled Discard Solution.* **Transfer** of LEU concentration discard solution from Tank WF03 to WWTF Tank 29 without final sample and analysis due to inadvertently opening incorrect valve. Event Report 44579

10/21/08 IROFS Failure in Area 302. NFS Event Report 44584 (See 7/21/03)

10/30/08 *NFS Inspection Report.* Inspection conducted from July 6, 2008 to October 4, 2008: On July 21, 2008, the inspectors evaluated the fire brigade’s performance in response to an actual **fire** associated with an oxygen cylinder located outside near building 105. The brigade members ultimately extinguished the fire with water. The inspectors noted licensee had not inspected the fire dampers for the past two years, including fire dampers designated as IROFS. The inspectors noted that fire dampers designated as IROFS were not part of the safety related equipment list nor were the fire damper inspections formally integrated into the fire protection program.

During review of the ISA for Building 310 Warehouse, the inspectors determined the only identified IROFS was **inadequate** for meeting 10 CFR 70.61 (b) requirements for the identified high consequence event. 10 CFR 70.61 (b) requires high consequence events (*i.e. potentially life-threatening events*) to have a very low likelihood of occurring. Building 310 warehouse is a large storage warehouse for hazardous and non-hazardous nuclear materials. Licensee determined that a fire in the warehouse **could result in a high consequence event due to a chemical release.** The licensee only identified a single administrative IROFS to reduce the likelihood. In addition, the inspectors noted *the monthly surveillance in Building 310 Warehouse had been identifying non-compliances with the Combustible Control Program since July 2008.* Licensee had not taken effective corrective actions to address the issues. Based on these findings, the inspectors determined the management measures in place for IROFS FIRE-2 **were not ensuring the reliability of the control to prevent a fire.** (4 Months!)

Since the last inspection (March 2007), changes were made to the Emergency Plan (EP), equipment and the assignment of personnel to the emergency organization. The inspectors noted a **significant change** to the protective action guide exposure limit for emergency workers performing search and rescue. Previously, emergency personnel required approval from the Emergency Control Director (ECD) to enter radiation areas greater than 20 millirem per hour (mr/hr). *The EP and applicable implementing procedures were revised to require approval at 1000 mr/hr (one rem per hour).* This change in the protective action exposure limit, although 50 times less conservative, is significantly less than the federal guidance in Table 2-2 of the EPA

Manual of Protective Action Guides and Protective Actions for Nuclear Incidents for emergency workers (25 rem total for life saving or protection of large populations). *October 1, 2008, licensee reported a fitness for duty issue under 10 CFR 26 (NRC event #44532). IR 70-143/2008-003, Inspection dates 07/06-10/04/08, ML083040312*

