Global Nuclear Fuel

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SPM 12-036

August 16, 2012

Catherine Haney, Director
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555-0001
Attn: Document Control Desk

Subject: Request to Amend License SNM-1097

References: 1) SNM-1097, Docket 70-1113

Dear Ms. Haney:

The Global Nuclear Fuel – Americas L.L.C. (GNF-A) facility in Wilmington, North Carolina hereby provide revisions to sections our approved SNM license (Reference 1).

Attachments 1 through 3 provide administrative wording changes to Chapters 2, “Organization and Administration”, Chapter 4, “Radiation Safety”, and Chapter 11, “Management Measures”. The changes have been internally reviewed and documented as changes to license commitments not requiring NRC approval in accordance with SNM 1097 Section 1.3.1.2 and 10 CFR 70.72. The revised sections are identified with a vertical line in the right hand margin.

A summary of the changes are as follows:

Chapter 2, Section 2.2.1.2, Revise Area Manager qualifications
Section 2.2.1.4, Revise Shift Supervisor qualifications

These changes provide additional detail in qualification requirements and provide an appropriate balance between education and applicable experience.

Section 2.2.1.10, Delete sentence on reporting structure for the Criticality and Radiation Safety Function Managers

This change removes unnecessary detail from the text as the organizational reporting structure is already in Figure 2.1.

Chapter 4, Section 4.5.2, Access Control – change personnel survey “meters” to “instrumentation”, add “personnel contamination monitors” and change mR to mR/hr in table 4.2.
Section 4.10.3, (Respiratory) Equipment Maintenance – add wording “and as documented in written procedures”.

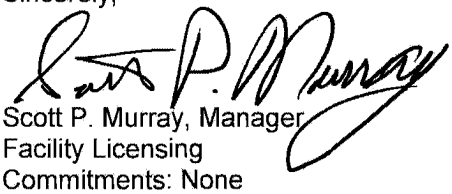
These changes correct typos, provide clarification, and support implementation of improved technologies (whole body monitors vs. survey meters).

Chapter 11, Section 11.5.1, Operating Procedures – add "Common Procedures" (CPs) and "Work Instructions" (WIs) to the procedure list.
Section 11.7, Change "unusual incident report" (UIR) to "condition report" (CR).

These changes support our ongoing efforts for procedure and Corrective Action Program improvements.

Please contact me on (910) 819-5950 if you have any questions or would like to discuss this matter further.

Sincerely,



Scott P. Murray, Manager
Facility Licensing
Commitments: None

Attachment(s):

1. SNM -1097 Chapter 2 Revisions
2. SNM -1097 Chapter 4 Revisions
3. SNM -1097 Chapter 11 Revisions

cc: R. Johnson, USNRC NMSS
MN Baker, USNRC NMSS
M. Thomas, USNRC RII

US NRC
August 16, 2012

Attachment 1
SNM-1097 Chapter 2 Revisions

CHAPTER 2.0
ORGANIZATION AND ADMINISTRATION

2.1 POLICY

The GNF-A policy is to maintain a safe work place for its employees, to protect the environment, and to assure operational compliance within the terms and conditions of special nuclear material licenses and applicable NRC regulations.

2.2 ORGANIZATIONAL RESPONSIBILITIES AND AUTHORITY

2.2.1 KEY POSITIONS WITH RESPONSIBILITIES IMPORTANT TO SAFETY (FIGURE 2.1)

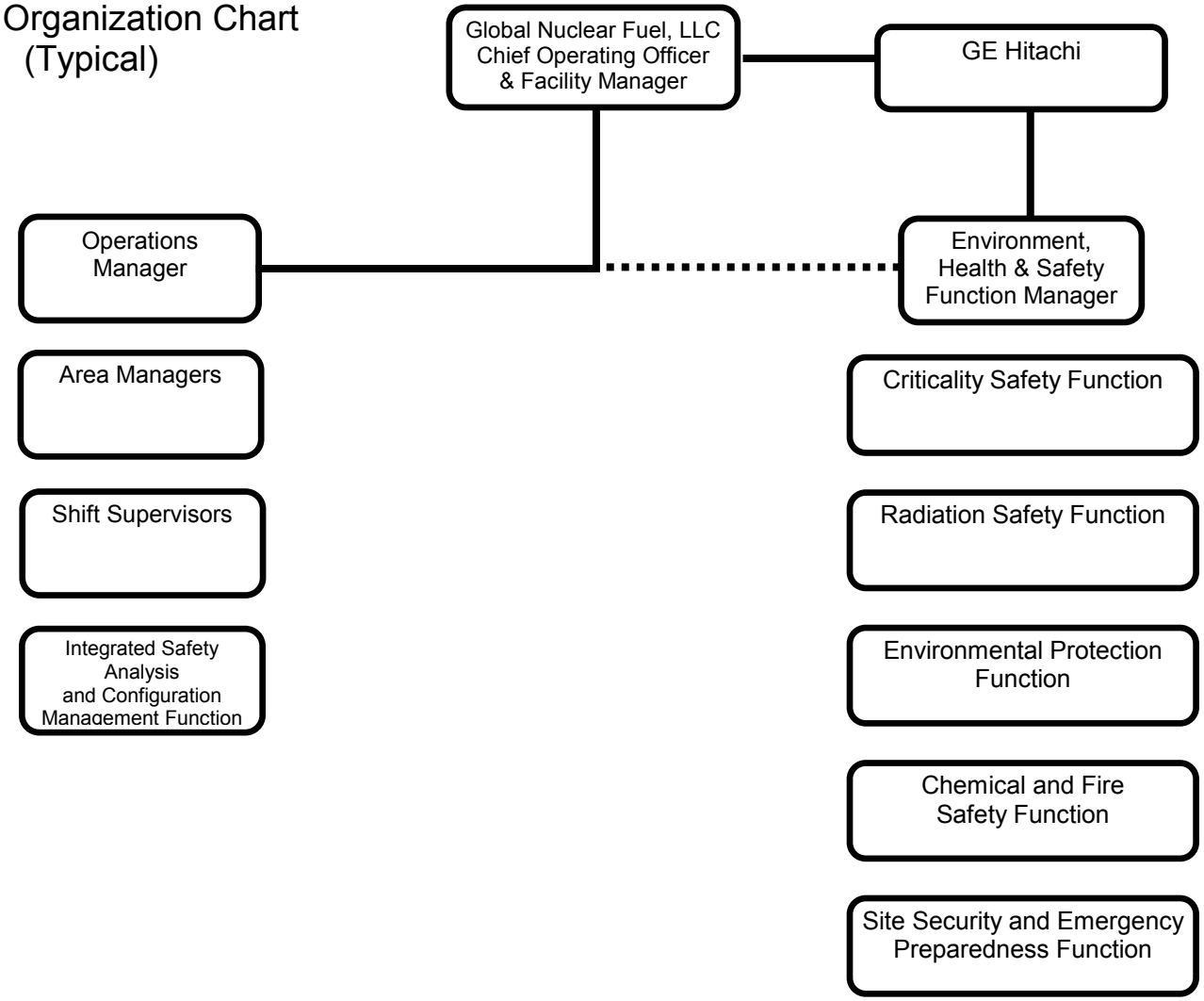
Responsibilities, authorities, and interrelationships among the GNF-A organizational functions with responsibilities important to safety are specified in approved position descriptions and in documented and approved practices.

2.2.1.1 GNF-A's Facility Manager

The GNF-A Facility Manager is the individual who has overall responsibility for safety and activities conducted at GNF-A. The Facility Manager directs operations by procedure, or through other management personnel. The activities of the Facility Manager are performed in accordance with GNF-A's policies, procedures, and management directives. The Facility Manager provides for safety and control of operations and protection of the environment by delegating and assigning responsibility to qualified Area Managers.

The minimum qualifications of a Facility Manager is a BS or BA degree and two years experience in manufacturing operations. The Facility Manager is knowledgeable of the safety program concepts as they apply to the overall safety of a nuclear facility, and has the authority to enforce the shutdown of any process or facility. The Facility Manager must approve restart of an operation they request be shutdown.

