

U. S. NUCLEAR REGULATORY COMMISSION

REGION V

Report No. 70-1257/89-03

Docket No. 70-1257

License No. SNM-1227

Priority: 0 Category: ULFF Safeguards Group: III

Licensee: Advanced Nuclear Fuels, Inc.
2101 Horn Rapids Road
Richland, Washington 99352-0130

Facility Name: Richland Facility

Inspection at: Richland, Washington

Inspection Conducted: September 25-29, 1989

Inspectors: C. A. Hooker 11/7/89
C. A. Hooker, Fuel Facilities Inspector Date Signed
K. M. Prendergast 11/7/89
K. M. Prendergast, Emergency Preparedness Date Signed
Analyst

Other
Inspector: A. Datta, Fire Protection Engineer, NMSS/IMSB

Approved by: R. Fish 11/8/89
R. Fish, Chief Date Signed
Emergency Preparedness Section

Summary:

Areas Inspected: This was a routine unannounced inspection of licensee action on previous inspection findings, criticality safety, operations review, maintenance and surveillance testing, radioactive waste management, environmental protection, emergency preparedness, transportation of radioactive materials, and radioactive waste generator requirements. The inspection also included extensive tours of the licensee's facilities. Inspection procedures 30703, 92701, 92702, 88015, 88020, 88025, 88035, 88045, 88050, 86740, and 84850 were addressed.

Results: In the areas inspected, the licensee's performance appeared adequate and their program seemed capable of meeting its safety objectives. However, weaknesses were exhibited in emergency response training that resulted in one apparent violation (paragraph 8) and control of combustible materials (paragraph 5). One non-cited violation (NCV) was also identified involving failure to adhere to protective clothing requirements (paragraph 5).

DETAILS

1. Persons Contacted

A. Advanced Nuclear Fuels

- *R. G. Frain, Vice President, Operations Division
- *T. W. Patten, Manager, Plant Operations
- *W. E. Stavig, Manager, Safety, Security and Licensing
- *C. W. Malody, Manager, Regulatory Compliance
- C. J. Volmer, Manager, Quality Assurance (QA)
- J. L. Glesener, Manager, Plant Maintenance
- *T. C. Probasco, Supervisor, Radiological and Industrial Safety
- +*J. E. Pieper, Specialist, Health Physics (HPS)
- +S. R. Lockhaven, Specialist, Industrial Regulations
- *E. L. Foster, Radiological Safety Specialist (RSS)
- M. G. Hill, General Supervisor, Chemical Operations
- L. D. Weaver, Supervisor, Waste Operations
- W. V. Jackson, Supervisor, Traffic and Warehousing

B. Richland Fire Department

- D. Schrag, Director of Operations

*Denotes those attending the exit interview on September 29, 1989.

+Indicates telephone conversation on October 4, 1989.

In addition to the individuals noted above, the inspectors met and held discussions with other members of the licensee's staff.

2. Follow-up of Licensee Action on Open Items (92701)

Item 70-1257/88-10-01 (Closed). This item involved the licensee's use of the provisions described in 10 CFR 20.102 for development of an individual's exposure history that had received exposure at a foreign facility. Based on discussions with cognizant licensee representatives regarding this matter, it appeared that the licensee had an adequate understanding of the appropriate methods for obtaining and assigning previous quarterly radiation exposure received by workers. Based on a review of circumstances surrounding this matter, it appeared that the licensee took a conservative approach until they had obtained signed documentation regarding the exposure received by this individual. The inspectors had no further questions regarding this matter.

Item 70-1257/88-02-05 (Closed). This item dealt with an independent audit of the licensee's Emergency Plan. Based on an examination of an independent audit conducted during March 1989, the inspectors determined that the results of the audit were satisfactory and that suggestions for program improvement were appropriately transmitted to licensee management. The resume of the individual who performed the audit was examined and it was determined that he had sufficient experience and education for the audit conducted. This individual was also provided appropriate documents by the licensee for preparation for the audit. This item is considered closed.

3. Follow-up of Licensee Action on Violations (92702)

Item 70-1257/88-08-07 (Closed). This violation involved the failure to perform an adequate survey of protective clothing (PC) stored for reuse. The inspectors verified that effective corrective actions had been implemented to prevent recurrence as stated in the licensee's timely letter dated December 15, 1988. During facility tours, the inspectors observed that the licensee had discontinued the practice of reusing coveralls and were storing reusable lab coats on the contaminated side of the step off pads. This item is considered closed.

Item 70-1257/88-08-08 (Closed). This item involved a violation with the licensee's procedures being less conservative than the requirements of the license for contamination levels allowed on PC for reuse. The inspectors verified that effective corrective actions had been implemented to prevent recurrence as stated in the licensee's timely letter dated December 15, 1988. The licensee had appropriately revised their procedures and a review of weekly surveys indicated that procedures were being followed. This item is considered closed.