- 11/05/08 NFS Inspection Report. The inspector reviewed the licensee Nuclear Criticality Safety Evaluation (NCSE) for the OCB Process Ventilation System, NCS-2005-01. The overflow drains that were associated with the scrubber and dissolution system are used to prevent accumulation of material in unfavorable geometry ductwork of the system. The inspector determined the analysis had an inadequate description of the placement of overflow drains associated with the scrubber and dissolution system. The description of the overflow drains in the analysis used a generic description that was applied to overflow drains and it did not indicate the actual location of each drain and made it difficult to identify the overflow drains in the facility during the walk-down of the system. Licensee staff agreed the overflows credited in this analysis to protect the unfavorable geometry ductwork are sufficiently different in their individual placement and such that a revision to the NCSE is warranted to more adequately describe each overflow. This was entered into PIRCS #15900. IR 70-143/2008-207, Inspection dates 10/20-24/08, ML083040131
- 12/02/08 *Sale Of NFS Awaits OK By Commission.* The sale of NFS to a Virginia based company could be finalized before the new year, said Tony Treadway, spokesman for the Erwin firm. NFS's sale to Babcock & Wilcox Co. of Lynchburg Va., was announced in August. The Erwin Record, 12/02/08 (Note: *Babcock & Wilcox (B&W) is currently a defendant in a 16 year old lawsuit in Apollo, Pennsylvania. Kiski Valley residents continue to pursue legal action against B&W who claim they or their relatives developed 32 kinds of cancer related to the Apollo plant and a subsidiary in nearby Parks Township. In addition to 240 personal injury complaints, the suit contains 60 wrongful death complaints and another 120 property damage claims arising from home values that have dropped to almost nothing. The plaintiffs got a boost last month when one of the corporate defendants, Atlantic Richfield Co., settled for 27.5 million, which includes payments of up to 600,000 to each of a half-dozen families.*
- Babcock & Wilcox already settled part of the case 10 years ago with eight plaintiffs. The settlement amount remains secret. First filed in 1994, the suit has also been delayed most recently by the seven-year Babcock & Wilcox bankruptcy case in New Orleans, but emerged from bankruptcy last year. The Apollo plant was built in a portion of an abandoned steel mill in 1957. Atlantic Richfield bought it as a subsidiary in 1967 and sold it to Babcock & Wilcox in 1971. The plant processed fuel for nuclear-powered Navy submarines and ships and for commercial power plants. The cleanup of the Apollo site finished in 1995. Material at the Parks site remains buried there and has been the source of yet another controversy as residents argue it still poses a risk. Pittsburgh Post Gazette, April 27, 2008 See 4/21/09*
- 12/05/08 *Unplanned Contamination:* During a transfer of uranyl nitrate, solution entered a column overflow. Less than 1 liter of solution **leaked** from a fitting on the overflow line and contaminated process equipment primarily in an area inaccessible to personnel. The event is being reported because decontamination could not be completed within 24 hours. Decontamination of remaining areas are ongoing. NFS Event Report 44700
- 12/22/08 *Letter From NRC To NFS: Notification Of Intent To Import Natural And Depleted Uranium Material.* "After reviewing your letters to the NRC Director and Deputy Director of the Office of International Programs, dated 8/07/08 and 9/18/08, the NRC has concluded that additional information describing how NFS will use the natural and depleted uranium proposed for import from Nuclear Fuel Industries (NFI) of Japan is needed. In order to determine the proposed imports will be used and therefore can be imported under a general license (and are not "radioactive waste" which must be imported under a specific license), the NRC will need more definitive statements as to the arrangements in place (or being developed) and the timeframe within which

the materials proposed for import from Japan are expected to be used. This conclusion is based on the following statements from the August 7, 2008 letter:

“NFS intends to use the Natural Uranium (NU) material as feedstock in the down blending of HEU where feasible. NFS may also use the material as a surrogate to test processes and/or process equipment, or sell or broker the material to other laboratories, manufacturers, or brokers. Disposition of the material will depend on the physical and/or chemical composition of the material and the availability of markets and/or customers.”

Please provide additional information that demonstrates there is a reasonable expectation that the imported materials will in fact be used and not have to be indefinitely stored or later disposed of. The NRC needs to know what will become of the material if markets and/or customers are not available. To the extent that NFS interacted with the NRC regarding similar issues in 2006, it would be useful for NFS to comment on its experience with respect to imports of natural and/or depleted uranium from Italy. Specifically, did NFS receive source and/or special nuclear materials from Italy, i.e., JRC (Ispra) and Segrate (Milan) and if so, how much of each type of material was imported? What is the current status of these imported materials? Has NFS used all or most of these materials?

NFS Reply: Quantity: (1) Natural Uranium (NU)=1,641 kgU oxide and (2) Depleted Uranium-6,460 kgU oxide. NFS will provide interim storage of the NU and DU as needed, until all material is recycled. No uranium or packages will be returned to NFI. NFS will guarantee the content of five impurities written below is less than each limit and guarantee that Gadolinium is not included. Variations of up to 10% of the above quantities are allowable: (a) Ti-1.6wt%; (b) Cr-20 ppm; (c) Fe-250 ppm; (d) Ni-50 ppm and (e) Cu-35 ppm. First delivery is scheduled for March 2009. Letter from /RA/ Scott W. Moore, Deputy Director, Office of International Programs, NRC, to B. Marie Moore, Vice President, Safety and Regulatory, NFS, 12/22/08, (21G-08-0153 and 21G-08-0119), ML083570478 (See 10/19/07)