Figure 2.1
GNF-A Organization Chart
(Typical)



2.2.1.2 Area Manager

The Area Manager is the designated individual who is responsible for ensuring that activities necessary for safe operations and protection of the environment are conducted properly within their designated area of the facility in which uranium materials are processed, handled or stored. Designated Area Manager responsibilities include:

- Assure safe operation, maintenance and control of activities
- Assure safety of the environs as influenced by operations
- Assure performance of integrated safety analyses for the assigned facility area, as required
- Assure application of assurance elements to safety controls, as appropriate
- Assure configuration control for safety controls for the assigned facility area, as required
- Use approved written operating procedures which incorporate safety controls and limits
- Provide adequate operator training

The minimum qualifications of an Area Manager are one of the following three options:

Option 1, a combination of:
- BS/BA degree in a technical field;
- Two years supervisory or technical experience in a nuclear, manufacturing or other technical field; and,
- One year of supervisory or technical experience in nuclear operations.

Option 2, a combination of:
- BA (non-technical) / AA degree;
- Three years supervisory or technical experience in a nuclear, manufacturing or other technical field; and,
- One year of supervisory or technical experience in nuclear operations.

Option 3, a combination of:

- High School diploma;
- Five years supervisory or technical experience in a nuclear, manufacturing or other technical field; and,
- Two years of supervisory or technical experience in nuclear operations.

Area Managers shall be knowledgeable of the safety program procedures (including chemical, radiological, criticality, fire, environmental and industrial safety) and shall have experience in the application of the program controls and requirements, as they relate to their areas of responsibility. The assignment of individuals to the position of Area Manager is approved by the Facility Manager, and the listing of Area Managers by area of responsibility is maintained current at the facility.

2.2.1.3 Integrated Safety Analysis and Configuration Management Function

The integrated safety analysis and configuration management function is administratively part of the fuel production operations at GNF-A. Designated responsibilities include:

- Establish and maintain the integrated safety analysis program and identify items relied on for safety (IROFS)
- Establish and maintain the assurance program for safety controls
- Provide advice and counsel to Area Managers on matters of the integrated safety analysis program
- Establish and maintain the configuration control system for fuel manufacturing equipment and safety controls, and related record retention
- Establish and maintain the operating procedure systems

Minimum qualification requirements for the manager of the integrated safety analysis and configuration management function are a BS or BA degree in science or engineering and two years experience in related manufacturing assignments; or a high school diploma with eight years of manufacturing experience. The manager of the integrated safety analysis and configuration management function shall have experience in the understanding and management of the assigned programs.

2.2.1.4 Shift Supervisor

Shift supervisors are provided as the interface between management and facility operators. Shift supervisor responsibilities include:

- Provide day to day work direction to operators and other workers.
- Assure safe operation and control of activities
- Assure adherence to written operating procedures and controls
- Provide adequate operator oversight and guidance

- Identify and communicate off-normal conditions

The minimum qualifications for shift supervisor are a High School diploma and one of the three qualifications outlined below.

- One year supervisory experience in a nuclear, manufacturing or technical field
- Two years of technical experience in nuclear or manufacturing operations, or
- Three years of operator experience in nuclear operations

2.2.1.5 Criticality Safety Function

The criticality safety function is administratively independent of production responsibilities and has the authority to shutdown potentially unsafe operations. This function must approve restart of an operation they request be shutdown.

Designated responsibilities include:

- Establish the criticality safety program including design criteria, procedures and training
- Provide criticality safety support for nuclear operations including integrated safety analyses and configuration control
- Assess normal and credible abnormal conditions
- Determine criticality safety limits for controlled parameters
- Perform methods development and validation to support criticality safety analyses
- Perform neutronics calculations, write criticality safety analyses and approve proposed changes in process conditions or equipment involving fissionable material
- Specify criticality safety control requirements and functionality
- Provide advice and counsel to Area Managers on criticality safety control measures, including review and approval of operating procedures
- Support emergency response planning and events

- Assess the effectiveness of the criticality safety program through audit programs

The criticality safety function manager shall hold a BS or BA degree in science or engineering, have at least four years experience in assignments involving regulatory activities, and have experience in the understanding, application and direction of nuclear criticality safety programs.

Minimum qualifications for a senior engineer within the criticality safety function are a BS or BA degree in science or engineering with at least three years of nuclear industry experience in criticality safety. A senior engineer shall have experience in the assigned safety function, and has authority and responsibility to conduct activities assigned to the criticality safety function.

Minimum qualifications for an engineer within the criticality safety function are a BS/BA degree in science or engineering. An engineer shall have experience in the assigned safety function, and has authority and responsibility to conduct activities assigned to the criticality safety function, with the exception of independent verification of criticality safety analyses.

2.2.1.6 Radiation Safety Function

The radiation safety function is administratively independent of production responsibilities and has the authority to shutdown potentially unsafe operations. This function must approve restart of an operation they request be shutdown.

Designated responsibilities include:

- Establish the radiation protection and radiation monitoring programs
- Establish the radiation protection design criteria, procedures and training programs to control contamination and exposure to individuals
- Evaluate radiation exposures of employees and visitors, and ensure the maintenance of related records
- Conduct radiation and contamination monitoring and control programs
- Evaluate the integrity and reliability of radiation detection instruments
- Provide radiation safety support for integrated safety analyses and configuration control

- Provide analysis and approval of proposed changes in process conditions and process equipment involving radiological safety
- Provide advice and counsel to Area Managers on matters of radiation safety
- Support emergency response planning and events
- Assess the effectiveness of the radiation safety program through audit programs
- Oversight of the respiratory protection program

The radiation safety function manager shall hold a BS or BA degree in science or engineering, have at least two years experience in assignments that include responsibility for radiation safety, and have experience in the understanding, application and direction of radiation safety programs.

Minimum qualifications for a senior member of the radiation safety function are a BS or BA degree in science or engineering with at least two years of nuclear industry experience in the assigned function. Alternate minimum experience qualification for a senior member of the radiation safety function is professional certification in health physics. A senior member shall have experience in the assigned safety function, and has authority and responsibility to conduct activities assigned to the radiation safety function.

2.2.1.7 Environmental Protection Function

The environmental protection function is administratively independent of production responsibilities and has the authority to shutdown operations with potentially uncontrolled environmental conditions. This function must approve restart of an operation they request be shutdown.

Designated responsibilities include:

- Identify environmental protection requirements from federal, state and local regulations which govern the GNF-A operation
- Establish systems and methods to measure and document adherence to regulatory environmental protection requirements and license conditions
- Provide advice and counsel to Area Managers

- Evaluate and approve new, existing or revised equipment, processes and procedures involving environmental protection activities
- Provide environmental protection support for integrated safety analyses and configuration control
- Assure proper federal and state permits, licenses and registrations for non-radiological discharges from the facilities

Minimum qualifications for the manager of the environmental protection function are a BS or BA degree in science or engineering and two years of experience in assignments involving regulatory activities or equivalent.

2.2.1.8 Chemical and Fire Safety Function

The chemical and fire safety function is administratively independent of the production responsibilities and has the authority to shutdown operations with potentially hazardous health and safety conditions. This function must approve restart of an operation they request be shutdown.

Designated responsibilities include:

- Identify fire protection requirements from federal, state, and local regulations which govern the GNF-A operations
- Develop practices regarding non-radiological chemical safety affecting nuclear activities
- Provide advice and counsel to Area Managers on matters of chemical and fire safety
- Provide consultation and review of new, existing or revised equipment, processes and procedures regarding chemical safety and fire protection
- Provide chemical and fire safety support for integrated safety analyses and configuration control

Minimum qualifications of the manager of the chemical and fire safety function are a BS or BA degree in science or engineering and two years of experience in related assignments.

2.2.1.9 Site Security and Emergency Preparedness Function

The site security and emergency preparedness function is administratively independent of the production responsibilities. Designated responsibilities include:

- Provide physical security for the site
- Establish and maintain the emergency preparedness program, including training and program evaluations
- Provide advice and counsel to Area Managers on matters of physical security and emergency preparedness
- Maintain agreements and preparedness with off-site emergency support groups

Minimum qualifications are a BS or BA degree in science or engineering, one year of experience in related assignments, or a high school diploma with eight years of experience in related assignments.

2.2.1.10 Environment, Health & Safety (EHS) Function

The EHS function is administratively independent of production responsibilities but has the authority to enforce the shutdown of any process or facility in the event that controls for any aspect of safety are not assured. This function has designated overall responsibility to establish the radiation safety, criticality safety, environmental protection, chemical safety, fire protection and emergency preparedness programs to ensure compliance with federal, state and local regulations and laws governing operation of a nuclear manufacturing facility. These programs are designed to ensure the health and safety of employees and the public as well as protection of the environment.