4. Criticality Safety (88015)

The licensee's program was reviewed for compliance with 10 CFR Part 70, Requirements of the License, Licensee Procedures and Recommendations Outlined in Various Industry Standards. The inspection included a review of selected records and procedures, interviews with personnel and facility tours.

There had been no engineering modifications that would require a criticality safety analysis (CSA) since the last inspection in this area (70-1257/89-02). However, CSA performed for other types of activities involving special nuclear material (SNM) were reviewed as follows:

- (1) CSA, "SWUR Ash Drums", dated April 13, 1989, for handling and storage of ash drums from the incinerator in the Solid Waste Uranium Recovery (SWUR) Facility.
- (2) CSA, "German Pails", dated June 15, 1989, and "BU-D/BU-J Shipping Containers", dated June 16, 1989, involving unloading/loading, handling, storage, and shipping of powder/pellets.
- (3) CSA, "Operations With D/4095/AF Shipping Containers and its Pellet Boxes and Tray Stacks", dated June 6, 1989, for in-plant operations, loading/unloading and storage.

Each CSA had been performed by the Criticality Safety Specialist. The CSA appeared to be conservatively modeled for each condition. The second party review was performed by the HPS in accordance with the requirements delineated in Part I, Section 4.1.1 of the License.

Monthly and bimonthly criticality audits conducted during the period of March 27, 1989, through August 31, 1989, were reviewed. No findings were identified in the audits. Prior to August 1989, bimonthly audits were conducted by the Criticality Specialist and monthly audits were conducted

by the Plant Criticality Safety Engineer. With the new organizational changes, described in Inspection Report No. 70-1257/89-02, the Criticality Specialist conducts monthly audits and the bimonthly audits have been discontinued. This change has been reflected in the licensee's License Amendment Application dated June 14, 1989. This amendment is still under review by the NRC.

During facility tours, the inspectors observed that criticality detectors were as described in Part I, Section 1.6.1, of the License, and appeared to be strategically located. Records of criticality monitoring system calibrations and tests were reviewed. Bench-top calibrations were performed annually and response reliability tests were being conducted quarterly.

With respect to in-plant criticality controls, no unsafe criticality safety practices were observed during facility tours. Criticality control limits were appropriately posted where SNM was being processed, handled and stored. Appropriate containers were being used for storage of SNM. Each container was labeled with the enrichment and quantity of SNM. Leakage from wet operations appeared to be minimal.

The licensee's performance in this area appeared adequate to meet their safety objectives. No violations or deviations were identified.

5. Operations Review (88020)

This area was reviewed to determine if operations were being conducted in accordance with the conditions of the license, licensee procedures, and recommendations outlined in various industry standards. The inspection of this area consisted primarily of observations made during facility tours and a review of the licensee's fire prevention program.

The fire protection program of the facility was measured against the requirements of the recently published Branch Technical Position on fire protection, as well as prevalent industry standards, notably the National Fire Protection Association codes. In performing the assessment, the inspector toured all the buildings and the adjacent outdoor storage, materials handling, and equipment areas which house or support licensed activities. Documents and computerized data were examined for the purpose of assessing the licensee's commitment to the fire protection program and actual performance of its procedures. The assessment methods also included examination of randomly selected portable extinguishers and installed fire protection equipment, process equipment, process flow sheets, and past inspection reports of American Nuclear Insurers (ANI) and the State of Washington Occupational Safety and Health Administration. Facility employees and a director of the Richland City Fire Department were interviewed.

There had been no significant changes in the licensee's SNM operations since the last inspection of this area (70-1257/89-02).

a. Fire Protection

(1) Facilities

The manufacturing activities of the facility are located in two principal buildings, the UO₂ Building and the Specialty Fuels (SF) Building. These buildings have concrete floors, 6-inch non-bearing concrete perimeter walls and built-up roofing on metal decks. Interior walls separating process areas are made of 8-inch concrete blocks, with one notable exception. The wall between the incinerator installation and the remainder of the process areas in the SF Building, spanning the full width of the building and the full height of 28 ft., is made up of gypsum boards on metal studs, which also provides an air gap. The effectiveness of this wall as a fire barrier is questionable, and the incinerator area has, apart from the heated equipment and ducts, a moderate fire loading because of the contaminated combustible waste in cardboard boxes handled in the area. Both the UO₂ Building and the SF Building are equipped with fire detectors, but no automatic fire suppression systems. This matter was discussed at the exit interview on September 29, 1989. The inspectors' observations were acknowledged by the licensee.

The powder storage area, in which radioactive material is stored in 45-gallon drums and 5-gallon buckets, has sheet metal walls and roof and is attached to the UO₂ Building. This is a moderation-controlled area, where combustible substances should be limited to the absolute minimum. The walls and the roof of this area however are lined with fiber glass insulation having a combustible, plastic lining. The introduction of this combustible material in a moderation-controlled area should have been avoided. This building also is equipped with fire detectors, but no automatic fire suppression system.