- 12/22/08 *NRC Grants Consent to the Indirect Transfer of Control of Nuclear Fuel Services, Inc., (the licensee) from NFS Services, LLC., To NOG-Erwin Holdings, Inc. NOG-Erwin Holdings, Inc., is a wholly owned subsidiary of Babcock & Wilcox Nuclear Operations Group, Inc., which is a wholly owned subsidiary of BWXT Technologies, Inc., which is a wholly owned subsidiary of the Babcock & Wilcox Company. The change of control is “indirect” in that the licensee will remain the same, and there will be no changes to licensed activities under SNM-124, or the licensee’s name. NOG-Erwin Holdings, Inc., confirmed that it will abide by the terms of the license. From David Decker, NRC/Congressional Affairs, to U.S. Senate and U.S. House of Representatives, Subject: Nuclear Fuel Services Transfer of Control, 12/24/08*
- 01/01/09 *Sale Of NFS Becomes Final. B&W spokesman Jud Simmons said B&W will be able to expand its nuclear manufacturing and services to the government and commercial sectors. Johnson City Press, 2/01/09 (See Note on 12/02/08)*
- 01/07/09 *SUBJECT: NRC OFFICE OF INVESTIGATIONS, REPORT NO. 2-2006-017 AND NFS INSPECTION REPORT 007000143/2008401. “This refers to an investigation initiated on April 20, 2006 by the NRC Office of Investigations (OI) at NFS. The purpose of the investigation was to determine whether fitness for duty requirements were willfully violated in connection with a Fitness for Duty incident which occurred in March 2006. A factual Summary, included as Enclosure 1 to this letter, provides details of the OI investigation. Based on the OI investigation, **seven** Apparent Violations of NRC requirements were identified and are being considered for escalated enforcement action in accordance with the NRC Enforcement Policy”. The seven Apparent Violations are summarized as follows:*
- On March 9, 2006, a senior executive of NFS consumed alcohol less than 5 hours before a scheduled working tour, in apparent violation of 10 CFR 26.20, “Written policy and procedures”, subparagraph (a)(1)

- Despite detection of alcohol on the senior executive's breath and observance of behavior indicating questionable fitness, NFS failed to relieve the senior executive of his duties and failed to perform for-cause testing to determine his fitness for duty. There are four examples of this apparent violation, two of which were willful:
 1. On March 7, 8 and 9, 2006, a security manager detected alcohol on the breath of the senior executive but with careless disregard of applicable requirements, did nothing to remove or initiate removal of the employee for cause testing.
 2. On March 9, a senior security manager detected alcohol on the employee's breath and observed the senior executive engage in an inappropriate angry outburst directed at an NRC inspector. In deliberate violation of applicable requirements, the senior security manager took no action to remove or initiate removal of the senior executive for cause testing.
 3. On March 9, the senior executive made inappropriate comments of a sexual nature to a female radiation technologist employee in the presence of another radiation technologist employee and their supervisor. Although one radiation technologist believed the employee appeared and acted impaired, and the other radiation technologist commented the senior executive must have been drunk, neither the radiation technologists nor their supervisor took any action to remove or to initiate removal of the senior executive for cause testing.
 4. On March 9, 2006, an NFS security guard and his supervisor detected alcohol on the senior executive's breath, and the security guard believed the senior executive appeared and acted impaired, but neither the guard nor the supervisor took any action to remove or initiate removal of the senior executive for cause testing.
- On April 5, 2006, NFS granted the senior executive Self-Referral Rehabilitation in the NFS Employee Assistance Program after he had been notified of an ongoing Fitness for Duty investigation.
- Sometime after April 5 and before April 30, 2006, on behalf of NFS, an NFS executive provided the NRC with information which was materially inaccurate in Apparent Violation of 10 CFR 70.9, "Completeness and accuracy of information". Specifically, correspondence addressed to NRC stated the NFS senior executive had entered a substance abuse rehabilitation program when, in fact he had not done so. The executive provided the inaccurate information with careless disregard to its accuracy. The inaccurate statement was material because it was capable of influencing NRC decisions regarding the NFS response to the March 9, 2006 violation of 10 CFR 26.20(a)(1).
- On April 11, 2006, a senior NFS manager placed a letter in the senior executive's personnel file, and on June 8, 2006, NFS provided this letter, which was not accurate in all material respects, to the NRC. Specifically, the letter stated the senior executive had entered a substance abuse rehabilitation program, when, in fact, the senior executive had not done so. The inaccurate statement was material because it was capable of influencing NRC decisions regarding the NFS response to the March 9, 2006, violation of 10 CFR 26.20(a)(1).
- On May 2006 NFS failed to determine the senior executive's fitness returning him to duty. The contract professional retained by NFS to perform a determination of the senior executive's fitness to return to duty could not make the required determination because pertinent information had not been supplied to and considered by the contractor, who subsequently advised NFS the senior executive was fit to return to duty. As a result, NFS failed to make the determination required by 10 CFR 26.27(b)(1) and Procedure No. NFS-HR-08-001 that the senior executive was fit to safely and competently perform his responsibilities. The information not supplied or considered was that the smell of alcohol was detected on the senior executive not only March 9, 2006, but also on March 7 and 8, 2006; *the senior executive consumed alcohol on March 9, 2006 less than 5 hours before a scheduled working tour; the meeting in which the senior executive was "hot-headed" was an important meeting with regulators of NFS, NRC and the U. S. Department of Energy (DOE); the*

senior executive made inappropriate comments of a sexual nature to a female employee on March 9, 2006; and the senior executive had been convicted in 1979 of driving under the influence of alcohol, for which his license was suspended and for which he was fined.