The manager of the EHS function must hold a BS or BA degree in science or engineering and have five years of management experience in assignments involving regulatory activities. The manager of the EHS function must have appropriate understanding of health physics, nuclear criticality safety, environmental protection, and chemical and fire safety programs.

2.2.2 MANAGEMENT CONTROLS

Management controls for the conduct and maintenance of GNF-A's health, safety and environment protection programs are contained in documented plant practices

described in Section 11, and approved by cognizant management. Such practices are part of a controlled document system, and appropriately span the organizational structure and major plant activities to control interrelationships, and to specify program objectives, responsibilities and requirements. Personnel are appropriately trained to the requirements of these management controls, and compliance is monitored through internal and independent audits and evaluations.

Management controls documented in practices address requirements including:

- Configuration Management
- Integrated Safety Analysis
- Radiation Safety
- Criticality Safety
- Environmental Protection
- Chemical Safety
- Fire & Explosion Safety
- Emergency Preparedness
- Quality Assurance
- Training
- Procedures
- Maintenance
- Audits
- Incident Investigation & Reporting
- Fissile Material Accountability and Control
- Worker Concerns Program
- Management Measures Necessary to Maintain Items Relied on for Safety

2.3 TRAINING AND CONTINUING ASSURANCE

Personnel training and continuing assurance is conducted as necessary to provide reasonable assurance individuals are qualified, continue to understand, and recognize the importance of safety while performing assigned activities.

Training is provided for each individual at GNF-A, commensurate with assigned duties. Training and qualification requirements are met prior to personnel fully assuming the duties of safety-significant positions, and before assigned tasks are independently performed.

Formal training relative to safety includes radiation and radioactive materials, risks involved in receiving low level radiation exposure in accordance with 10 CFR 19.12, basic criteria and practices for radiation protection, nuclear criticality safety principles not verbatim, but in general conformance with ANSI/ANS 8.19 and ANSI/ANS 8.20 guidance, chemical and fire safety, maintaining radiation exposures and radioactivity in effluents As Low As Reasonably Achievable (ALARA), and emergency response.

The system established for management assurance and record retention of training and retraining is described in Chapter 11.

2.3.1 NUCLEAR SAFETY TRAINING

Training policy requires that employees complete formal nuclear safety training prior to unescorted access in the airborne radioactivity controlled area (see Chapter 11, Section 11.4.2.2).

2.3.2 OPERATOR TRAINING

Operator training is performance based, and incorporates the structured elements of analysis, design, development, implementation, and evaluation. Job-specific training includes applicable procedures and safety provisions, and requirements. Emphasis is placed on safety requirements where human actions are important to safety. Operator training and qualification requirements are met prior to process safety-related tasks being independently performed or before startup following significant changes to safety controls.

2.4 SAFETY COMMITTEES

2.4.1 WILMINGTON SAFETY REVIEW COMMITTEE

The functions of the Wilmington Safety Review Committee include responsibility for the following:

- An annual ALARA review which considers:
  - Programs and projects undertaken by the radiation safety function and the Radiation Safety Committee
  - Performance including, but not limited to, trends in airborne concentrations of radioactivity, personnel exposures, and environmental monitoring results
  - Programs for improving the effectiveness of equipment used for effluent and exposure control
- Review of major changes in authorized plant activities which may affect nuclear or non-nuclear safety practices
- Professional advice and counsel on environmental protection, and criticality, radiation, chemical and fire safety issues affecting the nuclear activities.

The committee is responsible to the Facility Manager. Its proceedings, findings and recommendations are reported in writing to the Facility Manager and to appropriate staff level managers responsible for operations which have been reviewed by the committee. Such reports shall be retained for at least three years.

The committee holds at least three meetings each calendar year with a maximum interval of 180 days between any two consecutive meetings.

2.4.2 RADIATION SAFETY COMMITTEE

The objective of the Radiation Safety Committee is to maintain occupational radiation exposures as low as reasonably achievable (ALARA) through improvements in fuel manufacturing operations.

The committee meets monthly to maintain a continual awareness of the status of projects, performance measurement and trends, and the current radiation safety

conditions of shop activities. The maximum interval between meetings does not exceed 60 days.

A written report of each Radiation Safety Committee meeting is forwarded to cognizant Area Managers and the manager of the EHS function. Records of the committee proceedings are maintained for three years.

The committee consists of managers or representatives from key manufacturing functions with activities affecting radiation safety.

Attachment 2
SNM-1097 Chapter 4 Revisions

ACHAPTER 4.0
RADIATION SAFETY

4.1 ALARA (AS LOW AS IS REASONABLY ACHIEVABLE) POLICY

GNF-A's standard of care for occupationally exposed individuals is to maintain exposures below the limits established by the U.S. Nuclear Regulatory Commission. Beyond the standard of care, GNF-A's radiation protection staff has a commitment to establish, maintain, and implement an effective radiation protection program. This includes program commitment to maintain employee exposures As Low As Reasonably Acheivable (ALARA) which is delineated by documented radiation protection program practices and procedures. Area Managers maintain worker exposures ALARA by proper use of procedures, equipment, and process design.

The radiation safety function ensures that occupational radiation exposures are maintained ALARA via timely exposure monitoring and interaction via Radiation Safety Committee participation with manufacturing personnel, and annual ALARA program assessments with senior management.

The Wilmington Safety Review Committee (Chapter 2) also plays a role in the overall ALARA program at GNF-A.

4.2 RADIATION SAFETY PROCEDURES AND RADIATION WORK PERMITS (RWPS)

Routine work performed in radiation controlled areas is administered by the use of standard practices and procedures described in Chapter 11.0. Non-routine activities, particularly those performed by non-GNF-A employees, which generally are not covered by documented procedures, are administered by the Radiation Work Permit (RWP) system. The RWP system is described in documented plant practices and procedures.

RWPs are issued by a radiation safety technician or supervisor for non-routine operations not addressed by an operating procedure when special radiation control requirements are necessary. The RWP specifies the necessary radiation safety controls, as appropriate, including personnel monitoring devices, protective clothing, respiratory protective equipment, special air sampling, and additional precautionary

measures to be taken. RWPs are reviewed and approved by radiation safety supervision prior to issuance.

The RWP requirements are reviewed by each affected individual and a copy is made available to the radiation safety function throughout the duration of the activity. Work is monitored by the radiation safety function as required. RWPs have expiration dates and the status of issued RWPs is reviewed on a weekly basis by a radiation safety technician or supervisor.

4.3 VENTILATION REQUIREMENTS

4.3.1 INTER-AREA AIR FLOW DESIGN

Ventilation equipment is designed to provide air flow from areas of lesser potential contamination to areas of higher potential contamination. Direction of air flow between areas is checked monthly or after significant changes to the ventilation system. If insufficient air flow results in airborne concentrations greater than 10 DAC, then the affected processes are shut down. Specific facilities and capabilities of ventilation systems are detailed in Table 4.1.

4.3.2 ENCLOSURES AND LOCALIZED VENTILATION

Hoods and other localized ventilation designs are utilized to minimize personnel exposure to airborne uranium. Activities and process equipment that generate airborne uranium are designed with filtered enclosures, hoods, dust capturing exhaust ports and other devices which maintain air concentrations of radioactivity in work areas such that personnel exposures are below 10 CFR 20 limits under normal operating conditions.

Air flows through hood openings and localized vents are maintained in accordance with Table 4.1. Additionally, differential pressure indicators are installed across exhaust system filters to monitor system performance. The flows and differential pressures are checked monthly or after significant changes to the ventilation system. If insufficient air flow results in airborne concentrations greater than 10 DAC, then the affected processes are shut down in accordance with plant procedures.

4.3.3 EXHAUST SYSTEM

Potentially contaminated air is exhausted through high efficiency filter media which are at least 99.97% efficient for removal of 0.3 micron particles. HEPA filters in the exhaust system are equipped with a device for measuring differential pressure. Differential pressures greater than four inches of water are investigated. In no case will filters be operated at a differential pressure which exceeds the manufacturer's ratings for the filter.

Water scrubbers or other appropriate devices are provided where necessary to treat effluents before filtration. Such scrubbers are installed so that effectiveness of filters is maintained.