The Packaged Radioactive Materials Warehouse is a one-story, structural steel frame building with sheet metal walls and roof and concrete floor (Dimensions: 50' x 140' x 16' high). The building is divided into three parts. The south end of the building, measuring 50' x 35', contains 1273 used contaminated HEPA filters stacked to about 9 ft. above the floor. The filters have wood frames and are packaged in cardboard boxes and/or plastic bags. This is undoubtedly a heavy combustible loading, even if the filter cores themselves may be noncombustibles. Another area of the building is partitioned by a plastic sheet stretching from floor to ceiling and across the full width of the building. The building is equipped with fire detectors. The present status of this building and absent an automatic fire suppression system, plus being used to store radioactive material, presents a distinct and significant hazard. The following in-office analysis was made regarding fire vulnerability of this area:

- The analysis was conservatively based on 1200 filters, 24" x 24" x 11½", plywood framed. The cardboard boxes and the plastic covers are ignored for the purpose of this computation.

Weight of the wood frame: 18 lb (estimated). Weight of wood in room: 18 x 1200 = 21,600 lb. Heat value of wood in room: 21,600 lb x 6000 Btu/lb = 129E6 Btu.

Average self-ignition temperature of wood: 600°F. Weight of air in room at 70°F: 26,250 cft/ 13.5 cft/lb = 1940 lb (approximately).

Assuming conservatively that 90% of the heat dissipates to the environment due to convection and radiation, the energy that must be generated to raise the temperature of the room air to 600°F, the self-ignition temperature of wood, is,

$$[1940 \text{ lb} \times 0.24 \text{ Btu/lb}^\circ\text{F} \times (600-70)^\circ\text{F}] \times 10 = 2.47\text{E}6 \text{ Btu.}$$

The fraction of the combustibles (wood only) that must completely burn to raise the room-temperature to 600°F is,

$$2.47\text{E}6 \div 129.6\text{E}6 = 0.019 \text{ or } 1.9\%.$$

Based on the above analysis, it would only take a small fraction of the stored combustibles to raise the room temperature to a level that could cause all of combustibles to burn at once. This could only take a very few minutes from the inception of the fire. Fire-driven convection currents would spread radioactive contamination to the adjoining room and to the environment.

During the inspection, the inspectors were informed that a filter cutting unit and new 10 ton hydraulic compactor were being installed in the UO₂ Building for processing and disposal of the HEPA filters. The center of the filters will be cut out and compacted and the combustible wooden frames will be burned in the licensee's incinerator. The licensee was currently testing the new compactor in the maintenance shop and making space available in line No. 3 of the UO₂ Building for installation.

The potential significant fire hazard from the stored, used HEPA filters was discussed at the exit meeting on September 29, 1989. The inspectors' observations regarding the problem were acknowledged by the licensee. The licensee's action regarding this matter will be examined in a subsequent inspection (70-1257/89-03-01).

The warehouse building, where finished fuel bundles awaiting shipment are stored, is protected by a dry-pipe automatic sprinkler system. No deficiencies were found in this area.

(2) Process Fire Safety

Processes and equipment layouts, including flammable gas generation, storage and control systems, were examined for fire hazards. The ammonia dissociation plant and the loss-of-pressure automatic shutdown system is considered satisfactory. Emergency shut-off buttons for flammable gases, located at several strategic points in the two principal buildings, provide an added measure of safety.

The inspectors noted that the gas supply to the dryers in the laundry facility was not equipped with an automatic shut off device. The use of an automatic shut-off valve, similar to those in the UO₂ Building, was discussed at the exit meeting on September 29, 1989. The inspectors noted that this had also been the recommendation of the ANI auditor. The licensee's action regarding this matter will be examined in a subsequent inspection (70-1257/89-03-02).

The inspectors also endorsed the ANI recommendation for dikes to hold potential leakages from the hot oil dryers in the UO₂ Building. Without such confinement, a spill and fire could spread to the lower floor. This observation was also discussed at the exit interview on September 29, 1989.

(3) The Plant Ventilation System

The design of the independent HVAC systems for the plant areas in the UO₂ and the SF Buildings were examined. The deluge systems for protecting HEPA filter banks in the event of over-temperature were inspected. No deficiencies were noted.

(4) Fire Protection Systems

The facility is supplied by the Richland city water system. The fire-water coverage for the facility is considered satisfactory. The absence of hose houses is noted. The company has a policy that its own employees fight no more than small, incipient fires. In view of the proximity of the Richland City Fire Department, and the good rapport between them and the facility personnel, no deficiencies were identified.

The process buildings and others in which licensed activities are performed are protected by fire detectors of the combined heat and rate-of-temperature-rise type. The only automatic fire suppression system is in the warehouse. The detectors and the sprinkler system are connected to an alarm system and an annunciator panel in the guard house. No deficiencies were found in the detection and alarm system.