- NFS did not provide appropriate training to ensure that employees understood their roles and responsibilities in implementing its Fitness For Duty Program and that employees understood 10 CFR Part 26 "Fitness for Duty Programs", requirements associated with the consumption of alcohol within 5 hours of any scheduled working tour. There are two examples of this violation: (1) NFS did not ensure that employees understood that fitness for duty of an employee may be questionable based solely on detection of the smell of alcohol on the employee, and did not ensure that employees understood that aberrant behavior which may require for cause testing means not only behavior out of the ordinary for a particular employee, but also behavior which is aberrant in general; and (2) NFS training sessions and materials failed to expressly and clearly indicate that no employee may consume alcohol within 5 hours of any scheduled working tour, but only indicated that consumption of alcohol with 5 hours of a scheduled working tour may be grounds for cause testing.

*In addition, based on the OI investigation, multiple Apparent Violations by two NFS employees and two NFS contractors of "Deliberate Misconduct," were identified. Specifically, **materially incomplete or inaccurate information** was submitted to NFS and to contractors of NFS which, in turn, caused or contributed to failures in NFS' implementation of requirements and of NFS programs and procedures. The Apparent Violations of 10 CFR 70.10 are being addressed in separate correspondence to the individual employees and contractors. In addition, please be advised that the number and characterization of the Apparent Violations described herein may change as a result of further NRC review. NFS will be advised by separate correspondence of the results of the NRC's deliberations on this matter.*

In lieu of a pre-decisional enforcement conference, NFS may also request Alternative Dispute Resolution (ADR) with the NRC in an attempt to resolve this issue. Alternative Dispute Resolution is a general term encompassing various techniques for resolving conflicts outside of court using a neutral third party. The technique the NRC has decided to employ is mediation. *The Institute on Conflict Resolution (ICR) at Cornell University has agreed to facilitate the NRC's program as a neutral third party.* For administrative purposes this letter is issued as Inspection Report 07000143/2008401. Letter from Kriss M. Kennedy, Director, Division of Reactor Safety, NRC, Region II, Atlanta, Georgia to Mr. David L. Kudsin, President, NFS, 1/7/09

01/12/09

Identification Of Apparent Violations From NRC Inspection Report No. 70-143/2008/003. This letter refers to unresolved item (URI) associated with the item relied on for safety (IROFS) identified for the 310 Warehouse. Two Apparent Violations (APV) were identified and are being considered for escalated enforcement action. The first APV requires, in part, that each engineered or administrative control system necessary to comply with the performance requirements be designated as IROFS. The NRC determined that, prior to August 29, 2008, the fire accident scenarios indicated in the 310 Warehouse Integrated Safety Analysis (ISA) summary had insufficient engineered or administrative controls designated to demonstrate compliance with the performance requirements. Only one administrative IROFS (Fire-2) had been designated to prevent or mitigate a high consequence event.

The second APV involves the failure to implement 10 CFR 70.62 which requires, in part, that NFS establish a safety program that demonstrates compliance with the performance requirements. One of the elements of the safety program is management measures which **ensure that administrative IROFS will be available and reliable** to perform its intended function when needed to comply with the performance requirements. Prior to August 29, 2008, NFS had not implemented a safety program that would ensure IROFS FIRE-2 would perform its intended function when needed to comply with the performance requirements. Non-compliances with the combustible loading program in the 310 Warehouse (the critical component of FIRE-2) were identified, but corrective actions were ineffective. Specifically unacceptable amounts of combustible

