AREVA

Office of Nuclear Materials Safety and Safeguards
U.S. Nuclear Regulatory Commission
Attn: Document Control Desk
One White Flint North
11545 Rockville Pike
Rockville, MD 20852-2738

September 20, 2008

Subject: **SNM-1168 AMENDMENT REQUEST TO SUPPORT NEW CHEMISTRY SERVICES LABORATORY (CSL)**

Enclosure: I) Description of License Change
II) Description of License Application Change Pages

Attachment: 1) Chapter 1 and Chapter 7 Change Pages

Dear Mr. Matt Bartlett

Attached are change pages to the SNM-1168 License. The amendment is required to incorporate a new building for laboratory operations within the current security fence. The new laboratory building replaces existing trailer type structures that have been in use for many years. The construction and operation of the CSL will occur in two phases as described in the enclosure. Several editorial type changes are incorporated in this revision to enhance the readability and do not make substantive changes to the license.

In addition to the changes to support the CSL, this amendment requests includes changes to authorize the possession, packaging and shipping of by-product contaminated equipment at NRC licensed utility sites. This requested authorization is consistent with the current authorization for SNM and will allow AREVA to use our extensive technical experience shipping this type of equipment.

This amendment does not make substantive changes to the authorized activities or possession limits of the license and meets the categorical exclusion criteria of 10 CFR 51 (c) (11) and therefore is not subject to an environmental review. Enclosure (I) provides a detailed description of the proposed change and provides an analysis of why the amendment is subject to the Categorical Exclusion for an Environmental Assessment. Enclosure (II) provides a description of the change pages to the application, which is included as Attachment 1.

Should you have any questions regarding this submittal, please call me at (434)-832-5205.

Sincerely,

Samuel E Miller
Manager, Environmental,
Health, Safety and Licensing

NMSS01

AREVA NP INC.
An AREVA and Siemens company

3315 Old Forest Road, P.O. Box 10935, Lynchburg, VA 24506-0935
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1.0 Introduction

The current Chemistry Services Laboratory (CSL) is located in three sealand trailers occupying about 1,700 ft^2 adjacent to the SERF buildings and behind the fuel plant. About one-third of this space is used for chemical and hardware storage. AREVA is replacing the current laboratory and supporting structures with a modern laboratory to support the ongoing analytical requirements of the services business. This building is primarily for by-product material and will not contain more than 350 g of ^{235}U.

10 CFR 51 (c) (11) allows for a categorical exclusion from the requirement to perform an environmental assessment for license amendments "which are administrative, organizational, or procedural in nature, or which result in a change in process operations or equipment, provided that (i) there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite, (ii) there is no significant increase in individual or cumulative occupational radiation exposure, (iii) there is no significant construction impact, and (iv) there is no significant increase in the potential for or consequences from radiological accidents."

This project description provides the information necessary to support the categorical exclusion from the requirement to perform an environmental assessment and provides background to support the license amendment request.

2.0 General Description

The CSL will be a stand-alone building located in approximately the center of the fenced portion of the Mt. Athos Road (MAR) site as shown in Figure 2-1.

The Phase 1 building will consist of a two-story building that will house several laboratories as well as offices, rest/change rooms, sample/equipment storage rooms, a chemical storage room, an elevator and a mechanical room(s). The total enclosed area of the Phase 1 building will include about 7,000 ft^2. The Phase 1 building will have a footprint of about 4,000 ft^2, including about 800-1,000 ft^2 for the mechanical room(s), plus a concrete pad, sidewalks and gas storage. The mechanical room will include a pit (or basement) for waste water tanks. External utilities hookup shall be included for periodic power-up of field laboratories and test equipment.

Phase 1 will also include the relocation of equipment and instruments from the existing trailers and procurement of additional equipment and instrumentation. Phase 1 will allow analysis of moderately radioactive materials.

Phase 2 will consist of expanding the building up to a total of about 20,000 ft^2 and adding additional equipment and instrumentation. Phase 2 expands the laboratory capability to analyze higher radioactively contaminated corrosion and metallurgical samples.

Instrumentation procurement in both phases will provide capabilities for measurement of chemical, radiochemical, physical and metallurgical properties of radioactive and non-radioactive samples.

Phase 1 provides features that will allow expansion for Phase 2 with minimal re-work of the Phase 1 facility and with minimal disruption to operations in the Phase 1 facility. The location of the Phase 1 building was selected to allow for future expansion.

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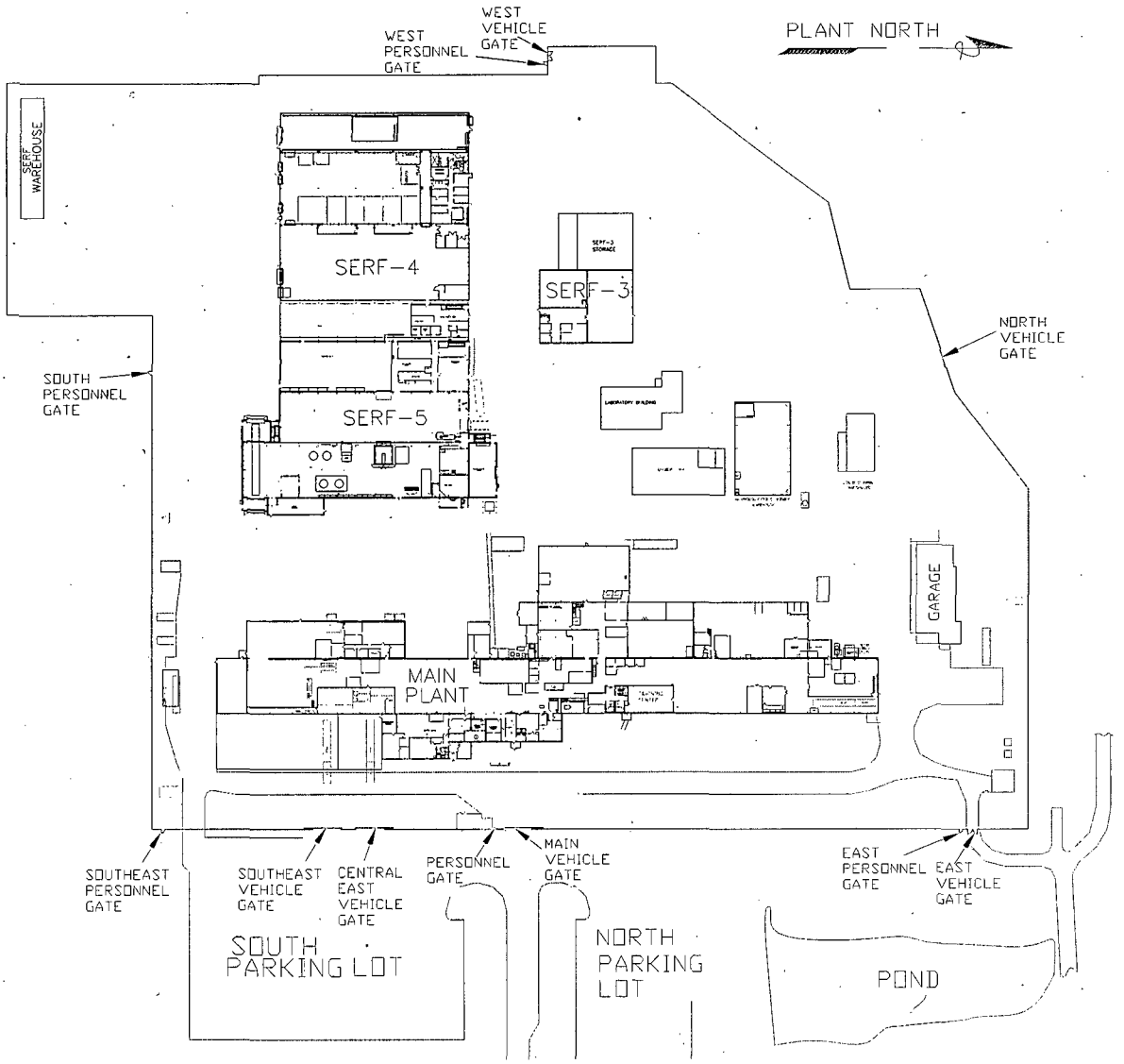
Contaminated areas are designed to be under negative ventilation.