4.3.4 AIR RECIRCULATION

Room air may be recirculated within the uranium processing areas after being filtered. Room air recirculated within areas where airborne concentrations are likely to exceed 0.1 DAC is filtered by HEPA filters and/or water scrubbers.

4.4 AIR SAMPLING PROGRAM

Air samples are continuously taken from each main process area where airborne concentrations are likely to exceed 0.1 DAC when averaged over 40 hours to assess the concentrations of uranium in air. The air samples are collected in such a way that the concentrations of uranium measured are representative of the air which workers breathe. Air sampling results and individual personnel exposure assignments are monitored by the radiation safety function to evaluate the effectiveness of personnel exposure controls.

Evaluations of air sampling representativeness are performed in accordance with the methods and acceptance criteria in Table 2 of Regulatory Guide 8.25, "Air Sampling in the Workplace".

Filters from air samplers are changed each shift during normal operating periods or at more frequent intervals following the detection of an event that may have released airborne uranium, based upon knowledge of the particular circumstances. Filters are not changed as frequently during periods when no work is in progress. The filters are processed to determine the uranium concentration in air for each area.

Each air sampler is equipped with a rotameter to indicate flow rate of air sampled. These rotameters are calibrated or replaced at least every 18 months.

Air sampling results in excess of 2.5 DAC (8 hr. sample) and not resulting from a specific known cause are investigated to determine the probable cause. Operations or equipment will be shut down, and immediate corrective action will be taken, at locations where an air sample exceeds 10 DAC without a specific known cause. Corrective actions are implemented and documented based on the frequency and magnitude of events causing releases of airborne uranium.

Routine air sampling is supplemented by portable air sample surveys as required to evaluate non-routine activities or breaches in containment. Based on these surveys, additional radiation protection requirements for the particular operation may be established.

4.5 CONTAMINATION CONTROL

4.5.1 SURVEYS

Routine contamination survey monitoring is performed for uranium process and manufacturing areas including non-controlled areas such as hallways and lunch rooms immediately adjacent to controlled areas. Removable contamination measurements are made based on the potential for contamination in these areas and operational experience. Survey frequencies are determined by the radiation safety function. Survey results are compared to action guide values as specified in plant procedures and appropriate responses are taken.

The minimum survey frequencies and maximum removable contamination action levels are as follows:

Area	Frequency	Action Limit (dpm α/100 cm^2)
Controlled Areas (Floors & Other Readily Accessible Surfaces)	Weekly	≥5,000
Eating Areas used primarily by Controlled Area Personnel	Weekly	≥220
Non-controlled Areas	Monthly	≥220

When contamination levels in excess of action limits are found, mitigating actions are taken within 24 hours.

Personnel contamination surveys for external contamination on clothing and the body are required by personnel when exiting the change rooms. If contamination is found in excess of background levels, the individual attempts self-decontamination at the facilities provided in the change rooms. If decontamination attempts are not successful, decontamination assistance will be provided by the radiation safety function. If skin or personal clothing is still found contaminated above background levels, the individual may not leave the area without prior approval of the radiation protection function.

4.5.2 ACCESS CONTROL

Routine access points to controlled areas are established through change rooms. Each change room includes a step-off area provided between the contamination controlled and non-controlled areas. Instructions controlling entry and exit from controlled area are posted at the entry points. Personnel survey instrumentation is provided in the step-off area of each change room for use by personnel leaving the controlled areas. Posted instructions address the use of the instrumentation and appropriate decontamination methods.

Alternate access points to controlled areas are established for specific activities that are not accommodated by the change rooms. Such access is governed by approved

procedures, or Radiation Work Permits, which establish controls to prevent the spread of contamination to non-controlled areas.

4.5.3 PROTECTIVE CLOTHING

Protective clothing is provided to persons who are required to enter the controlled areas where personnel contamination potential exists as determined by the radiation safety function. The amount and type of protective clothing required for a specific area or operation is determined by operational experience and the contamination potential. Available clothing includes caps, hoods, laboratory coats, coveralls, safety glasses, boots overshoes, shoe covers, rubber and cloth gloves and safety shoes.

The minimum clothing requirement for airborne controlled area entry is as follows:

Area Workers	Inspectors and Visitors Only Observing Operations
Shoe covers or work area shoes	Shoe covers
Coveralls	Laboratory coats
Rubber gloves	Rubber gloves (as needed)
Safety glasses	Safety glasses

The protective clothing is removed upon exit in the controlled area change rooms.

In laboratory areas where uranium is handled the minimum protective clothing requirement for entry is a laboratory coat and safety glasses.

4.5.4 LEAK TESTING OF PLUTONIUM ALPHA SOURCES

The sources when not in use shall be stored in a closed container adequately designed and constructed to contain plutonium which might otherwise be released during storage.

The sources shall be tested for loss of plutonium at intervals not to exceed 110 days, using radiation detection instrumentation capable of detecting 0.005 μCi of alpha contamination.

If any survey or measurement performed as required by the preceding paragraph discloses the loss of more than 0.005 μCi of plutonium from the source, or if a source has been damaged or broken, the source shall be deemed to be losing plutonium. The licensee shall immediately withdraw it from use, and cause the source to be decontaminated and repaired, or disposed of in accordance with the Commission regulations.

Records of test results shall be kept in units of microcuries and maintained for inspection by the Commission.

Notwithstanding the periodic test required above, any plutonium alpha source containing not more than 0.1 μCi of plutonium is exempted from the above requirements.

4.6 EXTERNAL EXPOSURE

Deep-dose equivalent and shallow-dose equivalent from external sources of radiation are determined by individually assigned dosimeters. The radiation safety function makes a determination to issue personnel dosimetry to individuals based on work area surveys, occupancy time, or other exposure information such as area monitor results. Personnel dosimeters are processed by a National Voluntary Laboratory Accreditation Program (NVLAP) accredited vendor. The capability exists to process dosimeters expeditiously if there is an indication of an exposure in excess of established action guides. Action guides for external exposures are established in plant procedures. Maximum radiation exposure action levels are specified in Section 4.9.

External exposures may be calculated by the radiation safety function on the basis of data obtained by investigation when the results of individual monitoring are unavailable or are invalidated by unusual exposure conditions.

4.7 INTERNAL EXPOSURE

Intakes are assigned to individuals based upon one or more types of measurements as follows: air sampling (described in Section 4.4), urinalysis and in vivo lung counting. Intakes are converted to committed dose equivalent (CDE) and committed effective dose equivalent (CEDE) for the purposes of limiting and recording occupational doses. Action levels are established in plant procedures to prevent an individual from exceeding the occupational exposure limits specified in 10 CFR 20. Maximum

radiation exposure action levels are specified in Section 4.9. Control actions include temporarily restricting the individual from working in an area containing airborne radioactivity, and actions are taken as necessary to assure against recurrence.

4.7.1 URINALYSIS PROGRAM

The urinalysis program is conducted primarily to evaluate the intake of soluble uranium to assure that the 10 CFR 20 intake limit of 10 mg is not exceeded. Individuals assigned to work in areas where soluble airborne uranium compounds are present in concentrations that are likely to result in intakes in excess of 10 percent of the applicable limits in 10 CFR 20 are monitored by urinalysis. The minimum sampling frequency for these individuals is biweekly. Urinalysis may also be used to monitor individuals involved in non-routine operations, perturbations or incidents.

Urine sampling frequencies and action levels are established in plant procedures based on the appropriate biokinetic models for the uranium compounds present. Results above the applicable action level are investigated. Urinalysis action levels are based on maximum radiation exposure action levels specified in Section 4.9. Results that exceed action levels result in a temporary work restriction for the individual to prevent additional exposure and allow a more accurate assessment of the intake.

4.7.2 IN VIVO LUNG COUNTING

Routine in vivo lung counting frequencies are established for individuals who normally work in areas where non-transportable uranium compounds are processed. Baseline and termination counts are performed when feasible. Lung counting frequencies are based upon individual airborne exposure assignments and previous counting results. The minimum count frequency is annual for individuals with an assigned intake greater than 10 percent of the Annual Limit on Intake (ALI).

Appropriate actions are taken based upon in vivo lung counting results to ensure the ALI will not be exceeded. If an individual's lung burden indicates an intake greater than the applicable action level, the individual is temporarily restricted from working in areas containing airborne uranium. In vivo lung counting action levels are based on the maximum radiation exposure action levels specified in Section 4.9.