*before date means Loss of Containment

- material were found in the warehouse repeatedly for several months. Letter from /RA/ Joseph W. Shea, Director, Division of Fuel Facility Inspection, NRC, Region II, Atlanta Georgia to David L. Kudsin, President NFS, 1/12/09, ML090120305 (See 10/30/08 Inspection Report)
- 01/15/09 *NFS Alcohol Incident Draws Ire Of Nuclear Regulatory Commission.* The incident happened in 2006 according to the NRC. Johnson City Press, 1/15/09 (See 3/09/06, 3/27/08, 5/12/08, 1/07/08, and 1/07/09)
- 02/12/09 *Contaminated Worker sent to Offsite Hospital for Treatment.* Event 44848
- 03/03/09 *Loss or Degraded Safety Items. Degradation of Item Relied on For Safety (IROFS).* NFS Event Report 44887 Failure of a component designated as safety related equipment (SRE) used as as IROFS. The IROFS (level switch) failed to fulfill its safety function in securing a pump in the presence of a low fluid level. The failure resulted in a **high consequence event** failing to meet the highly unlikely category. IR 70-143/2009-001, 5/04/09, inspection dates January 1 through April 4, 2009, ML091240427 (See 7/21/03)
- 03/04/09 *Glove box Overflow Drains May be Inadequate to Perform Their Safety Function.* It was determined that in some instances a single drain alone was not capable of maintaining a solution depth to within design parameters in some localized areas within the glove box. Discharge flow rates are sensitive to drain weir (sic) height and glove box floor flatness. Event 44890 (Note: There should **not** be a single glove box that has only one drain—and a single drain should allow discharge at a rate equal to inflow to prevent a critical mass accumulating in a given configuration. A single drain cannot be deemed an IROFS because material can easily block a drain if this glove box has a wet process. License condition).
- 03/14/09 *Roe Tours NFS, Feels Confident Of Its Safety.* “Roe said NFS followed a good business philosophy by examining where and why it had trouble and examined the whole process at the facility. He feels comfortable that NFS is safe.” Johnson City Press, p.4A, 3/14/09
- 03/19/09 *NFS Meets With Regulatory Group on Safety.* General Manager for NFS, Tim Lindstrom, “acknowledged that as a company whose main function is manufacturing fuel, **we’re not organized around safety culture.** Johnson City Press, 3/19/09
- 03/23/09 *NRC to Investigate Problems With Glove Box Drains at NFS.* The NRC is launching a week-long special inspection March 23 at NFS to look into a problem involving numerous overflow drains for glove boxes where HEU solution is handled. NRC said operations were shut down in **23 glove boxes**. NRC said the inspectors also will look at the adequacy of the company’s root cause analysis after a similar event in 2005. Jenny Weil, Washington, Platts, The McGraw-Hill Companies, 3/23/09
- 04/03/09 *NFS, Inc., Site Status Summary.* NFS met the declining “performance trend” criteria established in SECY-08-0135 for Agency Action Review Meeting (AARM) consideration. Specifically, the NRC inspections and events at NFS, prior to and during 2006, revealed significant performance issues that lasted more than one inspection period. The performance issues resulted in escalated enforcement actions that warranted extraordinary NRC actions (i.e., an Augmented Inspection Team Inspection in 2006, and issuance of a confirmatory order (CO) in February 2007). The Order required NFS to revise its configuration management (CM) programs and implement a comprehensive safety culture improvement initiative. The NRC response to the performance issues also included heightened NRC oversight at NFS (i.e., additional inspections, the assignment of a second resident inspector, and more frequent Licensee Performance Reviews (LPR’s). The problems that led to issuance of the CO are **deeply rooted** and a *sustained effort will be required by NFS as part of its safety culture improvement initiative to enhance its overall performance.* *The NRC will disposition several apparent violations extending from 2006 to the present with similarities to the perform-*

ance issues that resulted in the 2007 CO, and that may result in escalated enforcement. A sustained period of heightened oversight by NRC is also warranted.

The staff is currently developing a strategy to determine appropriate criteria for future modification or closure of the CO. It is anticipated the strategy will include **substantial** inspection activities by NRC, including independent NRC assessment of safety culture at NFS through application and adaption of existing inspection tools such as Inspection Procedure 95003.

*Three **pending** escalated enforcement actions currently exist at NFS. A fitness-for-duty-case (EA-08-103) resulted in the identification of several apparent violations that could result in escalated enforcement, including individual actions. Apparent violations related to the processing of a weapon onto the site (EA-08-346) were identified that could result in escalated enforcement action. An apparent violation that involved the potential willful falsification of medical records (EA-08-321) could also result in escalated enforcement action.*

On December 31, 2008, *Amendment 85* to License SNM-124 was issued to reflect an indirect transfer of control of the licensee from NFS Services, LLC, to NOG-Erwin Holdings, Inc. (*a subsidiary of Babcock and Wilcox (B&W)*). On January 1, 2009, David Kudsin became the President of NFS. This was the only personnel change at the site. NRC.ML090550079, 4/03/09 (Note: *The assignment of a second resident inspector was made in 2004. See 4/13/04 and 4/21/04*).