Figure 2-1



3.0 Gaseous Effluents

Potentially contaminated air will be exhausted through a pre-filter and a high efficiency (HEPA) filter that is rated for at least 99.95% efficient for removal of 0.3-micron particles. The anticipated contribution of the new CSL facility to gaseous releases is based upon the experience this facility has gained from the operation of the SERF. The releases from the SERF and CSL are anticipated to be

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similar in that the ventilation systems have been designed to meet the same requirements (i.e. negative pressure in relation to the outside environment and HEPA filtration).

4.0 Liquid Effluents

The liquid effluent streams from the CSL are anticipated to be as follows:

4.1 Radioactive Waste Water

Contaminated water will be generated as a result of laboratory operations which will be sent to the evaporation system where it will be HEPA filtered prior to release. Any dried sludge or other solids collected from the evaporation system are disposed of as LSA waste. Water from the sinks, floor drains and instrumentation drains may contain small amounts of radioactivity primarily from the washing of glassware. The piping system runs under the concrete floor through a double walled and monitored piping system into the retention tank.

4.2 Storm Water Discharges

Precipitation run off will be collected via a storm water collection system which discharges to the environment. These discharges are regulated under a VPDES permit number VA0004774 issued by the Commonwealth of Virginia.

4.3 Sewage

Sanitary wastes for the facility will be piped to sewage treatment plant consistent with the current permitted operation.

5.0 Solid Wastes

The facility generates contaminated solid wastes, hazardous wastes, mixed waste and non-hazardous uncontaminated solid wastes. These wastes are generated and disposed of as follows:

5.1 Contaminated Wastes

The most highly contaminated solid waste product will be residual material from the mechanical and chemical analysis of reactor services samples. Mixed waste, i.e., hazardous waste mixed with radioactivity may be generated in small quantities. Laboratory procedures and practices are carefully controlled to ensure that the potential to generated mixed waste is minimized.

Other solid contaminated wastes from the CSL will consist principally of contaminated equipment, decontamination materials, used personal protective equipment (i.e. gloves, booties, etc.), and floor sweepings. This material is stored until there is a sufficient quantity available for shipment to a licensed waste facility. The quantity of waste generated is anticipated to be 10 to 20 percent greater than the currently amount generated. Based on overall generation rates and scaling for the increased floor area and man-hours anticipated, a contaminated waste generation rate of 20,000 to 40,000 lb per year is expected from the CSL.

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5.2 Hazardous Waste

No significant hazardous waste is anticipated to be generated from the operation of the CSL facility. Small quantities of hazardous waste, if generated, will be treated, stored and disposed consistent with RCRA requirements. If the hazardous waste becomes mixed waste it will be processed consistent with NRC and EPA requirements. As discussed above, the laboratory procedures and practices are focused on avoiding the potential to generate mixed waste and if generated the quantity is expected to be low.

5.3 Non-Hazardous and Uncontaminated Solid Wastes

Uncontaminated and non-hazardous solid wastes from the CSL will be disposed of by a private waste hauler at the Lynchburg Sanitary Landfill.

5.4 Chemical Inventory

The laboratory maintains a number of chemicals stored in laboratory quantities. Chemicals are stored consistent with their compatibility and hazards. Flammable liquids are stored in appropriate containers or cabinets.

6.0 Environmental Monitoring

To monitor the environmental performance of the facility, AREVA NP Inc. has established a variety of environmental monitoring stations. Soil, water, sediment, and vegetation samples along with radiation monitors (TLD's) are taken to monitor for the environmental impact of the facility. The location of environmental monitoring stations is described in detail in Chapter 9 of the License Application. These monitoring stations provide adequate coverage for environmental monitoring of the CSL facility.

7.0 Evaluation of Environmental Impact of the Facility

7.1 Effluents

As discussed in previous sections there is no significant change in the types or significant increase in the amounts of any effluents that may be released offsite.

The design of the new facility includes Radiologically Controlled Areas (RCA's) that will be used for radiological work and storage of radiological materials. Within the RCA's will be Contaminated Areas (CA's) where work on radioactive and contaminated systems will be performed. The RCA's are to be maintained at a slightly negative pressure with respect to outside air to ensure that air migrates into the area, preventing the spread of contamination.

The design of the facility will incorporate one exhaust stack for the radiologically controlled areas. The exhaust stack will incorporate high efficiency particulate air (HEPA) filters to minimize the amount of radioactive contaminates exhausted into the environment. The system will be continually sampled for radioactivity. The quantity of the anticipated radioactive gaseous releases may be slightly higher than the current laboratory operation primarily due to the increased volumetric flow rate of the new stack. The effluent concentration when measured at the stack will be consistent with the current

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stack concentration and may be lower due to the new equipment. The expected effluent concentration measured at the stack is estimated to be <1% of the 10 CFR 20, Appendix B, table 2 values.

7.2 Occupational Radiation Exposure

Exposure from authorized activities in the CSL facility will be received predominately from external sources of radiation. Radiation dose for individuals working at CSL are anticipated to be within this same range as the current laboratory. Periodically personnel will be working in a potentially high radiation field. Exposure from such work will be minimized by using both permanent and temporary shielding.

The majority of TEDE received on site however is expected to continue to be dominated by fuel and services operations, not CSL related work.

7.3 Construction Impact

The construction of the CSL is within the currently established controlled area of the facility. There is no significant impact of this construction to the environment since this land was previously dedicated to site operations. A radiological survey consistent with MARSSIM has been performed to verify that the area is not impacted by radioactive material. Storm water runoff from this area has always been accounted for in the storm water pollution prevention plan. Additionally the area has been free of meaningful timber and vegetation growth for a significant period of time.

Workers entering the area will be provided training consistent with 10 CFR 19. Instructions for responding to site emergencies will also be provided. Based on the current effluent levels, site environmental dose data and radiological surveys of the construction area the dose to a worker is expected to be much less than 100 mrem and not require monitoring. However, dosimeters have been placed around the construction area to demonstrate compliance with the dose limits of 10 CFR 20.

As mentioned above, a MARSSIM type survey was performed demonstrating that the underlying soil meets the Soil Screening Levels of NUREG/CR-5512. Soils excavated from the project site are being confined to the site.