4.8 SUMMING INTERNAL AND EXTERNAL EXPOSURE

Internal and external exposures determined as described in the preceding sections of this application are summed in accordance with the requirements of 10 CFR 20 for the purposes of limiting occupational doses and recording individual monitoring results.

4.9 ACTION LEVELS FOR RADIATION EXPOSURES

Work activity restrictions will be imposed when an individual's exposure exceeds 80% of the applicable 10 CFR 20 limit.

4.10 RESPIRATORY PROTECTION PROGRAM

The respiratory protection program shall be conducted in accordance with the applicable portions of 10 CFR 20, including written procedures for air sampling sufficient to identify the potential hazard, proper equipment selection, maintenance and testing, dose estimation; and surveys or bioassays, as necessary, to evaluate actual intakes. Respiratory protection equipment specifically approved by the National Institute for Occupational Safety and Health (NIOSH) is utilized.

4.10.1 QUALIFICATIONS OF RESPIRATOR USERS

Individuals designated to use respiratory protection equipment are evaluated by the medical function and periodically thereafter at a frequency specified by the medical function to determine if the individual is medically fit to use respiratory protection devices. If there are no medical restrictions precluding respirator use, the individual is provided respiratory training and fitting by a qualified instructor. Additional training on the use and limitations of self-contained breathing devices is provided to designated individuals.

An adequate fit is determined for all face-sealing respirators using either a quantitative fit test method or a qualitative method. Qualitative fit testing is acceptable if (1) it is capable of verifying a fit factor of 10 times the assigned protection factor (APF) for facepieces operated in a negative pressure mode or (2) it is capable of verifying a fit factor of $\geq$100 for facepieces operated in a positive pressure mode. Mask fits are re-evaluated annually.

4.10.2 RESPIRATORY PROTECTION EQUIPMENT

Only NIOSH approved respiratory protection equipment is utilized. Protection factors specified in 10 CFR 20 Appendix A are used for selecting the proper equipment and estimating personnel exposures.

4.10.3 EQUIPMENT MAINTENANCE

Respiratory protection equipment is cleaned, serviced, tested and inspected in accordance with the instructions specified by the manufacturer per the NIOSH certification and 10 CFR 20 for each respiratory protection device. Equipment maintenance is always conducted in accordance with the applicable portions of 10 CFR 20 and as documented in written procedures.

4.11 INSTRUMENTATION

Appropriate radiation detection instruments are available in sufficient number to ensure adequate radiation surveillance can be accomplished. Selection criteria of portable and laboratory counting equipment is based on the types of radiation detected, maintenance requirements, ruggedness, interchangeability and upper and lower limits of detection capabilities. The radiation safety function annually reviews the appropriateness of the types of instruments being used for each monitoring function. Table 4.2 lists examples of the types and uses of available instrumentation.

4.11.1 CALIBRATION

Portable instrumentation is calibrated before initial use, after major maintenance, and on a routine basis at least six months following the last calibration. Calibration consists of a performance check on each range scale of the instrument with a radioactive source of known activity traceable to a recognized standard such as the National Institute of Standards and Technology (NIST).

Prior to each use, operability checks are performed on monitoring and laboratory counting instruments. The background and efficiency of laboratory counting instruments are determined on a daily basis when in use.

TABLE 4.1
SPECIFIC FACILITIES & CAPABILITIES OF VENTILATION SYSTEMS

Facility	Alarms, Interlocks & Safety Features	Purpose
Hoods	Air flow during operation $\geq$ 80 linear feet per minute	Prevents spread of radioactive materials
	Effluent air filtered with HEPA filters	Prevents release of radioactive materials to environs
High Velocity Local Ventilation	Air flow designated to maintain an average of 200 linear feet per minute	Prevents spread of radioactive materials from work area to immediate room area
Recirculating Air Systems & Exhaust Air Systems	Air filtered in potentially contaminated zones with HEPA filters or water scrubbers	Removes essentially all contaminants from room and exhaust to environs
	Pressure drop indicator set to alarm at $\geq$4" $H_2O\Delta P$ across final filter	Maintains adequate circulation for removal of dust and contaminants from the room air
	Effluent air filtered with HEPA filters	Prevents release of radioactive materials in environs

TABLE 4.2
TYPES & USES OF AVAILABLE INSTRUMENTATION (TYPICAL)

Type	Typical Range	Routine Use
DOSE RATE METERS		
GM Low Range	0.01 mR/hr - 2000 mR/hr	Area Dose Rate Survey, Shipment Survey
GM High Range	0.1 mR/hr - 1000 R/hr	Emergency Monitoring
Ion Chamber - Low Range	0.1 mR.hr - 10 R/hr	Area Dose Rate Survey, Shipment Survey
Ion Chamber - High Range	1 mR/hr - 1000 R/hr	Emergency Monitoring
ALPHA SURVEY METERS	50 cpm - 2 x 10^6 cpm	Direct Area Equipment Surveys
NEUTRON METERS	0.5 mR/hr - 5 R/hr	Special Dose Rate Surveys
PERSONAL CONTAMINATION MONITORS	N/A	Personal Surveys
LABORATORY INSTRUMENTATION		
Automatic air sample counter	N/A	Lab Analysis
Fixed geometry Geiger-Mueller counter	N/A	Lab Analysis
Scintillation Counter	N/A	Lab Analysis
In Vivo Lung Counter	N/A	Lung Deposition Measurements

Attachment 3
SNM-1097 Chapter 11 Revision

CHAPTER 11.0
MANAGEMENT MEASURES

11.1 MANAGEMENT MEASURES

11.1.1 REASONABLE ASSURANCE

GNF-A commits to apply *Management Measures* on a continuing basis to IROFS for the purpose of providing reasonable assurance that the IROFS are available and able to perform their function when needed.

11.1.2 GRADED APPLICATION OF MANAGEMENT MEASURES TO IROFS

GNF-A applies *Management Measures* in a graded approach based on unmitigated risk as described in Chapter 3 (in particular see Sections 3.3, 3.4 and 3.5).

11.2 CONFIGURATION MANAGEMENT (CM)

11.2.1 CONFIGURATION MANAGEMENT POLICY

GNF-A commits to maintain a formal configuration management process, governed by written, approved practices, and ensures that plant design changes do not adversely impact safety, health, or environmental protection programs at GNF-A. The following items are addressed prior to implementing a change:

- The technical basis for the change
- The impact of the change on safety, health and control of licensed material
- Modifications to existing operating procedures including any necessary training or retraining before operation
- Authorization requirements for the change
- For temporary changes, the approved duration (expiration date) of the change

- The impacts or modifications to the ISA, ISA Summary and any other component of the overall safety program

The configuration management (CM) program ensures that the information used to operate and maintain safety controls is kept current. Safety controls are systems, structures, components and procedures that prevent and/or mitigate the risk of accidents.

The CM program includes the following activities:

- Maintenance of the design information for the plant
- Identification of all IROFS
- Control of information used to operate and maintain the plant
- Documentation of changes
- Assurance of adequate safety reviews for changes
- Periodic comparison assessment of the conformance of specific safety controls to the documentation of plant design basis

11.2.2 DESIGN REQUIREMENTS

Written plant practices define the development, application, and maintenance of the design specifications and requirements. Plant design specifications and requirements are maintained as controlled information. The specific content of the information depends on the age of the design and the requirements in place at the time of design. As a minimum, the information required for safe operation of the facility is available.

11.2.3 DOCUMENT CONTROL

Documented plant practices define the control system, including creation, revision, storage, tracking, distribution and retrieval of applicable information including:

- Hazards Analysis (ISA reference report), ISA Summary including a listing of IROFS
- Operating procedures

- Drawings for safety related systems, structures and components
- Technical specifications and requirements
- Software for safety controls
- Calibration instructions
- Functional test instructions

The documented plant practices describe the responsibilities and activities that maintain consistency between the facility design, the physical facility, and the documentation. They also describe how the latest approved revisions are made available for operations.

11.2.4 CHANGE CONTROL

GNF-A maintains written plant practices describing the configuration management program for controlling design change, including approval to install and operate facility, process, or equipment design changes. These practices stipulate that a trained and approved safety reviewer determine if the applicable ISA is impacted by the facility change. If there is an impact to the ISA, it is identified and the change is flagged for review and approval by an ISA team in accordance with the process described in Chapter 3.