(5) Fire Protection Equipment Maintenance

The facility has a computerized system of maintenance record keeping, including records of maintenance of fire protection equipment. Records of several maintenance items were examined. Random checks were made of portable fire extinguisher tags to determine whether the latest monthly inspection was recorded. Additionally, past inspection reports of ANI were examined. No deficiencies were identified in equipment maintenance procedures or performance.

(6) Pre-Fire Planning

Emergency response planning documents included procedures to be followed in the event of a fire emergency. The document, however, falls short of a real pre-fire plan. The inspector was shown the outline of a pre-fire plan that was being drafted, with the collaboration of the Richland City Fire Department. This appeared to be a good beginning. The licensee is encouraged to expedite the completion of this plan.

The facility has a plan to provide basic training in fire fighting to the 45-member emergency response team. Unfortunately, only 20% of the team were present to receive the annual training in November 1988. Inspection of records showed that attendance at training sessions has been progressively dropping year by year. Also, due to a lack of assignment of a minimum number of emergency response team-members in each shift, there is a possibility that no trained person would be available in an emergency on a late night shift. Paragraph 8 also discusses problems associated with fire protection training.

An inspector visited a fire station of the Richland City Fire Department and interviewed Mr. Duane Schrag, Director of Operations. Mr. Schrag appeared to be well informed of the facility layout and the special restrictions of fighting a fire in a nuclear fuel facility. The inspector left with the impression of a competent and interested fire department.

(7) Housekeeping

Housekeeping appeared good in most areas toured. However, paper and plastic products mixed with zircalloy turnings were observed in a bin meant for zircalloy scrap. In another area, a 55-gallon drum was found to be nearly overflowing with zircalloy scrap. This metal is known to be a fire hazard in scrap form. It should not be mixed with ordinary combustibles and should not be accumulated in any substantial quantity in a work area. The licensee acknowledged these observations at the exit interview on September 29, 1989.

b. Other-Operations

- (1) During a tour of the Engineering Laboratory Operations Building on September 26, 1989, with the HPS, an inspector observed an individual working on a gas cylinder in a small designated contaminated area of Lab No. 41, with shoe covers as the only PC being worn. The inspector questioned the HPS regarding this individual's dress and was informed that the individual should also be wearing a Lab coat. When questioned by the inspector, the individual stated that he had put on shoe covers and made a brief entry into the contaminated area to close a valve on a gas cylinder and unscrew a hose fitting. The individual informed the inspector that he was aware of the PC requirements and knew that a Lab coat was required to be worn when in the contaminated area. The inspector observed the individual properly perform a body frisk upon exiting the contaminated area with no contamination detected.

A review the last weekly survey of Lab No. 41, dated September 22, 1989, indicated that the contamination level on the floor of the controlled area was 5,000 dpm/100 cm² alpha and the equipment and counter tops were less than 200 dpm/100 cm² alpha. The HPS initiated a Violation of Radiation Safety Rules (VRSR) report to document this matter and forwarded it to the individual's supervisor for corrective action. Corrective actions taken involved the individual being counseled on the need to follow protective clothing requirements, even for brief entries into contaminated areas. This action was documented on the VRSR report on September 27, 1989.

Radiation Work Procedure AND-P91001, Revision 3, dated February 1, 1989, Section 2, Item No. 2, under "Protective Equipment & Clothing Requirements," specifies, in part, that the minimum PC for personnel entering a contaminated area consists of shoe covers, lab coats and gloves (when touching potentially contaminated samples or equipment).

Although the individual was wearing shoe covers, failure to wear a Lab coat was identified as an apparent violation of Part I, Section 3.1.2 "Radiation Work Procedures" of the License. However, based on the safety significance of this incident, it would appear to be a Severity Level V matter since (1) it did not result in any personal contamination, (2) was not reportable, (3) the licensee took immediate corrective actions to prevent recurrence and (4) the inspector did not observe any other apparent violations of PC requirements. This apparent violation is not being cited because the criteria specified in Section V.G. of the Enforcement Policy were satisfied (NCV 70-12,7-03-03, Closed).

- (2) On September 29, 1989, at about 7:45 a.m., the inspectors were informed of an incident involving a personal injury that occurred earlier that morning in the SWUR facility. At about 12:50 a.m., while a worker was checking the alignment of a 30

gallon drum in the incinerator ash dump hood, he accidentally actuated the drum's lifting device which resulted in his right middle finger getting cut off between the finger nail and fist knuckle. The worker was immediately removed from the controlled area, PC cut off, frisked for contamination, and transported to a local hospital for emergency medical treatment. The section of finger that had been cut off was found and surveyed with no detectable contamination identified. With the attending physician's permission, the damaged end of the individual's finger, hand, and used gauze were surveyed at the hospital by the RSS. No contamination was detected. Due to the extent of the injury, the worker's finger had to be amputated up to the second knuckle. The individual was released from the hospital and sent home. The licensee had secured operations with the incinerator pending results of an investigation of this incident. The licensee was also making arrangements for further evaluation to determine if any internal deposition of radioactive material had occurred as a result of the injury. At the exit interview on September 29, 1989, the inspectors informed the licensee that the results of their investigation of this matter would be reviewed in a subsequent inspection (70-1257/89-03-04).