8.0 Radiological Accidents

The nature of the activities to be performed in the CSL facility is similar in nature to those already being performed. All working involving contaminated equipment will be performed under the authority of a Radiation Work Permit and with coverage provided by qualified Radiation Protection Technicians. The area will be maintained at a slightly negative air pressure with respect to the outside air, which minimizes the possibility of airborne contamination spreading to the environment. Furthermore, floors and drainage systems have been designed to contain liquids from spills, sprinklers and fire fighting activities within the controlled areas. Access to radiologically controlled areas will be controlled by an electronic access control system that will limit access to those areas to individuals properly trained to work with radioactive materials.

The off site exposure from any credible incident involving the activities to be performed at the CSL is insignificant when compared to the risk associated with a criticality accident.

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9.0 Possession at Reactor Sites

In addition to the changes for the CSL, this amendment requests changes to allow the possession of contaminated field service equipment at utility sites. AREVA NP Inc. provides outage services to nuclear utilities and routinely ships equipment and supplies to NRC licensed utility sites to support the field service activities. AREVA NP Inc. has many years experience handling and shipping this type of equipment. In addition to AREVE NP Inc.'s current authorization to possess and ship fuel assemblies at utility sites, we request authorization for the same activities for by-product contaminated equipment under the same controls and authorizations as fuel handling as an alternative and optional method of return shipment to be exercised when deemed appropriate.

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Enclosure II, Description of License Application Change Pages

Page #	Paragraph	Description of change
All, 1-7	Header, 1.5(c), 1.5(d)	The comma after AREVA NP was deleted
1-1	1.1(a)	Added laboratory operations to general facility information. Incorporated editorial changes and deleted last two sentences of the paragraph to remove unnecessary descriptive text. Deleted SERF-2 which is no longer used for by-product material work
1-1	1.1(b) bullet #1	Editorial changes.
1-2	1.1(c)	Added CSL to process description and deleted SERF-2 as noted above
1-3	1.3(g)	Added "or laboratory samples" to describe material type
1-3	1.3(i)	Added solid, liquid or gaseous samples. And increased the limit from 1 uCi to 10 uCi as a contingency. Deleted the word "sealed" so that the description encompasses non sealed sources. The laboratory will use some very low activity matrix sources to calibrate the gamma spectroscopy equipment. Revised wording to say Analytical samples instead of standard samples. Also added atomic numbers 1 and 2 so that material is Atomic number 1-96.
1-5	1.4	Paragraph 1.4 has been amended to include "Possession, packaging and shipping field services equipment at NRC licensed utility sites."
1-7	1.5(b)	Added the word containers to the 1st bullet to complete the sentence. This was an oversight from the original application.
1-7	1.5(d)	Paragraph 1.5(d) has been revised to include "and contaminated services equipment". Added Inc. after AREVA NP in paragraph 1 and 2.
1-7	1.5(e)	Added Inc. after AREVA NP
1-8	1.6(a)	Editorial comment to replace BWXT with Babcock and Wilcox to reflect current name.
1-8	1.6(b)	Replaced Lynchburg Foundry with Intermet Corporation
1-9	1.6(b)	Editorial comment to replace BWXT with Babcock and Wilcox to reflect current name.
1-10	1-5(d)	Revised section to note that site water is no longer provided by wells
1-12	Figure 1-1	Replaced Figure 1-1 with new figure showing laboratory building
7-1	7.2(b)	Added CSL and maintenance building to bullet list of sprinkler areas

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Attachment 1

Chapter 1 and Chapter 7 Change Pages

AREVA NP INC.
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CHAPTER 1.0

GENERAL INFORMATION

1.1 Facility and Process Information

a) General Facility Information

There are approximately 16 distinct buildings located at this site. General site layout is as shown in Figure 1-1. Fuel fabrication operations take place in the main process building. Activities related to work on equipment potentially contaminated with by-product material generally take place in SERF-3, SERF-4 and SERF-5. Laboratory operations with radioactive materials are performed in the CSL building. Site structures are generally constructed of concrete floors, a mixture of corrugated metal on steel and concrete or concrete block walls, with corrugated metal roof assemblies.

b) Fuel Fabrication Areas Design Features

All SNM manufacturing and storage is limited to the southern end of the main process structure. The main SNM manufacturing areas are:

- Pellet Receiving Bay. This area is dedicated to the process of receiving and shipping SNM. A large roll up door at the end of the bay is closed once a trailer is inside. Conveyors move the SNM in/out of the pellet receiving room as required. SNM in the pellet receiving bay is stored within approved shipping containers other than during the unloading or loading process. The unloading and loading process is an attended operation which occurs approximately once or twice per week, for approximately 8 hours, whenever fuel manufacturing is in progress.

- Pellet Loading Room. The pellet loading room is a concrete block structure within the main process building. In this area are the three fuel vaults, the pellet loading table and a conveyor for moving the pellets into/out of the pellet receiving bay. The operations conducted in the pellet loading room are strictly mechanical in nature. The area is under negative ventilation at all times when operations are in progress. The ventilation system exhausts through a HEPA filter bank. Air from the pellet loading room and main plant area exhaust through a stack which is 21 meters high. The pellet loading room has been established as a permanent RCA.

Access to the pellet loading room is from a change room for control of contamination. Additionally there is an emergency exit to allow another escape path for personnel in the event of an emergency.

- Fuel Rod and Bundle Manufacturing Areas. The fuel rod and bundle manufacturing areas are located in the southern half of the main process building. Except for rods which are between the pellet loading operation and the upper end cap welding operation, all fuel in this area is fully encapsulated in fuel rods. The only operations conducted in this area are the fuel rod loading, fuel bundle assembly and assembly of Burnable Poison Rod Assemblies (BPRA's). This is an open manufacturing area.

c) Process Information

There are three classes of operations conducted at this facility.

The first class of operations this facility is engaged in is the fabrication of fuel assemblies for commercial nuclear reactors. Uranium oxide pellets are received and then transported to a pellet vault after the receipt inspection process is completed. The fuel pellets are then inserted into rods, which are then assembled into fuel bundles. Finished fuel bundles are then packaged and loaded onto truck transport for delivery to the receiving utility. Other activities conducted in conjunction with nuclear fuel fabrication include: fabrication of poison rods, download of finished fuel bundles and rods, repair of returned fuel assemblies, laboratory operations and waste disposal operations. These operations are conducted in approximately the southern one-third of the main process structure (Figure 1-1). These operations are regulated under this license.

The second class of operations conducted at the facility is support activities for nuclear reactor field service operations. These operations are primarily conducted in areas outside the main process structure (Figure 1-1), in SERF's 3, 4, 5 and CSL. Operations in these areas include equipment and machinery repair, fabrication of specialized equipment, laboratory services, and the training of field personnel. These activities may be conducted with equipment contaminated by licensed approved quantities of by-product materials. Other authorized activities include the decontamination, maintenance, refurbishment, storage, transportation, and testing of contaminated equipment, tooling and components. These operations are regulated under this license.