04/04/09 *NRC Planning Own Evaluation of Safety Culture at NFS.* “NRC spokesman Roger Hannah said the evaluation probably would not take place until next year. We are beginning to look at how we will do that. We know we’re going to do something. We’re not sure of the details yet”. The NRC said it placed a lot of emphasis in its inspection on the uranium aluminum (UAL) area, where dissolvers had clogged and caused material to back up into overflow columns. *“These operational upsets had occurred several times over the week. Each overflow situation placed a significant burden on the operations staff because each of the overflow lines are safety related equipment”*. The federal agency concluded there were problems in company procedures and an alarm, which did not sound initially. “The inspectors anticipated the recent spills in the UAL area would have generated a more conservative or questioning attitude with regard to responding to alarms”. Johnson City Press, 4/04/09

04/21/09 *Nuclear Company Settles Lawsuit For \$52.5M—Towns had high incidence of Cancer.* Nearly 15 years after filing a lawsuit alleging that two nuclear fuel processing plants in Armstrong County caused a high incidence of cancer in a small community, more than 300 plaintiffs will see an end to the litigation. Babcock & Wilcox, which ran the plants that made nuclear fuel for ships and submarines in Apollo and Parks Township from 1971 to 1983, has agreed to settle the case for \$52.5 million. That money will cover 245 claims for either personal injury or wrongful death, as well as 125 separate claims asserting property damage. Chief U.S. District Judge Donetta W. Ambrose approved the settlement on Friday.

The initial lawsuit brought by 10 residents in the area was filed in federal court in 1994 against both Babcock & Wilcox and Atlantic Richfield Co., which owned the plants from 1967 until it sold them to Babcock in 1971. The case was put on hold for several years after Babcock & Wilcox filed for Chapter 11 bankruptcy in 2000. Then, last year, Atlantic Richfield settled its claims for \$27.5 million. The case against Babcock was slated to go to trial in January, but both sides requested a delay because they were in settlement negotiations.

In a 15 page recommendation, retired San Francisco Superior Court Judge Daniel H. Weinstein wrote there were risks to both sides if they went to trial, but he enumerated several for the defense. The company would have to defend its operation of these facilities in a residential community for decades. In addition, Judge Weinstein wrote, there was a potential for a verdict against Babcock & Wilcox that could approach \$1 billion. Pittsburgh Post-Gazette, Tuesday, 4/21/09 (See 4/27/08)