The licensee's overall performance in this area was judged to be adequate. However, weaknesses were identified in the control of combustible materials used in facility constructions and in storage of used materials. One NCV was identified.

6. Maintenance/Surveillance Testing (88025)

This area was reviewed to determine whether general maintenance of equipment was evident and surveillance tests were being performed in accordance with the license. The inspection of this area was primarily focused on observations made during facility tours.

The licensee's program for preventative maintenance (PM) and scheduled surveillance tests were discussed with the Manager, Plant Maintenance. The licensee's commercially supplied program, Computerized Maintenance Management System, contained about 1,700 PM items, including repetitive maintenance such as calibrations and equipment tests. The system also provided maintenance history and spare parts available for each item.

During facility tours, no excessive oil or other liquids were observed to be leaking from equipment or systems. Ventilation systems appeared to be operating as expected in all areas toured. Racks for storing SNM appeared to be in tact and adequately maintained.

Maintenance and surveillance testing of various selected items are also described in other paragraphs of this report.

The licensee's performance in this area appeared satisfactory and their program seemed capable of meeting its safety objectives. No violations or deviations were identified.

7. Waste Management/Environmental Protection (88035/88045)

The inspectors reviewed the licensee's programs for compliance with 10 CFR Part 20, license requirements and recommendations outlined in various industry standards.

There have been no significant changes in management controls since the last inspection of these areas. The only change noted was the removal of some responsibilities from the Industrial Regulation Specialist to allow more attention to be devoted to the licensee's environmental monitoring program. There were no changes in the manner of program implementation.

Records of the licensee's monthly internal HP audits, which includes portions of the environmental monitoring program, were examined. It was noted that no deficiencies were identified during the audits. The audits merely provide an "X" to indicate satisfactory findings and did not describe the detail or portion of the program that was audited. A description of the program areas audited would benefit the licensee in determining when all elements of the program had been audited. Records of the weekly stack sample data from continuous isokinetic sampling system of all facility stacks were examined. Sample data indicated that all gaseous effluent were well below the limits listed in 10 CFR Part 20, Appendix B, Table II.

Records of monthly lagoon interliner samples for 1989 were examined. Sample analysis data indicated that no leakage had occurred. This indicates liner integrity is intact. The licensee had completed repairs in No. 4 lagoon and were installing a new liner in lagoon No. 2.

Records of sample data from the plant waste effluent monitoring station for the period January 1, 1989, through July 1989, were examined. All results indicated that the releases were less than 1 part per million uranium. The licensee observed some positive samples during July 10-18, 1989. Their investigation of this matter concluded that the high results resulted from an accumulation of a thin film of uranium that had plated out on the bottom of the collection container. Confirmatory testing of the container and further testing of processed effluent from the lagoon further confirmed their conclusion. Monthly sludge sample data for 1989 from the city sewage processing facility indicated less than 25 pCi per gram which is the licensee's action level for investigation and corrective action.

Records of quarterly and semiannual well samples taken at approximately 20 locations, on and offsite, were examined. Two wells were noted to have elevated sample results ($8.7E-8$ and $6.4E-8$ uCi/ml gross alpha) when compared with other well sample data. According to the licensee, sample results for these two wells fluctuate with the seasons due to changes in the water table. Records observed documented their conclusion. The sample results from the two wells were lower in the first quarter of 1989 than in some previous samples drawn in 1988. The elevated readings were also attributed to some migration of effluent that resulted from a previously reported 1988 leak in one of the lagoon liners.

Records of grab samples for soil and vegetation for 1989 were examined and the results were negative for uranium.

Records of in-line filter testing for absolute filters at numerous facilities were examined and all were noted to have stated efficiencies of greater than 99.95 percent.

Records of quality controls for flurometric analysis to determine uranium concentrations were examined. It was noted that calibrated standards were used in the analysis prior to performing the sample analysis and these standards were traceable to the National Bureau of Standards (NBS).

Records of quality controls for sample counting equipment were examined. The licensee performed quarterly Chi-Square tests to determine that counting instruments were operating satisfactorily. Daily performance checks were conducted using standards that were traceable to the NBS. It was also noted that when performance checks were out of specification, corrective actions were not always documented. The licensee was encouraged to evaluate documenting these actions on the performance check sheet or in the equipment's log.

The licensee's liquid effluent monitoring station, which monitors releases from lagoon discharges to the sewer system, and one static environmental fluoride detector were examined during this inspection. The fluoride detector was in the location specified in the license and appeared operable. The liquid effluent sampling system was tested and also appeared functional. However, as noted in previous NRC reports, the flow meter's calibration was stated to be incorrect in determining the flow through the system. According to the licensee, the flow of effluent leaving the site is also measured by the City of Richland and the flow determinations from Richland are used when the licensee's flow meter is not operating satisfactorily.