The third class of operations is general manufacturing. Operations included in this class include, but are not limited to, the manufacture of components for the grid cages of the fuel assemblies, filters, and the

manufacture of incore instrumentation. These operations are conducted in the remainder of the main process building outside the areas of the fuel fabrication processes (Figure 1-1). No special nuclear material or byproduct material is processed in these areas. These operations are regulated under various codes published by OSHA, EPA and the Commonwealth of Virginia.

1.2 Institutional Information

- Name and Address of Licensee

AREVA NP Inc.
Mt. Athos Road facility
Rt. 726 Mt. Athos Road
P. O. Box 11646
Lynchburg, Virginia 24506-1646

- State of Incorporation

AREVA NP, Inc. is a wholly owned subsidiary of AREVA, Inc. The relationship is organized and exists under the laws of the State of Delaware.

- Principal Offices

AREVA NP Inc.
P. O. Box 10935
Lynchburg, VA. 24506-0935

AREVA NP Inc.
Mt. Athos Road Facility
Rt. 726 Mt. Athos Road
P. O. Box 11646
Lynchburg, Va. 24506-1646

Financial Qualifications

AREVA NP Inc. will, as required by 10 CFR 70.25, provide a summary of its financial condition sufficient to demonstrate conclusively its ability to pay the cost of decommissioning its nuclear facility. Such summary will include the method by which, and extent to which, provision is being made for this financial obligation.

1.3 Type, Quantity and Form of Licensed Material

	Material	Form	Quantity	Authorized Uses
a)	Uranium enriched with the isotope ^{235}U to a maximum enrichment of 5.1%. This category includes enriched reprocessed uranium containing plutonium and other transuranic isotopes.	Chemical form to be uranium oxide. Physical form may be pellet or pellet scrap. For enriched reprocessed uranium containing plutonium and other transuranic isotopes the concentration of transuranic isotopes in such uranium is limited to 50Bq per gram of uranium. AREVA NP, Inc. shall obtain shipper certification that uranium containing plutonium and other transuranic isotopes is limited to 50Bq per gram of uranium.	15,000 kilograms ^{235}U	Incorporation into fuel rods and fuel assemblies for use in commercial nuclear power plants. Principal use is for pushing pellets into rods. Other authorized activities include receipt, download, storage, packing, shipment, and laboratory analysis.
b)	Depleted and Normal Uranium. Depleted uranium to have a ^{235}U isotopic composition less than 0.700%. Normal uranium to have a ^{235}U isotopic composition between 0.700% and 0.725%.	Chemical form to be uranium oxide. Physical form may be pellet, pellet scrap, or powder.	100,000 kilograms	Incorporation into fuel rods and fuel assemblies for use in commercial nuclear power plants. Principal use is for pushing pellets into rods. Other authorized activities include receipt, download, storage, packing, shipment, and laboratory analysis.
c)	Uranium of any enrichment of ^{235}U	Any chemical or physical composition.	350 grams	Analytical and laboratory purposes.

d)	Encapsulated by-product material, Atomic numbers 3 to 83 inclusive.	One or more sealed sources.	Up to 10 curies	Repair, calibration and source checking of instrumentation.
e)	Plutonium	One or more sealed sources.	Up to 6.0 grams	Repair, calibration and source checking of instrumentation.
f)	Californium-252	One or more sealed sources.	Up to 4.0 milligrams	Active rod scanner.
g)	By-product material (including transuranic elements) as contamination or laboratory samples.	Of any chemical or physical composition.	Up to 1000 curies	Field service activities, for operations in support of nuclear plants, and/or as waste.
h)	Americium-241	One or more sealed sources.	Up to 5.0 curies	Repair, calibration and source checking of instrumentation.
i)	Analytical Standards, Atomic numbers 1 to 96 inclusive.	One or more sources, solid, liquid or gaseous samples	Up to 10 microcurie	Repair, calibration and source checking of instrumentation.

1.4 Authorized Activities

Fabrication of nuclear power fuel assemblies starting by inserting fuel pellets into rods, through fuel assembly bundling, packaging and delivery of fuel assemblies to a carrier for transport, and repair of returned assemblies. The handling and storage of materials resulting from the activity of fabricating nuclear power fuel assemblies

Disposal of various solid, liquid, and airborne wastes resulting from the authorized activities excluding onsite burial.

Laboratory operations such as but not limited to chemical analysis, metallographic analysis and testing.

Field Operations activities involving equipment, processes, laboratory operations and areas contaminated with authorized quantities of by-product materials to include decontamination, maintenance, refurbishment, storage, transportation, and testing of contaminated equipment, tooling and components. Possession, packaging and shipping field equipment at NRC licensed utility sites.

Storage of nuclear materials in various forms (uranium oxide pellets, pellet scrap, contaminated material, filters, downloaded cladding) and facilities appropriate to safety.

Activities of a process and product development nature.

Maintenance of the facilities and equipment under adequate control to assure safety.

Possession of authorized by-product, source, and special nuclear materials in packages approved pursuant to 10 CFR 71 for the purpose of delivery to a carrier for transport, and in private carriage between NRC licensed facilities within the United States.

1.5 Special Exemptions and Special Authorizations

a) Postings

A continued exemption is requested from the labeling and posting requirements of 10 CFR 20.1902(e) and 20.1904(a) because of the nature of our operation. The intent of this section is met by posting areas which house or temporarily store radioactive material with signs incorporating the radiation symbol and with the warning: "CAUTION RADIOACTIVE MATERIAL; ANY AREA OR CONTAINER WITHIN THIS PLANT MAY CONTAIN RADIOACTIVE MATERIAL". This exemption is based on practicality and/or experience and has been applied effectively at the Mt. Athos Road facility for the past 25 years.

b) Storage of Fuel Within Shipping Containers

- Fuel may be stored in NRC licensed shipping containers. Fuel stored in this manner is exempt from the criticality monitoring requirements of 10 CFR 70.24 provided:
  - The containers and contents have been subject to the determinations required by 10 CFR 71, Subpart D.
  - The containers are sealed, properly identified, and meet shipment requirements.
  - The containers are arranged in one of the following arrays:
    - An array that does not exceed a 100 Transport Index and separated from other arrays by a minimum distance of 12 feet

- Loaded on a truck, trailer or other conveyance in accordance with DOT shipping requirements.

c) Free-Release Limits

AREVA NP Inc. is authorized to release equipment and material for unrestricted use in accordance with "Guidelines for Decontamination of Facilities and Equipment Prior to Release for Unrestricted Use or Termination of Licenses for By-Product, Source or Special Nuclear Material", USNRC, August 1987.

d) Possession at Reactor Sites

AREVA NP Inc. may possess unirradiated fuel assemblies and contaminated services equipment at nuclear reactor facilities anywhere within the United States, for the purpose of loading them into shipping packages, and delivery to an authorized carrier for transport in accordance with the regulations. Operations incident to such loading shall be subject to the control of an AREVA NP Inc. representative, approved by the manager of the regulatory affairs function, who shall assure that the completed transport package complies with all requirements of the regulations.