The written plant practices also prescribe controls and define the distinction between types of changes, ranging from replacement with identical designs that are authorized as part of normal maintenance, to new or different designs that require specified review and approval.

11.2.5 ASSESSMENTS

Planned and scheduled internal and independent audits are performed to evaluate the application and effectiveness of management controls and implementation of programs related to activities significant to plant safety. Audits are performed to assure that operations are conducted in accordance with the operating procedures, and to assure that safety programs reflected in the operating procedures are maintained.

11.2.6 DESIGN RECONSTITUTION

The current plant design was reconstituted in accordance with the requirements specified in 10 CFR 70.62.

GNF-A submitted a plan as required by 10 CFR 70.62 (c) (3) (i) and this plan was approved by the NRC on June 11, 2002 (TAC NO. L31607).

GNF-A performed the design reconstitution in accordance with their approved plan and submitted the completed summary required by 10 CFR 70.62 (c) (3) (ii) on October 12, 2004. Periodic updates as required by the regulations (10 CFR 70.72 (d) (2&3)) are submitted to the NRC.

11.3 MAINTENANCE

The purpose of planned and scheduled maintenance of safety controls is to assure that systems are kept in a condition of readiness to perform the planned and designed functions when required.

Area Managers are responsible for assuring the operational readiness of safety controls in their assigned facility areas.

The maintenance function utilizes a systems-based program to plan, schedule, track and maintain records for maintenance activities. Maintenance instructions are an integral part of the maintenance system for maintenance activities. Key maintenance requirements for safety controls such as calibration, functional testing, and replacement of specified components are derived from integrated safety analyses described in Chapter 3.

Maintenance activities generally fall into the categories described in the following sections.

11.3.1 CORRECTIVE MAINTENANCE

Corrective Maintenance refers to situations where repairs, replacements or major adjustments such as re-calibration take place.

GNF-A commits to promptly perform corrective actions to remediate unacceptable performance deficiencies in IROFS.

The maintenance planning and control system provides documentation and records of systems and components that have been repaired or replaced.

When a component of a specified safety control is repaired or replaced, the component is functionally verified via post maintenance testing to assure that it has the capability to perform its planned and designed function when called upon to do so.

If the performance of a repaired or replaced safety control could be different from that of the original component, the change to the safety control is specifically approved under the configuration management program and pre-operationally tested to assure it is likely to perform its desired function when called upon to do so.

11.3.2 PREVENTATIVE MAINTENANCE

Preventative Maintenance refers to activities that are performed as precautions to help ensure that systems remain operational and avoid unexpected failures. Examples of safety controls included for scheduled preventive maintenance are:

- Radiation Measurement Instruments
- Criticality Detection Devices
- Effluent Measurement & Control Devices
- Emergency Power Generators
- Fire Detection and Control Systems
- Pressure Relief Valves
- Air Compressors
- Steam Boilers

11.3.3 SURVEILLANCE/MONITORING

GNF-A utilizes active engineered controls that are integrated into the routine plant operations to the degree practical. In these systems the IROFS are near continuously monitored by the digital control system as a routine part of the operating process. Degradations or failures in these cases result in immediate safe shutdown of the operations.

IROFS associated with passive engineered systems are typically fixed physical design features to maintain safe process conditions. Assurance is maintained through pre-operational audit and periodic verification of effectiveness as prescribed in the ISA process described in Chapter 3, Table 3.7 and includes consideration of the importance of the IROFS as well as quality and reliability information.

IROFS relying on geometry-based controls, where the geometry is subject to undetected change in routine operation, are periodically verified on a schedule commensurate with the potential for change in the parameters of interest.

- Examples of active engineered controls that are integrated into routine plant operations include all IROFS managed by the distributed control system (e.g. PROVOX) or hardwired interlocks.
- Examples of passive engineered IROFS would include process equipment design features such as physical separation of storage fixtures (floor storage fixtures, installed can-conveyor separation); or other process design characteristic (air breaks, overflows, orifice sizing, restricting vessel feeds, hood physical restraints, etc.).
- Examples of geometry-based IROFS would include design control of process equipment physical dimensions (pellet tray dimensions, boat size, container volume, pipe tank ID, annular tank thickness, slab tank thickness) and/or use of neutron absorbers.

11.3.4 FUNCTIONAL TESTING

GNF-A commits to perform post-maintenance testing to verify that the maintenance activity did not adversely affect the functionality of the IROFS associated with the maintenance work.

GNF-A commits to perform functional tests in accordance with written instructions that define the method for the test and the required acceptable results. The results of the tests are also recorded and maintained.

11.4 TRAINING AND QUALIFICATIONS

11.4.1 ORGANIZATION AND MANAGEMENT OF THE TRAINING FUNCTION

Training programs at the GNF-A facility for personnel who perform activities relied on for safety are provided through shared responsibility between EHS safety disciplines, Operations and Human Resources functional organizations. Area Managers are responsible for the content and effective conduct of training for operations personnel. Records are maintained on each employee's qualifications, experience, training, and retraining.

Facility administrative procedures establish the requirements for indoctrination and training of personnel performing activities relied on for safety and to ensure that the training program is conducted in a reliable and consistent manner throughout all training areas.

Training records are maintained to support management information needs associated with personnel training, job performance, and qualifications. Training records are retained in accordance with records management procedures.

11.4.2 FUNCTIONAL AREAS REQUIRING TRAINING

Training is provided for each individual at GNF-A, commensurate with assigned duties (or roles). Training and qualification requirements are met prior to personnel fully assuming the duties of safety-significant positions, and before assigned tasks are independently performed.

Functional areas requiring training may be grouped into one of three broad categories:

- General Employee Training
- Technical Training
- Developmental Training

The objective of the training program is to ensure safe and efficient operation of the facility and compliance with applicable regulatory requirements. Training requirements shall be applicable to, but not restricted to, those personnel who have a direct relationship to the operation, maintenance, testing, or other technical aspects of the facility IROFS.

Continuing or periodic retraining courses shall be established when applicable to ensure that personnel remain proficient. Periodic training generally is conducted to ensure retention of knowledge and skills important to facility operations. The training may consist of periodic retraining exercises, instructions, or review of subjects as appropriate to maintain the proficiency of all personnel assigned to the facility.

Chapter 8, Radiological Contingency and Emergency Plan, provides additional information on personnel training for emergency response tasks.

11.4.2.1 General Employee Training

General Employee Training (GET) encompasses those quality assurance, radiation protection, industrial safety, environmental protection, emergency response, and administrative procedures established by facility management and applicable regulations. The industrial safety training for GNF-A complies with applicable section of the Occupational Safety and Health Administration (OSHA) regulations such as 29 CFR 1910 and with 10 CFR 19 (Notices, Instructions, and Reports to Workers: Inspection and Investigations). Continuing training is conducted in these areas as necessary to maintain employee proficiency. All persons under the supervision of facility management (including contractors) must participate in GET; however, certain facility support personnel, depending on normal work assignment, may not participate in all topics of this training. Temporary maintenance and service personnel receive GET to the extent necessary to assure safe execution of their duties. Certain portions of GET may be included in new employee orientation program implementation.

GET topics are listed below:

- General administrative controls and procedures and their use
- Quality Assurance policies and procedures
- Nuclear Safety (Criticality/Radiological)
- Industrial, Chemical, Fire, Health and First Aid
- Emergency Plan and implementing procedures
- Fire protection and fire brigade

- New Employee Orientation
- Environmental Protection

11.4.2.2 Nuclear Safety Training

Training programs are established for the various job functions (e.g., operations, radiation protection technicians, contractor personnel) commensurate with criticality safety and radiation safety responsibilities. Visitors to the airborne radioactivity controlled area are trained in the formal training program or are escorted by trained personnel.

Formal Nuclear Safety training includes information about radiation and radioactive materials, risks involved in receiving low level radiation exposure in accordance with 10 CFR 19.12, basic criteria and practices for radiation protection, nuclear criticality safety principles not verbatim, but in general conformance with applicable objectives contained in ANSI/ANS 8.19 and ANSI/ANS 8.20 national consensus standard guidance.

Training policy requires that employees must complete nuclear safety training prior to unescorted access in the airborne radioactivity controlled area. Methods for evaluating the understanding and effectiveness of the training includes passing an initial examination covering formal training contents and observations of operational activities during scheduled audits and inspections.