The licensee's semiannual effluent report for the period of January 1 through June 30 1989, dated July 18, 1989, was reviewed in-office subsequent to the September 29, 1989, exit interview. This timely report was submitted in accordance with 10 CFR 70.59 and provided a summary of the radioactive gaseous and liquid effluents released from the facility. As was noted in an earlier inspection report No. 70-1257/88-10, the gaseous effluent releases were reported in terms of "less than" values although some stacks were known to have released positive, quantifiable activity with respect to the lower limit of detection (LLD) values presented in the report. In regard to liquid effluent data, the report contained apparent typographical errors as determined during a telephone conversation with cognizant licensee representatives on October 4, 1989. The report indicated that the concentration value was less than $1.7E-7$ Ci/ml with an LLD of $1.7E-7$ Ci/ml. It should have been less than $1.7E-7$ uCi/ml with an LLD of $1.7E-7$ uCi/ml. The licensee representatives informed the inspector that a correction to the report would be submitted to the NRC. The licensee's corrected effluent report dated October 5, 1989, was received and reviewed in the Region V office on October 10, 1989. The licensee made the appropriate unit corrections for the concentration of radioactivity released and the LLD. No further errors or anomalies were identified.

Licensee performance in this program area appeared satisfactory and their program seemed capable of accomplishing its safety objectives. The errors observed in the semiannual effluent report indicated a lack of attention to detail and appears to be an isolated incident and is not reflective of the licensee's overall program.

8. Emergency Preparedness (88050)

The licensee's program was examined to determine their compliance with the commitments outlined in their NRC approved Emergency Contingency Plan.

An examination of letters of agreements and a review of licensee drills/exercises indicated that the licensee has established a cooperative interface with appropriate offsite agencies. It was observed that the 1989 exercise included a combined response by the City of Richland, a local Hazardous Materials Team and the Plant Emergency Response Team. Discussions with local fire agencies also indicated good cooperation and preplanning with regards to an emergency at ANF. Records of letters of agreement for 9 offsite agencies, which included: Kadlec Hospital, Batelle Northwest Laboratories, Richland Police, Benton County, Richland Fire, Department Of Energy, U.S. Testing, Washington Public Power Supply System and the Richland School District, were examined and noted to have been updated in 1989. In addition, the Emergency Plan and implementing procedures were observed to include requirements for notification of state, local and Federal agencies in the event of an emergency at ANF.

The Emergency Plan was revised on January 31, 1989. There have been some changes in the licensee organization since that time and the Plan needs to be updated to account for these minor changes. An independent review of the Emergency Plan was conducted and transmitted to plant management on March 30, 1989. This report, concludes that the plan satisfactorily meets the intent and content of NUREG 0762. The review also forwarded some suggestions for strengthening the present plan. No documentation was available to describe any actions taken with regards to the suggestions for improvement contained in the review. The licensee may find it beneficial to include any suggestions for improvement from the annual review in some form of tracking system.

Emergency equipment and supplies required by the Emergency Plan and implementing procedures were examined and found to be operable and in calibration. In addition, records of alarm systems tests were also examined and considered adequate. However, the licensee's mobile command post referenced in the Emergency Plan and implementing procedures, was noted to require maintenance. The vehicle had been removed, tires were low, and the vehicle's suspension was stated to be very poor. The vehicle appeared fully functional in its present location; however, the moving of the vehicle would take time and equipment. The licensee stated they were aware of this problem and would be addressing the disposition of the command post in the near future.

Records of emergency response training required by the Emergency Plan and implementing procedures were examined and the following observations were noted:

review, the Emergency Plan and implementing procedures both need to be revised to clearly describe the licensee's current training program and to discuss the frequency for requalification training. Further, the differentiation between drills and training should also be clarified.

Records of drills and exercises required by the Emergency Plan and implementing procedures were examined. In addition, a video tape of the 1989 exercise was also viewed which involved a response to a release of hazardous materials by offsite agencies and the PERT. The records documented appropriate drills and exercises were conducted, and were also noted to contain critiques identifying areas for improvement. The exercise was conducted on September 14, 1989, and involved the coordinated responses by ANF, City of Richland, Benton County Emergency Management and Regional Hazardous Materials Response Team personnel. The September exercise was considered an improvement over previous exercises and the videotape should be very useful as a tool for emergency response training. Critiques were examined and noted to have been transmitted to management. A number of improvement items were identified and it appeared that corrective action was taken. However, some sort of tracking system might be beneficial to insure identified areas needing improvement are corrected.

License performance in this program area indicates a decline of management support for emergency response training. This area needs further support to insure adequate capabilities to support emergency response are maintained. One violation of NRC requirements was identified in this program area.

9. Transportation of Radioactive Materials (86740)

The inspectors reviewed the licensee's radioactive materials transportation program for compliance with the requirements of 10 CFR Parts 20, 30, 71, and 49 CFR parts 171 through 189, and the recommendations outlined in various industry standards.