- 04/23/09 *Tennessee Ranks Third In Cancer Mortality Rates.* The States disturbing rankings are from the Centers for Disease Control. Prior to 2005, TN ranked 44th in the nation for new cancer cases being reported. In 2005, the state implemented a statewide cancer registry to report new incidences of cancer. The new ranking of 20th, while worse, is proof the new registry is being used. The data provided will allow doctors and other professionals in the cancer research to develop a plan for improving Tennessee's cancer numbers. The Appalachian region ranks high for mortality rates, period. The reason why the death rate in the 420 counties in this area is higher compared to the rest of the country is unknown. According to the Tennessee Comprehensive Cancer Control Coalition (TCCCC) data, Unicoi, Washington, Greene and Sullivan counties have some of the highest incidences of breast cancer. Lung cancer also is still deadly for patients in Appalachia. The death rate from colorectal cancer is worse in both males and females in Unicoi, Washington, Greene, Carter and Sullivan counties. "While statistics claiming females in TN die from cancer at a rate 10.5% higher than the rest of the nation may be disturbing, it takes more than just a knowledge of statistics to improve health". Johnson City Press, 4/23/09 (Distribution of NFS Employees by Place of Residence: Unicoi, Washington, Carter and Sullivan Counties. 2001 NFS ER, Table 7, p.3-2) (See 8/03/02, 8/30/02, 1/11/03, 2/10/05/ 3/30/05, 9/02/06, 5/16/07, 5/29/07, 2/20/08, 2/27/08, 3/05/08, 3/18/08 and Note, and 12/02/08)
- 04/24/09 Special Inspection Team (SIT) inspection conducted from March 23-27, 2009 at NFS to inspect and assess the facts and circumstances surrounding the discovery of design issues regarding glove box drains identified as IROFS. Fourteen glove boxes in the fuels area and nine glove boxes in the BLEU (BPF) Facility were impacted (23 glove boxes) by Event #44890 on March 4, 2009. During a review of calculations for flow rates of overflow drain(s) on glove boxes for the new CD line process, an engineer noted a discrepancy between his peer-reviewed calculations and the contractor's initial calculation. On Feb. 27, NFS identified all potentially affected glove boxes (23 total) within the facility. Reported to NRC on March 4, 2009. As an immediate corrective action, licensee removed uranium bearing materials from the affected glove boxes and declared them out of service to further evaluate the implications and extended condition of the event. IR 70-143/2009-007, 4/24/09, inspection dates 03/23-27/09, ML091140536
- 04/28/09 NFS is required by the NRC to review and revise, as necessary, the Emergency Plan and supporting Emergency Procedures on an annual basis. These documents have been designated as "Official Use Only" and cannot be released to the public due to their sensitive nature. Letter from NFS, Robert Holley, Environmental Safety Manager, Safety & Regulatory, to Division of Solid Waste Management, EPA Identification # TND 00 309 5635, Permit # TNH-108, 4/28/09 (Question—Why can't the Emergency Plan be released to the public?)
- 05/27/09 *Tennessee's Sick Nuclear Workers Get \$1 Billion.* TN residents have collected more than \$1 billion from the federal compensation program for sick nuclear workers—far more than any other state. The Department of Labor announced it had paid more than \$1 billion in compensation and medical benefits to 9,134 TN residents under the Energy Employees Occupational Illness compensation Program Act. Rachael Leiton, director of the Division of Energy Employees Occupational Illness Compensation (EEOIC) noted several of the facilities covered by the program were in Oak Ridge—including Oak Ridge National Laboratory, the Y-12 nuclear weapons plant, and the former K-25 uranium-enrichment plant. "Individuals who worked at these and other covered facilities sacrificed their health to build this nation's nuclear defense programs," Leiton said. Knoxville News Sentinel, 5/27/09
- 05/30/09 U. S. NRC Commission staffers from Atlanta listened to public complaints about operations at the NFS plant for about three hours Thursday night. Located near the Nolichucky River in Erwin, the NFS plant for decades has produced fuel for U. S. Navy nuclear nuclear powered submarines and surface ships. It also "down-blends" highly enriched uranium (HEU) to a low enriched state suitable for conversion into fuel for TVA nuclear-power plants. Before the meeting, Joey Ledford, an NRC public affairs officer from Atlanta, said the meeting was being held to "hear what the citizens of Erwin have to say about NFS, given them a

good idea of our activities in regulating it, and get more ideas and input from the community.” Ledford said he hoped their meeting would assure the public the NRC was “doing a lot” in terms of regulating NFS.

Almost from the outset, members of the audience peppered the NRC officials with questions and complaints about NFS. *Among the questions were Greene County resident Trudy Wallack who took part several years ago in a formal petition effort to stop NFS from implementing its Blended Low-Enriched Uranium (BLEU) Project, who told the NRC officials that area residents were “begging” the NRC for help. “What we see you doing is giving them (NFS) what they want.” Wallack also asked NRC officials if history were not repeating itself at NFS. “We’re asking you not to give them (NFS) any more (license amendments).”*

“NFS has had a very long history of safety problems, and of course, they are under the Confirmatory Order concerning safety problems,” said Chris Tipton, an Erwin resident. “And yet, with that, you are still giving them license amendments to expand processes. I realize that a business, to be functional and make ends meet and to make a profit, they’ve got to have business, they’ve got to have processes. But still, it has to be our concern that they are not up to snuff on safety and never have been. And the other thing is that they are in close proximity to this town and to a very dense population area of schools and hospitals and nursing homes and a town and business sector. It’s still going to be a concern to us about safety and about anything and everything that’s going on out there”, Tipton said.