For such operations, AREVA NP Inc. shall be exempted from conditions of Title 10, Code of Federal Regulations, Part 70.24; "CRITICALITY ACCIDENT REQUIREMENTS" provided:

- As finished fuel assemblies are removed from their storage facilities, they shall be constrained in an arrangement that is no more reactive than that which they will assume in the shipping package.
- The total number of fuel assemblies in process at any one time shall not exceed the maximum authorized contents of the package being loaded.
- If two fuel assemblies are in movement at the same time, a 12 inch minimum edge to edge separation shall be maintained between them; and, only one fuel assembly at a time shall be loaded into the shipping package.
- Loaded packages will be stored in the approved shipping array, pending delivery to a carrier.

e) Exemption from Prior Commitments

All commitments made to NRC Staff prior to the approval date of this license application shall no longer be binding upon AREVA NP Inc., following approval of this license application unless re-imposed as license conditions.

1.6 Site Description

The following are brief summaries of certain physical attributes of this facility.

a) Site Geography

The facility is located in the State of Virginia in Campbell County as shown in Figure 1-3. The location of the facility with respect to the City of Lynchburg is shown in Figure 1-4.

The facility is located on an approximately 70 acre site in Campbell County approximately 4 miles from the Lynchburg city limits. The site is adjacent to the Babcock and Wilcox facilities (formerly BWX Technologies NNFD and Nuclear Technology Center plant sites). The physical layout of the site is as shown in Figure 1-1. The relationship between the facility and the Babcock and Wilcox facilities is illustrated in Figure 1-2.

The site is adjacent to state route 726. There are no interstate highways nearby.

The nearest body of water is the James River. The facility site lies on a river bend bounded on three sides by the James River and on the southeastern side by Mt. Athos.

b) Demographics

Census data from the U.S. Census Bureau for the 2000 census indicates that the population for Campbell County was 51,078. Population for the city of Lynchburg was 65,269.

Because of the terrain, most of the population within a 5 mile radius of the facility resides over 3 miles from the site. There are no significant clusters of population within a 2 mile radius of the facility. The closest inhabitants occupy residences, which are located about one-half mile to the ENE.

Approximately two-thirds of the population within 5 miles of the plant reside between the 3 and 5 mile radii in the WSW to WNW directions. This includes the eastern portions of the City of Lynchburg and the community of Madison Heights.

Within a 3 mile radius of the plant, there are only a few public facilities or business activities that attract large numbers. The neighboring Archer

Creek Plant of the Intermet Corporation and the Babcock and Wilcox facilities are the only other major industries in the immediate vicinity. Approximately 3,000 workers are employed at these facilities. The Central Virginia Credit Union is located immediately next to the facility, at the intersection of Route 726 and the entrance to Babcock and Wilcox.

c) Meteorology

Since Lynchburg is situated in the valley of the James River and on the eastern edge of the Blue Ridge Mountains, extreme weather in the area is rare.

The probability of this site being struck by a tornado is considered highly unlikely. Data obtained from NOAA indicates that between 1950 and 1995 there were, on average, 6 tornadoes per year in the state of Virginia. Of those tornadoes, 2 per year were categorized as "strong-violent", equating to an F2 to F5 rating on the Fujita Tornado Damage Scale. NOAA data showed that between 1950 and 1995 tornadoes (F0 to F5) occurred at a rate of 1.6 tornadoes per year per 10,000 square miles in Virginia. The annual probability therefore of any tornado striking this approximately 70 acre site is 1.9×10^{-5} per year or once in every 52,000 years. The probability of being struck by a "strong violent" tornado would be even less.

The probability of significant damage to this site due to high wind is considered highly unlikely. The NOAA publication "Climatic Wind Data for the United States" of November 1998 provides the mean speed and peak speed for wind for the period 1930 to 1996. For Lynchburg, the maximum mean wind speed is recorded as 9 MPH and the maximum peak speed is recorded as 74 MPH. The building specifications for the building where operations with SNM are conducted call for withstanding a wind load of 20 PSF, which is approximately equivalent to a wind speed of 90 MPH. As the design basis represents 120 percent of the maximum peak speed, significant damage due solely to wind is considered highly unlikely.

Since the site is not a coastal location, the effects of hurricanes would be limited to increased rainfall and possible flooding.

d) Hydrology

The facility site lies on a river bend bounded on three sides by the James River and on the southeastern side by Mt. Athos. Hence, the only waters that could be affected by plant operation or that could influence plant operation are the James River and the ground waters of the site and its immediate environs.

Facilities at the Mt. Athos site do not utilize any wells to obtain groundwater. Waters utilized at the site are provided by the city of Lynchburg municipal water supply.

e) Geology

The James River Basin of Virginia includes portions of four physiographic provinces, each of which is characterized by distinct landforms and physical features. These provinces, located west to east, are Valley and Ridge, Blue Ridge, Piedmont and Coastal Plain. Western or inner Piedmont where the Mt. Athos site property lies is an upland characterized by scattered hills, some of mountainous dimensions, lying eastward from the foot of the Blue Ridge.

The Mt. Athos site is located on a river bend and generally exhibits a rolling surface of gentle slopes. It is bounded on three sides by the meandering James River and on the southeastern side by Mt. Athos. The dominant topographic feature of the site is a hill located approximately at the center of the property, the crest of which rises to 693 feet MSL. The ground is inclined toward the river from the hilltop to the riverbank, which is at approximately 470 feet MSL. The highest point in the vicinity of the site is the top of Mt. Athos, where the elevation is 890 feet MSL.

The central Appalachian region of Virginia is characterized by a moderate amount of low-level earthquake activity which appears as somewhat isolated "clusters" of seismic energy release; there is a central Virginia cluster, a western Virginia-West Virginia cluster and a northern Virginia-Maryland-West Virginia cluster. The facility is located in the western part of the central Virginia cluster region which is classified as Zone 2 on the Seismic Risk Map of the United States. On the Modified Mercalli (MM) scale this zone corresponds to an intensity of VII, which implies building damages to the extent of fallen chimneys and cracked walls. Zone 2 has an acceleration range of 0.065 to 0.14 gravity.

During the period 1758 through 1968, 121 earthquake epicenters in Virginia were reported. The largest earthquake was in 1897, with a probable epicenter in Giles County, approximately 100 miles west of the plant site. A maximum intensity of VIII was estimated in the epicentral region, but an intensity of only V- VI was estimated for the facility site. For this earthquake the Lynchburg area reported it was perceptible with bricks falling from chimneys and furniture and houseware being jostled. The second largest earthquake was in 1875 with a maximum epicenter intensity of VII more than 50 miles east of the site. The estimated intensity at the site was V.

1.7 Terminology

The following definitions and abbreviations apply to terms used within this license.