The licensee's Quality Assurance Program (QAP), XN-NF-439, Revision 6, dated May 1987, Docket No. 71-0003, adequately defined personnel responsibilities and authority. QA Audit, FF-8-6, Nuclear Materials Shipping Containers, conducted September 6-8, 1988, in accordance with Paragraph 18 of the QAP, was examined. The audit was conducted to verify that the requirements contained in the QAP were being implemented by established procedures. The audit, conducted by three qualified auditors, appeared to be broad in scope. The audit identified one finding and presented three observations. The finding and observations involved administrative items regarding references in documents and use of outdated forms. The 1989 annual QA audit was to be conducted prior to the end of the year.

Records of several selected domestic and overseas shipments and receipt of SNM from January 1 through September 28, 1989, were examined. Various portions of preparation and loading of a shipment of UF₆ cylinders containing solid uranium keels was also observed during the inspection. Based on the examination of shipping records and observations in the field, the inspectors determined that the licensee

review, the Emergency Plan and implementing procedures both need to be revised to clearly describe the licensee's current training program and to discuss the frequency for requalification training. Further, the differentiation between drills and training should also be clarified.

Records of drills and exercises required by the Emergency Plan and implementing procedures were examined. In addition, a video tape of the 1989 exercise was also viewed which involved a response to a release of hazardous materials by offsite agencies and the PERT. The records documented appropriate drills and exercises were conducted, and were also noted to contain critiques identifying areas for improvement. The exercise was conducted on September 14, 1989, and involved the coordinated responses by ANF, City of Richland, Benton County Emergency Management and Regional Hazardous Materials Response Team personnel. The September exercise was considered an improvement over previous exercises and the videotape should be very useful as a tool for emergency response training. Critiques were examined and noted to have been transmitted to management. A number of improvement items were identified and it appeared that corrective action was taken. However, some sort of tracking system might be beneficial to insure identified areas needing improvement are corrected.

License performance in this program area indicates a decline of management support for emergency response training. This area needs further support to insure adequate capabilities to support emergency response are maintained. One violation of NRC requirements was identified in this program area.

9. Transportation of Radioactive Materials (86740)

The inspectors reviewed the licensee's radioactive materials transportation program for compliance with the requirements of 10 CFR Parts 20, 30, 71, and 49 CFR parts 171 through 189, and the recommendations outlined in various industry standards.

The licensee's Quality Assurance Program (QAP), XN-NF-439, Revision 6, dated May 1987, Docket No. 71-0003, adequately defined personnel responsibilities and authority. QA Audit, FF-8-6, Nuclear Materials Shipping Containers, conducted September 6-8, 1988, in accordance with Paragraph 18 of the QAP, was examined. The audit was conducted to verify that the requirements contained in the QAP were being implemented by established procedures. The audit, conducted by three qualified auditors, appeared to be broad in scope. The audit identified one finding and presented three observations. The finding and observations involved administrative items regarding references in documents and use of outdated forms. The 1989 annual QA audit was to be conducted prior to the end of the year.

Records of several selected domestic and overseas shipments and receipt of SNM from January 1 through September 28, 1989, were examined. Various portions of preparation and loading of a shipment of UF₆ cylinders containing solid uranium heels was also observed during the inspection. Based on the examination of shipping records and observations in the field, the inspectors determined that the licensee

performs receipt surveys pursuant to 10 CFR 20.205; maintained documentation to certify that recipients were authorized to receive the radioactive material shipped to them as required by 10 CFR 30.41(c); and the regulatory requirements for transporting radioactive materials contained in 10 CFR Part 71 and 49 CFR Parts 171 through 189 were being met. Copies of current shipping package certifications and transportation regulations were maintained.

During review of the shipping records, it was noted that Forms, "UF₆ Overpack & Cylinder Inspection Record," were incomplete for almost all such shipments made in 1989. The forms lacked notations (checks) as to whether the items listed were inspected (drain plug, welds, gasket stencil ...), and/or the signature of the person performing the inspections and date performed. The individual responsible for performing the inspections and completing the forms stated, in part, that although the forms were not always complete, he always performed the inspections of the items listed on the form. This matter was discussed with cognizant licensee staff during the inspection and at the exit interview on September 29, 1989. The inspector will evaluate the licensee's actions regarding this matter in a subsequent inspection (70-1257/89-03-06).

The licensee had not experienced any transportation incidents that would require reporting or degradation of package safety since the last inspection in this area.

The licensee's performance in this area appeared adequate and their program seemed capable of accomplishing its safety objectives. The deficiencies involving incomplete UF₆ cylinder inspection forms indicates a weakness in the review process of the individual responsible for transportation activities. No violations or deviations were identified.