Such training is typically performed using computer based training, but may be performed by authorized instructors. Training program contents are reviewed on a scheduled basis by the manager of the criticality safety and radiation safety functions to ensure that training program contents are current and adequate.

Previously trained employees who are allowed unescorted access to the airborne radioactivity controlled area are retrained at least every two years. The effectiveness of the training program is evaluated by either initial training exam or re-training exam. Visitors are trained commensurate with the scope of their visit and/or escorted by trained employees.

11.4.2.3 Industrial, Chemical, Fire, Health and First Aid

Industrial, Chemical, Fire Safety, Health and First Aid safety orientation of new or transferred employees is an important part of establishing the proper safety attitude among plant employees and insuring that they are aware of safety procedures, rules and hazards involving assigned duties. New employee orientation in performance of duties may include, as appropriate, the review of:

- OSHA General Duty Clause
- Employee Responsibilities
- Employer Responsibilities
- General Site Safety Rules
- Hazard Communication Training
- Fire Extinguisher Training
- Emergency Evacuation Procedure
- Job Hazards Analysis (JHA)
- Material Safety Data Sheets (MSDS)
- Lock-Out-Tag-Out Awareness

11.4.2.4 Technical Training

Technical training is designed, developed and implemented to assist facility operations and maintenance personnel in gaining an understanding of the applicable fundamentals, procedures, and technical practices common to a nuclear fuel conversion and fabrication facility. Technical training consists of initial training, on-the-job training, continuing training, and special training, as applicable to assigned technical duties of the job function (or role). This may include, but is not limited to, the following topics:

- On-the-Job Training
- Process Specific Training
- Mechanical Maintenance

- Controls, Instrumentation, Electrical Maintenance
- Chemistry

11.4.2.5 Development Training

Developmental Training is a broad category implemented to assist facility operations supervisory, and management personnel in gaining additional understanding of fundamentals and technical practices common to assigned job duties (or roles). Developmental training typically utilizes internal/external professionals via formal workshop, tutorials, and select training programs.

11.4.3 POSITION TRAINING REQUIREMENTS

Operator training is performance based, and incorporates the structured elements of analysis, design, development, implementation, and evaluation commensurate with assigned duties.

Minimum training requirements are developed for positions whose activities are relied on for safety. Initial identification of job-specific training requirement is based on individual employee experience. Entry-level criteria (e.g., education, technical background, and/or experience) for these positions are contained in position descriptions.

Job-specific training is performance based and established with relevant technical EHS safety discipline and operations leadership to develop a list of qualifications for assigned duties (or roles). Changes to facilities, processes, equipment, or job duties are incorporated into revised lists of qualifications.

11.4.4 BASIS OF TRAINING AND OBJECTIVES

The training program is designed to prepare initial and replacement personnel for safe, reliable, and efficient operation of the facility. Emphasis is placed on safety requirements where human actions are important to safety.

11.4.5 EVALUATION OF TRAINEE LEARNING

Trainee understanding and proficiency is evaluated through observation/ demonstration or oral or written examinations, as appropriate. Such evaluations measure the trainee's skill and knowledge of job performance requirements.

Operator training and qualification requirements are met prior to process safety-related tasks being independently performed or before startup following significant changes to safety controls.

11.4.6 CONDUCT OF ON-THE-JOB TRAINING

On-the-Job training (OJT) is a systematic method of providing the required job related skills and knowledge for a position. This training is conducted in the work environment. Applicable tasks and related procedures make up the OJT/qualifications program for each technical area which is designed to supplement and complement training received through formal classroom, laboratory, and/or simulator training. The object of the program is to assure the trainee's ability to proficiently perform job duties as required for the assigned role. Refer to Section 11.4.3.

Completion of on-the-job training is demonstrated through actual task actions using the conditions encountered during the performance of assigned duties (or roles) including references, tools, and equipment conditions reflecting the actual task to the extent practical.

11.4.7 EVALUATION OF TRAINING EFFECTIVENESS

Periodic evaluations of training program content and requirements are performed to assess program effectiveness. The trainees provide feedback after completion of classroom or computer based training session to provide data for this evaluation. These evaluations identify program strengths and weaknesses, determine whether training content matches current job needs, and determines if corrective actions are needed to improve program effectiveness.

Independent audits of EHS safety disciplines may also be used to provide independent evaluations of overall training program effectiveness (see Section

11.6.5 of this Chapter) as it relates to the ISA program, IROFS implementation, protection of the public, worker, and environment.

Evaluation objectives applicable to the overall organization and management of the GNF-A training programs may include, but are not limited to:

- Management and administration of training and qualification programs
- Development and qualification of the matrix organization
- Design and development of training programs, content, and conduct of training, and trainee examinations / evaluations.
- Training program interface with facility configuration management practices
- Training program assessments and evaluations

11.4.8 PERSONNEL QUALIFICATION

The qualification requirements for key management positions are described in Chapter 2, Organization and Administration. Education, experience, training and qualifications are specified in this chapter.

Qualification and training requirements for operations personnel shall be established and implemented in accordance with internal plant procedures (e.g, Human Resource).

11.4.9 RECORDS

The system established for maintaining records of training and retraining of personnel who perform activities relied on for safety is described in Section 3.8.

11.5 PROCEDURES

Licensed material processing or activities will be conducted in accordance with properly issued and approved management control procedures.

11.5.1 OPERATING PROCEDURES

Area Managers are responsible to assure preparation of written, approved and issued operating procedures incorporating control and limitation requirements established by the criticality safety function, the radiation safety function, the environmental protection function and the chemical and fire safety function. Integrated safety analysis results as described in Chapter 3 are used to identify procedures necessary for human actions important to safety. Operating procedures are initiated and controlled by a configuration management system. Area Managers ensure that operating procedures are made readily available in the work area and that operators are trained to the requirements of the procedures and that conformance is mandatory. Operators are trained to report inadequate procedures, and/or the inability to follow procedures.

Nuclear safety control procedure requirements for workers in uranium processing areas are incorporated into the appropriate operating, maintenance and test procedures in place for uranium processing operations.

The safety program design requires the establishment and maintenance of documented procedures for environmental, health and safety limitations and requirements to govern the safety aspects of operations. Requirements for procedure

control and approval authorities are documented. Procedure review for updating frequencies are as follows:

Document	Review Frequency	Reviewing & Approving Functional Manager
Operating Procedures (OPs) {Note: Nuclear Safety Release/Requirement (NSR/R) limitations and requirements are incorporated into OPs}	When changed [1]	Area Manager and Affected EHS Discipline (Radiation, Criticality, Environmental, Industrial [4], or MC&A)
Operating Procedures (OPs)	Every 3 Years [3]	Area Manager and Affected EHS Discipline (Radiation, Criticality, Environmental, Industrial [4], or MC&A)
Common Procedures (CPs) and Work Instructions (WIs)	Every 2 Years [2]	Radiation & Criticality Safety, Environmental Protection, Industrial [4] , or MC&A
Nuclear Safety Instructions (NSIs)	Every 2 Years [2]	Radiation & Criticality Safety
Environmental Protection Instructions (EPIs)	Every 2 Years [2]	Environmental Protection

1) The safety awareness portions of these OPs are reviewed and updated by the appropriate environment, health, and safety (EHS) discipline when warranted based on process related facility change requests.
2) Every 2 years means a maximum interval of 26 months.
3) Every 3 years means a maximum interval of 39 months
4) EHS Discipline - Industrial means normal worker safety, chemical safety, and fire and explosion protection.

11.5.2 MANAGEMENT CONTROL PROCEDURES

Licensed material activities are conducted in accordance with management control programs described in administrative and general plant practices approved and issued by cognizant management at a level appropriate to the scope of the practice. These documented practices direct and control activities across the manufacturing functions, and assign functional responsibilities and requirements for these activities. These practices are reviewed for updating at least every two years (26 months).

11.6 AUDITS AND ASSESSMENTS

11.6.1 CRITICALITY, RADIATION, CHEMICAL AND FIRE SAFETY AUDITS

Representatives of the criticality safety function, the radiological safety function, and the chemical and fire safety function conduct formal, scheduled safety audits of fuel manufacturing and support areas in accordance with documented, approved practices. These audits are performed to determine that operations conform to criticality, radiation, and chemical and fire safety requirements.