Term	Definition
Annual	Once per calendar year and not to exceed 14 months.
Baffling/Shielding	When used in the context of moderation control, a technique for secondary containment or diversion and control in the event of water pipe rupture.
RCA	Radiologically Controlled Area
CAR	Corrective Action Report
IROFS	Items Relied Upon For Safety.
Quarterly	Four intervals per year, each interval consisting of not more than 120 days.
RWP	Radiation Work Permit
Biannually or Semi-Annually	Two intervals per year, each interval consisting of not more than 243 days.
SNM	Special Nuclear Material
SRB	Safety Review Board
Biennally	1 interval per two years, consisting of not more than 820 days.
Criticality Safety Analysis or CSA	The CSA identifies and documents the basis of nuclear criticality safety for a particular system. The analysis identifies controlled parameters and establishes bounding assumptions for other parameters within the system. The CSA includes consideration of the potential accident scenarios or initiating events that the system may be subject to, the margin of safety associated with each postulated event and concludes that the system meets the requirements of the double contingency principle.
Pellet Scrap	SNM residue resulting from authorized operations. This may consist of whole pellets, pellet chips, ground pellet residues, and vacuum fines.
SERF	Service Equipment Refurbishment Facility

Figure 1-1

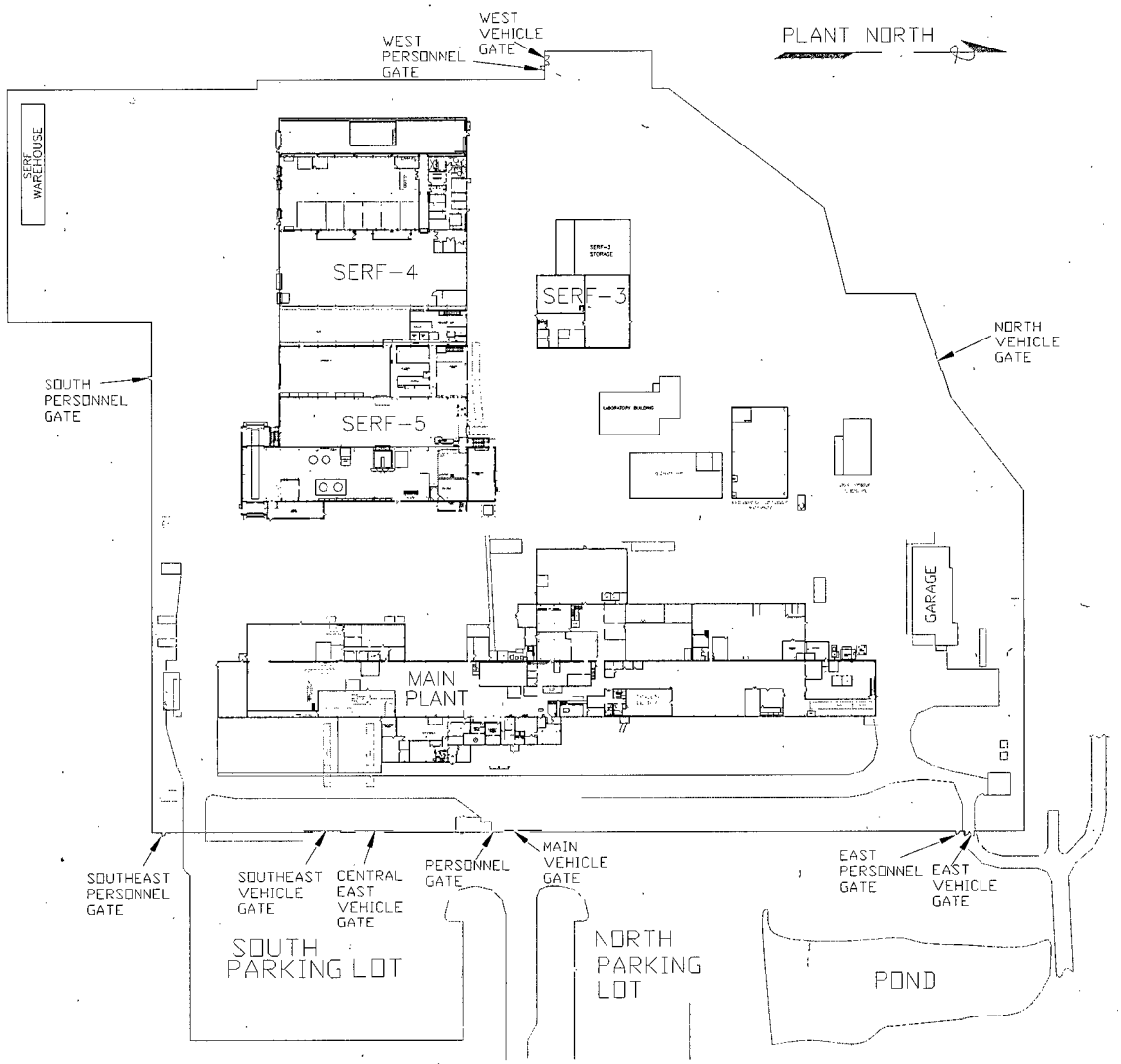
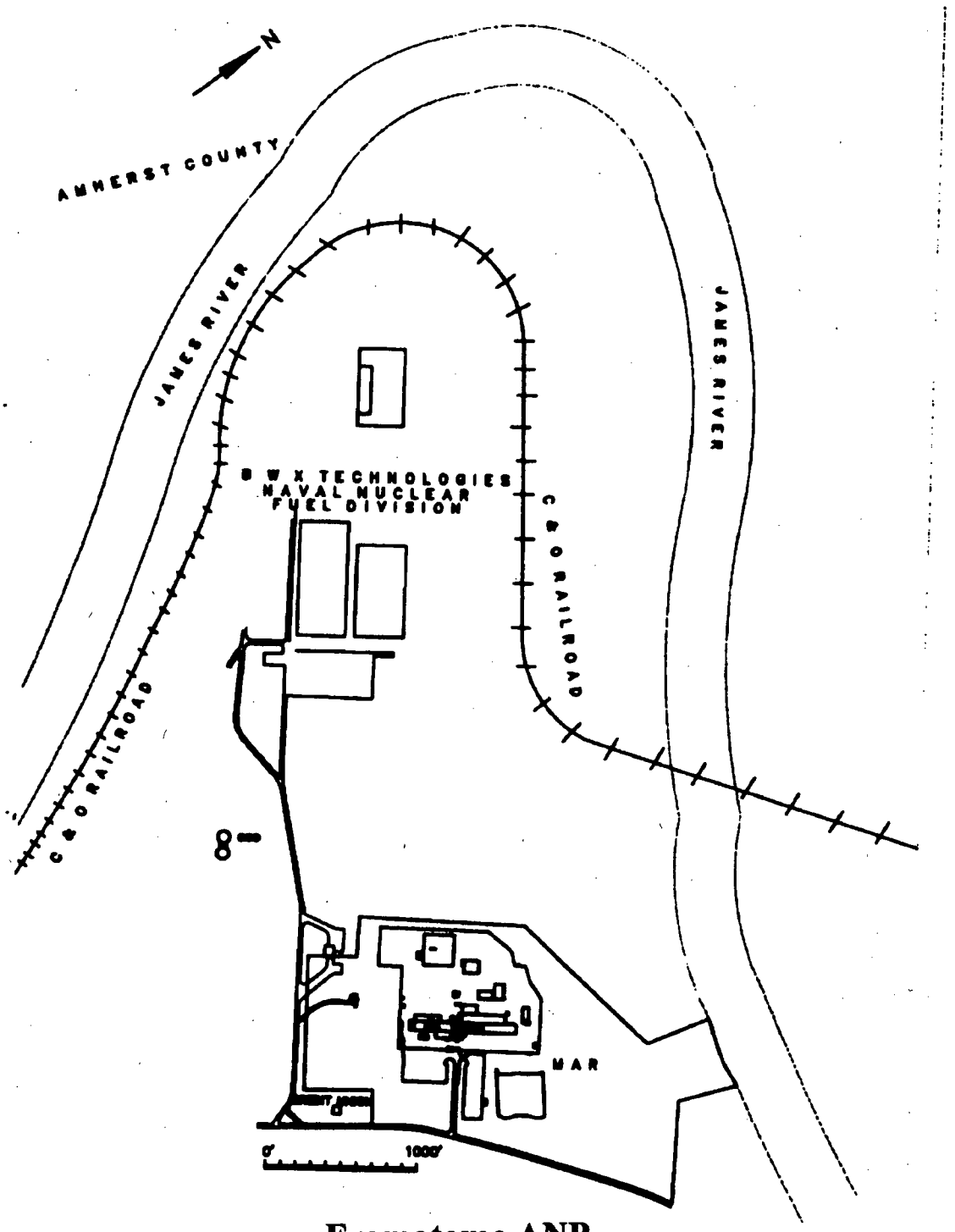
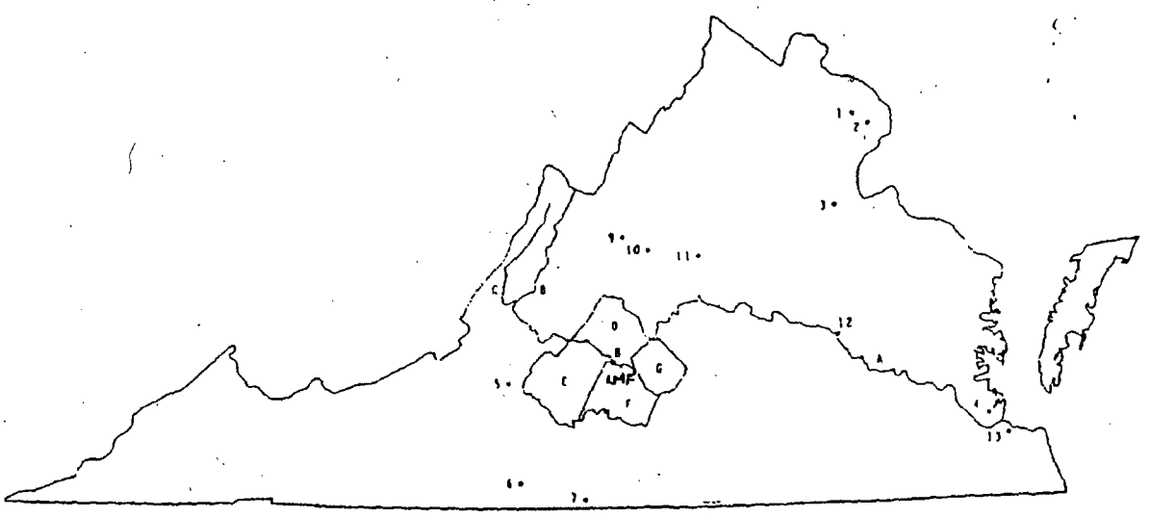