Several speakers voiced concern about the NRC’s having granted, earlier this month, an amendment to NFS for a new “CD line” at the Erwin plant that would propose a highly enriched form of uranium called uranium hexafluoride (UF₆), which arrives in gaseous form. Audience member Wanda Kelly asked if it were possible for an explosion of hydrogen gas at the plant to reach and damage cylinders holding UF₆ gas, causing a release of that highly radioactive material. NRC Resident Inspector Galen Smith replied although a hydrogen gas explosion could theoretically take place, such an explosion would not reach cylinders containing the stored UF₆ gas. *“The bottom line is we’ve had it,” said Erwin resident Kelly at one point. We don’t want the CD (commercial development) Line. We don’t want any new processes. We do not believe NFS. We do not believe they can improve. If they could improve, they would have done it in the last 50 years. And if the NRC could do anything, it already would have.”*

When asked after the meeting to sum up her feelings, Erwin resident Barbara O’Neal said “I feel the public knows a bit more about what’s going on than the NRC does. One of the lessons the NRC should learn is not to ever withhold information from the public,” referring to a period between 2004 and 2007 during which the NRC withheld most information about NFS operations out of concern for national security in the wake of the 9/11/01 terrorist attacks. O’Neal said she had read many documents that been withheld during that period (but subsequently released after a congressional inquiry) and had found their contents “scary.” The Greeneville Sun, 5/30/09 (See 10/06/04)

06/24/09

*NFS To Benefit From \$209 Million Contract—12 Metric Tons Of Bomb-Grade Uranium To Be Converted. The highly enriched uranium (HEU) will come from the vast storage vaults at the Y-12 nuclear weapons plant in Oak Ridge. The material will be converted or “down blended” at the NFS plant into about 220 metric tons of low enriched uranium (LEU) suitable for commercial reactors. The work will begin this year and be completed in 2012. Johnson City Press, 6/24/09, p. 1A & 8A. (Note: *The National Nuclear Security Administration (NNSA) today announced that it has awarded a \$209 million contract to down blend 12.1 metric tons of surplus U.S. highly enriched uranium (HEU) and store the resulting low enriched uranium (LEU). The contract was awarded to a team consisting of WesDyne International, LLC (a division of Westinghouse Electric Company, LLC) and Nuclear Fuel Services, Inc., (a subsidiary of the Babcock and Wilcox Company). NNSA News, 6/23/09 See 05/15/07**

06/30/09

Safety Equipment Failure Of The Criticality Alarm system. NFS Event 45179

07/06/09

Inspectors noted many flanges and fittings which appeared to be **leaking** a caustic solution that had not been entered into Problem Identification Resolution and Correction System (PIRCS). Interviews determined this to be a *long-standing problem*. A self-assessment observation which stated that “the area appeared in poor shape to the uninitiated” was indicative of a *tolerance for this degraded condition*. In accordance with the guidance in licensee procedure NFS-GH-65, an example of a qualified problem to be reported in PIRCS is a “*Spill, leak, or release of radiological or non-radiological liquid, solid, or airborne contaminants indoors or outdoors.*”

- PIRCS 9148 was initiated as a result of a **spill** following changing of a filter in a glove box. PIRCS 17369 and 18348 were initiated as a result of *spills encountered during subsequent change-outs of the same filter*. The reoccurrence of the problem led the team to conclude that the true root cause had not been found and therefore the corrective actions were ineffective.
 - PIRCS 11611 was initiated as a result of a filter change which resulted in a **spill** and contamination event. No corrective actions were initiated to prevent recurrence. Two years later, PIRCS 17506 was initiated due to a repeat event.
 - PIRCS 12815 was initiated after a *container of material was discovered in a storage rack not approved for that type of material*. Licensee determined root causes of the event to be failure of configuration control of the storage system and a failure to train personnel to be knowledgeable of the storage requirements.
 - PIRCS 14537 was initiated on July 22, 2008 and its apparent cause evaluation had three corrective actions associated with it. The corrective actions were never implemented due to a software glitch that caused a PIRCS entry to be effectively “lost” within the computerized system. *The manager assigned to approve the apparent cause corrective action **did not exist**. The three corrective actions assigned were given initial completion dates of February 28, 2009. As of the date of the inspectors’ review, no activity associated with the corrective actions had commenced.* The inspectors noted that no PIRCS audit function was able to uncover this anomaly.
1. The licensee’s performance in determining and implementing effective corrective actions did not meet the expectation of Inspection Procedure 71152 based on the number of reoccurring issues identified. The corrective actions tended to focus only on repairing the broken equipment without broadening the scope of the corrective actions to address the reasons why the equipment broke initially.
 2. Licensee demonstrated inconsistent use of extent of condition evaluations to ensure that root causes from one area were not present in others.
 3. Licensee’s lessons learned evaluations, which at times had identified effective corrective actions, were not formally evaluated and tracked.
 4. Licensee was not effectively entering self-assessment items into the corrective action program. IR 70-143/2009-010, Report dated 7/06/09, Inspection dates 04/27-29/09, ML091880007 (See 04/28/08)

(End)

*before date means Loss of Containment