Criticality and radiological audits are performed quarterly (at intervals not to exceed 110 days) under the direction of the manager of the criticality safety function and the manager of the radiation safety function. Chemical and fire safety audits are performed under the direction of the chemical and fire safety function manager. Personnel performing audits do not report to the production organization and have no direct responsibility for the function and area being audited.

Audit results are communicated in writing to the cognizant Area Manager and to the manager of the environment, health & safety function. Required corrective actions are documented and approved by the Area Manager, and tracked to completion by the environment, health & safety function.

Radiation protection personnel within the radiation safety function conduct weekly nuclear safety inspections of fuel manufacturing and support areas in accordance with documented procedures. Inspection findings are documented and sent to the affected Area Manager for resolution.

Records of the audit or inspection, instructions and procedures, persons conducting the audits or inspections, audit or inspection results, and corrective actions for identified violations of license conditions are maintained in accordance with procedural requirements for a minimum period of three years.

11.6.2 ENVIRONMENTAL PROTECTION AUDITS

An audit schedule of the environmental protection program is developed by the environmental protection function on an annual basis. Audits are conducted in

accordance with documented practices to ensure that operational activities conform to documented environmental requirements.

Personnel under the direction of the manager of the environmental protection function perform the environmental protection audits. Personnel performing the audits do not report to the production organization and have no direct responsibility for the function and area being audited.

Audit findings are communicated to the cognizant Area Manager, who is responsible for nonconformance corrective action commitments in accordance with documented practices. The manager of the environmental protection function or delegate is responsible for resolution follow-up for identified nonconformance. Audit results in the form of corrective action items are reported to the GNF-A Facility Manager and staff for monitoring of closure status.

11.6.3 INDEPENDENT AUDITS

GNF-A commits to perform triennial independent audits of its safety program elements (radiation protection, criticality safety, chemical safety, fire and explosion protection, industrial safety and environmental protection). The audit team will consist of appropriately trained and experienced individuals who are not involved in the routine performance of the work or program being audited. The audit scope includes compliance to procedures, conformance to regulations and the overall adequacy of the safety program.

Audit results are reported in writing to GNF-A's Facility Manager, the Area Managers, the manager of the radiation safety function, and the manager of the criticality safety function, as appropriate. The findings of the audit are assigned to the appropriate safety function or Area Managers. The assigned responsible individual takes the necessary steps to investigate the finding and identify appropriate corrective actions to address and correct the finding.

The corrective actions resulting from the audit are entered into the management tracking system and reported and tracked to completion by the Facility Manager.

11.6.4 FIRE SAFETY

Fire protection audits and inspections include:

- Internal formal quarterly audits, supplemented by routine informal inspections.

- Independent auditors perform scheduled fire protection, prevention and inspections of the facility. Action plans are developed to address findings arising from such inspections.

These audits and inspections verify that ignition sources and combustibles are properly controlled.

11.6.5 WORKER CONCERNS

GNF-A commits to maintain a safety conscious work environment. All workers are encouraged to report potentially unsafe conditions to their supervisor, management or the safety organization. Reported concerns are promptly investigated, assessed and resolved.

11.7 INCIDENT INVESTIGATIONS

GNF-A commits to maintain a system to identify, track, investigate and implement corrective action for abnormal events (unusual incidents). The system includes the following requirements and features:

- The system operates in accordance with written procedures
- Abnormal events are documented, tracked and reported to the Area Managers, the safety functions and facility management
- Abnormal events associated with IROFS or their associated management measures are specifically identified
- Each event is considered in terms of regulatory reporting criteria
- Events are considered in terms of severity and compliance with regulations or license conditions.
- All condition reports require investigation, a determination of root or most probable cause and the identification of required corrective action
- More significant condition reports require a formal, systematic determination of root cause (typically using an independent, qualified team), definition of corrective actions and a higher level management review and approval of the investigation and corrective actions
- Monthly reports covering condition reports and their status are issued to the Facility Manager, Area Managers and the safety functional managers

- Events are graded for the purpose of an ongoing management evaluation of facility performance and used as one element in driving safety culture focus
- Records of the events and the documented evidence of closure are maintained for a minimum of three years
- Condition report information is used where appropriate when performing ISAs

11.8 RECORDS MANAGEMENT

Records appropriate for integrated safety analyses, IROFS, the application of management measures to IROFS, criticality and radiation safety activities, training/retraining, occupational exposure of personnel to radiation, releases of radioactive materials to the environment, and other pertinent safety activities are maintained in such a manner as to demonstrate compliance with license conditions and regulations.

Records of integrated safety analyses and the identification of IROFS are retained during the conduct of the activities analyzed and for six months following cessation of such activities to which they apply or for a minimum of three years.

Records of criticality safety analyses are maintained in sufficient detail and form to permit independent review and audit of the method of calculation and results. Such records are retained during the conduct of the activities and for six months following cessation of such activities to which they apply or for a minimum of three years.

Records associated with personnel radiation exposures are generated and retained in such a manner as to comply with the relevant requirements of 10 CFR 20. The following additional radiation protection records will be maintained for at least three years:

- Records of the safety review committee meetings
- Surveys of equipment for release to unrestricted areas
- Instrument calibrations
- Safety audits
- Personnel training and retraining
- Radiation work permits

- Surface contamination surveys
- Concentrations of airborne radioactive material in the facility
- Radiological safety analyses

Records associated with the environmental protection activities described in Chapter 10 are generated and retained in such a manner as to comply with the relevant requirements of 10 CFR 20 and this license.

11.9 OTHER QA ELEMENTS

GNF-A performs a broad spectrum of work that requires the application of QA measures. This includes work-requiring conformance to 10 CFR 50, Appendix B, 10 CFR 71, Subpart H as well as certain aspects of 10 CFR 70. As a result of these over arching quality requirements, GNF-A's management system is structured to provide a full scope of QA elements and apply them as appropriate.

With regard to 10 CFR 70, particularly the identification and maintenance of IROFS and the management measures (discussed in this Chapter) that assure the availability of the IROFS to perform their intended function when required, the following information outlines the classic QA Elements and summarizes the manner in which they are applied for the operations. The following assurance elements are applied to IROFS and the management measurements at GNF-A:

- Organization – GNF-A operates to a documented organizational structure in which responsibility and authority is clearly identified
- Program – GNF-A operates to written policies, procedures and instructions.
- Design Control – GNF-A policies and procedures outline a program to provide design control for IROFS including the management measures necessary to assure their successful operation (see CM program Section 11.2).
- Procurement Documentation Control – GNF-A policies and procedures require the definition of procurement specifications, review and approval of procurement to assure they are compatible with regulatory requirements
- Instructions, Procedures, and Drawings – GNF-A uses instructions, written procedures and drawings to document configuration, processes and methods for doing work

- Document Control – GNF-A implements document control as described here in Chapter (11.5).
- Control of Purchased Materials, Equipment, and Services – GNF-A procedures require that purchased materials, equipment or services be secured from appropriately qualified vendors and that as appropriate vendor certifications or in-house dedication of the items or work are provided
- Identification and Control of Materials, Parts, and Components
- Control of Special Processes – GNF-A procures materials from qualified vendors to documented specifications that include where necessary control of special processes. Internally the change control process, Production Tests, Engineering Evaluation Tests, Radiation Work Permit and Temporary Operating Procedure routines control special situations.
- Internal Inspections – GNF-A uses pre-operational audits for IROFS to verify that parts, configuration and operations are as intended.
- Test Control – GNF-A implements a functional test program for IROFS as defined in this Chapter.
- Control of Measuring and Test Equipment – GNF-A maintains measuring and test equipment in accordance with procedures.
- Handling, Storage, and Shipping Controls –GNF-A process for procuring materials include where appropriate handling and shipping controls to ensure the validity of the items received. In addition where shelf life is important controls are implemented to ensure these limits are implemented for the item.
- Inspection, Test, and Operating Status – Where the ISA and associated IROFS require this type of marking; items are so marked and maintained.
- Control of Nonconforming Materials, Parts, or Components - GNF-A maintains a non-conforming materials program.
- Corrective Action – GNF-A procedures for investigating the failure of IROFS require the definition of root cause and corrective action.
- Records – Where specific actions are required, GNF-A maintains records to demonstrate the action has been completed.
- Audits – GNF-A provides audits as defined in this Chapter.