WEST PERSONNEL GATE
WEST VEHICLE GATE
PLANT NORTH
SERF WAREHOUSE
SERF-4
SERF-3
SERF-3 STORAGE
NORTH VEHICLE GATE
SOUTH PERSONNEL GATE
SERF-5
LABORATORY BUILDING
GARAGE
MAIN PLANT
SOUTHEAST PERSONNEL GATE
SOUTHEAST VEHICLE GATE
CENTRAL EAST VEHICLE GATE
PERSONNEL GATE
MAIN VEHICLE GATE
EAST PERSONNEL GATE
EAST VEHICLE GATE
SOUTH PARKING LOT
NORTH PARKING LOT
POND

Figure 1-2



Framatome ANP

Figure 1-3

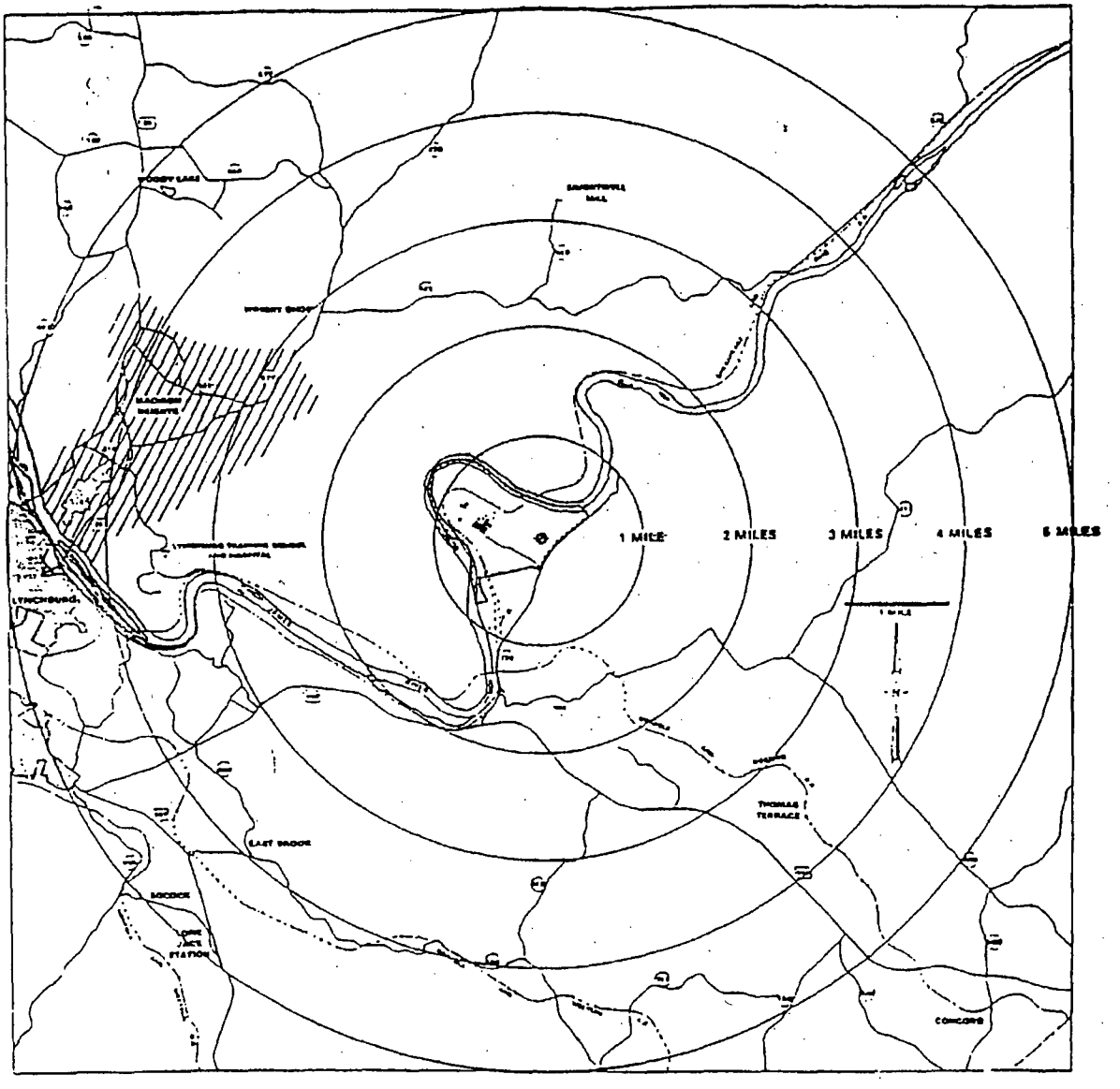


1. ARLINGTON
2. ALEXANDRIA
3. FREDERICKSBURG
4. NEWPORT NEWS
5. ROANOKE
6. MARTINSVILLE
7. DANVILLE
8. LYNCHBURG
9. STAUNTON
10. WAYNESBORO
11. CHARLOTTESVILLE
12. RICHMOND
13. NORFOLK