10. Radioactive Waste Generator Requirements (84850)

The inspectors reviewed the licensee's radioactive waste program for compliance with the requirements of 10 CFR Parts 20 and 61. The inspection also included tours of various areas of the licensee's facilities where solid waste was being collected, sorted, incinerated, and stored.

The inspectors observed that waste in various work areas was sorted and assayed for uranium content prior to being transferred to the SWUR facility for further processing. Combustible and non-combustible waste was resorted at SWUR facility in a closed glove box type ventilated hood designed to control the release of radioactive material to the work area. Combustible waste was burned in an incinerator, and the ash was being drummed, assayed, and stored for future uranium recovery operations. Non-combustible solid waste was assayed and is being stored for ultimate disposal. About 300 drums per week were currently being processed through the SWUR facility that was operating seven days per week. The licensee maintained about 11,000 drums of unsorted waste in inventory. These drums had collected from previous years of operation, prior to installation of the incinerator, and were saved for ultimate uranium recovery.

With respect to waste sorting prior to the transfer to the SWUR facility, the inspectors observed that waste collected in the UO₂ Building had to be sorted by hand from unsorted drums to sorted drums with workers wearing respiratory protection devices, as no ventilated hoods were provided for waste sorting in this area. However, improvements for waste sorting operations were planned, including a ventilated hood for waste sorting. The inspectors noted that some areas in the plant, where space was available, maintained drums identified for the collection of combustible and non-combustible waste materials. During a tour of the basement of the ELO Building, a waste collection drum marked as "Combustible Waste Only" contained numerous metal parts, including a small (about three gallon size) metal vessel. Waste drums designated for the collection of combustible materials in other areas of the licensee's facilities were also noted to contain non-combustible items. Although these drums were ultimately resorted, it appeared that improvements could be made in the licensee's initial waste collection program in order to reduce the time involved in waste sorting operations, which is also a good ALARA practice. The supervisor in charge of waste operations and the RSS, that was responsible for the site Radiological Safety Training (RST), informed the inspectors that area supervisors were responsible for instructing workers on waste segregation. Although waste disposal was covered in the RST, the RSS informed the inspectors that waste segregation was not a topic for RST. The inspectors explained the advantages of and encouraged the licensee to consider including the importance of waste segregation in the RST. This matter was also discussed at the exit interview on September 29, 1989. The inspectors observations were acknowledged by the licensee.

The licensee's plans for disposal of the vast number of HEPA filters stored onsite were discussed in paragraph 5 above. The inspectors also noted that by letter dated June 27, 1989, to U.S. Ecology, Incorporated, (USE) the licensee was negotiating for the potential disposal of about 40,000 cu.ft. of uranium contaminated sand expected during the next several years. This would be sand that blows into the lagoon system and becomes contaminated with uranium. The licensee had hoped to chemically leach the sand to less than 30 pCi/gm for unrestricted disposal. However, after extensive leaching operations of about 4,150 cu.ft. of sand, they could only obtain an average concentration of about 88 pCi/gm. For a more practicable decontamination goal, the licensee plans to reduce the contamination level below the unrestricted disposal level of 250 pCi/gm insoluble and 100 pCi/gm soluble enriched uranium as indicated in the NRC Branch Technical Position published in the Federal Register, Vol. 46, No. 205, Friday, October 13, 1981, p. 52061. This sand would be sent to the local burial and used for fill in waste disposal operations. The licensee has discussed this disposal method with the NRC NMSS Fuel Cycle Safety Branch and Division of Low Level Waste Management & Decommissioning Office, the State of Washington and USE. In order to dispose by this method, USE would have to obtain a license amendment from the State of Washington for their Hanford burial site.

The licensee's last shipment of solid waste for burial was performed on August 30, 1988. Records of this shipment (No. 157) were examined. The shipment consisted of eight boxes of non-compactable solid waste

materials that contained a total of 33.78 gms. U-235. Based on review of these records and licensee procedure P66,803. "Contaminated Waste Program", dated May 11, 1989, the inspectors determined that (1) the licensee classified waste pursuant to 10 CFR 61.55, (2) the waste met the characteristics of 10 CFR 61.56, and the prepared waste manifest and marking of packages were in accordance with 10 CFR 20.311. Licensee inspections of waste handling and packaging were conducted in accordance with 10 CFR 20.311(d)(3). The licensee also maintained a current copy of the disposal site's license.

The licensee's performance in this area appeared adequate and their program seemed capable of meeting its safety objectives. The installation and operation of the incinerator to reduce the vast amount of backlogged waste maintained onsite represents an improvement in the licensee's program. Improvement in the collection and segregation of waste in the work areas would benefit the licensee. No violations or deviations were identified.

11. Exit Interview (30703)

The inspectors met with the licensee's representatives, denoted in paragraph 1, at the conclusion of the inspection on September 29, 1989. The scope and findings of the inspection were summarized.

The licensee was informed of the two apparent violations identified in this report, one of which was the NCV.

The observations described in paragraphs 5, 7-10 of the report were acknowledged by the licensee.