A. JAMES RIVER
B. COWPASTURE RIVER
C. JACKSON RIVER
D. AMHERST COUNTY
E. BEDFORD COUNTY
F. CAMPBELL COUNTY
G. APPOMATTOX COUNTY

0 50 100
SCALE IN MILES

Figure 1-4



CHAPTER 7.0

FIRE SAFETY

7.1 General Facility Design

The general design of the facility is described in Chapter 1.0.

7.2 Facility Design - As It Relates To Fire Safety

The design of the facility includes a number of active and passive systems designed to mitigate the effect of any fire that may occur. Significant systems are:

a) Fire Water Supply - The fire water supply is provided by the Campbell County Utilities Service Authority. The fire water supply consists of a 16 inch feed pipe capable of providing 2,000 gpm. The supply is delivered through a network of underground piping. The underground piping system is a girded supply with primarily 10 inch mains with a portion of the system being 8 inch diameter piping. Private yard hydrants are provided on an average 250 ft. intervals along the underground loop.

b) Sprinkler Systems

The following areas have been provided sprinkler protection.

- Chemistry Services Laboratory (CSL)
- Chemical Storage Building
- SERF-5
- SERF-4
- SERF-3
- Main Process Building S-2
- Main Process Building West Offices
- Maintenance Warehouse

The following areas have not been provided sprinkler protection due to criticality control considerations:

- Pellet loading room
- Pellet vaults
- Pellet receiving bay
- Fuel rod manufacturing area

- Fuel bundle assembly and storage areas

Additionally there are miscellaneous trailers and buildings, which do not contain SNM, which may not have sprinkler protection as well.

c) Alarm Systems - The facility is equipped with a ADT Central Station alarm system. This system provides alarm indications in both the guard house and at a remote location. In the event of an alarm, the on-site security watch investigates and initiates the response. Additionally the remote monitoring station will attempt to contact the security watch to verify they have acknowledged the alarm. If the security watch has failed to acknowledge the alarm or cannot be contacted, the remote monitoring station will initiate the response. The alarm system monitors items related to both fire safety and security. The system has the following types of alarm modules:

- Smoke detector - A smoke detection sensor which triggers when an excessive amount of smoke is present.
- Heat detector - A heat or flame detection sensor which will trigger when the temperature rises above a preset level, or if a flame is detected through an ultraviolet or infrared sensor.
- Pull station - A switch contact located inside a manual fire alarm pull station. This is activated whenever someone physically pulls the alarm.
- Water-flow switch - A switch contact inside a sprinkler line, which is activated whenever water is flowing through the line, indicating that a sprinkler has activated.
- Monitor switches - Observes existing sensors for changes in conditions. Sensors checked by monitor switches include:
  - Radiation Evacuation Alarm
  - Sump pump for pit in final assembly area.
- Security modules. These modules are not related to fire safety, but rather detect potential intrusions at facility gates.

d) Portable fire extinguishers - Portable fire extinguishers are available throughout the facility to provide an ability to immediately extinguish any fire which may occur. The following types of fire extinguishers are in use:

- CO_2
- Dry Chemical & Halon Extinguishers

- Class D Extinguishers. These are used in areas where zircaloy metals are found.

e) Emergency Exits - The emergency exits from the fuel manufacturing areas are as follows:

- For the pellet receiving bay, there are two exits both of which provide direct access to the exterior of the building.

- The pellet loading room is a smaller, enclosed area with two designated exits. The primary exit is the normal exit path from the room, which leads persons to the rod and fuel bundle manufacturing areas. The second exit is a door which opens to a hallway that takes persons to the pellet receiving bay.

- The rod and bundle manufacturing area is a large, open area with multiple exit paths in the event of an emergency. Personnel may evacuate through the pellet receiving bay, the S-2 warehouse, the cafeteria or from multiple exits on the northern end of the main process structure.

7.3 Criticality Safety As It Relates To Fire Safety

The potential for a criticality resulting from using water to extinguish a fire in SNM areas is discussed in Chapter 5.0 "Nuclear Criticality Safety".

7.4 Environmental Concerns

The anticipated environmental impact of any fire is anticipated to be low due to the physical nature of the fuel at the facility. The physical nature of the SNM significantly restricts the release paths to the environment. Specifically:

- All SNM is predominately in a ceramic form. While a fire and the subsequent fire fighting efforts would likely result in some breakage of the pellets, such breakage would not result in either a significant airborne release or the spread of contamination significantly beyond the immediate area of the fire.

- For any fire in the fuel rod and bundle manufacturing areas the fuel would be fully encapsulated. Any fire in these areas would have to first breach the fuel rod, before the fire could then affect the ceramic pellets. This is an additional barrier to any environmental release.

7.5 Facility Ingress and Egress During Emergency Situations

Building exits, designed to provide safe egress in the event of a fire or radiological emergency, are described above for the portions of the facility which contain SNM. Similar provisions have been made for the other portions of the facility which do not

contain SNM. Emergency egress will be tested during plant emergency evacuation drills. The periodicity and other attributes of an emergency evacuation drill are described in Chapter 11.0 "Management Measures". AREVA NP Inc. will also maintain emergency response agreements with outside organizations to assure the quick and efficient access to the facility in the event of a fire emergency. Commitments regarding these agreements are contained within Chapter 11.0, "Management Measures".

7.6 Process Fire Safety

As discussed in Chapter 6.0, "Chemical Process Safety", no SNM process involves the use of chemicals. As a result the most significant hazardous material process is the machining of zirconium parts in the machine shop. This machine shop is in a separate portion of the main process building, away from the SNM areas. The risk of a zirconium fire is limited by the minimization of "chips" from the machining process, proper storage of waste material, and the availability of class D extinguishing agents in areas where zirconium parts are machined.

7.7 Fire Safety Management Measures

Those management measures affecting fire safety are described in Chapter 11.0 "Management Measures".

7.8 Fire Hazard Analysis

A Fire Hazard Analysis was conducted for the facility with a specific emphasis on the areas where SNM is located or which could affect SNM. The FHA analyzed fires in various locations of the facility and their possible impact on SNM. Each scenario was then given one of the following ratings: Nil, Extremely Remote, Low, Medium or High. Additionally all scenarios were assessed for possible damages to the facility. The FHA identified two scenarios which had a postulated impact of significant damage to the facility and a probability rating of "Low" or higher. One scenario involved a break in a natural gas line and the other involved a fire in a non-SNM area, the grid cage fabrication shop. The FHA recommended the installation of additional equipment to minimize the effects of a fire under these scenarios. The installation of this equipment has been completed.