GE Hitachi Nuclear Energy

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HITACHI

Security Related and Proprietary Information Notice
Attachment 2 contains proprietary information and Attachment 3 contains security-related information. Both are requested to be withheld from public disclosure in accordance with 10CFR2.390. Upon removal of the attachments the balance of this letter may be made public.

M220004

January 7, 2022

Osiris Siurano-Perez, Project Manager
Fuel Facility Licensing Branch
Division of Fuel Management
Office of Nuclear Material Safety
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Attn: Document Control Desk

Subject: SNM-960 Amendment to License Renewal Application

References:
1) NRC License SNM-960, Docket 07000754
2) Revised License Renewal Application for Vallecitos Nuclear Center, dated 3/18/2015 (ML15077A501, ML15077A496)
3) SNM-960 Revised License Renewal Application dated 2/26/2016 (ML16057A711, ML16057A714)

GE - Hitachi Nuclear Energy Americas LLC (GEH) requests an amendment to license SNM-960 (Reference 1) to include edits to the 2015 and 2016 revisions to the license renewal application (References 2 and 3) as cited in license condition 10 of the SNM-960 license. Attached find a "roadmap" of changes as well as a revision to Chapters 01, 02, 04, and 10 of the 2015 / 2016 license renewal application.

Attachment 2 to this letter contains GEH proprietary information and Attachment 3 contains security-related information. GEH requests both be withheld from public disclosure pursuant to 10 CFR 2.390.

If you have any questions regarding this matter, please contact me at (925) 918-6116.

Sincerely,

David J. Heckman, Site Regulatory Affairs / Licensing Lead
Vallecitos Nuclear Center

Attachment 1: GEH Affidavit
Attachment 2: GEH Supplemental Information for SNM-960 LAR (Contains proprietary information)
Attachment 3: SNM-960 Revised License Renewal Application, Chapter 01 (contains security-related information)
Attachment 4: SNM-060 Revised License Renewal Application, Chapters 02, 04, and 10
DJH 22-001

Attachment 1
GEH Affidavit

Attachment 1

AFFIDAVIT

I**, David J. Heckman,** state as follows:

(1) I am the Regulatory Affairs / Licensing Lead, of the Vallecitos Nuclear Center, GE Hitachi Nuclear Energy Americas, L.L.C. (GEH) and have been delegated the function by GEH of reviewing the information described in paragraph (2) which is sought to be withheld in Attachments 2 to GEH's letter, M220004, GEH Supplemental Information for SNM-960 License Amendment Request.

(2) GEH proprietary information is contained in Attachment 2 to this letter and is identified by the statement "GEH Proprietary Information."

(3) In making this application for withholding of proprietary information of which it is the owner or licensee, GEH relies upon the exemption from disclosure set forth in the Freedom of Information Act (FOIA), 5 USC Sec. 552(b)(4), and the Trade Secrets Act, 18 USC Sec. 1905, and NRC regulations 10 CFR 9.17(a)(4), and 2.390(a)(4) for trade secrets (Exemption 4). The material for which exemption from disclosure is here sought also qualifies under the narrower definition of trade secret, within the meanings assigned to those terms for purposes of FOIA Exemption 4 in, respectively, Critical Mass Energy Project v. Nuclear Regulatory Commission, 975 F2d 871 (DC Cir. 1992), and Public Citizen Health Research Group v. FDA, 704 F2d 1280 (DC Cir. 1983).

(4) The information sought to be withheld is considered to be proprietary for the reasons set forth in paragraphs (4)a. and (4)b. Some examples of categories of information that fit into the definition of proprietary information are:

a. Information that discloses financial, a process, method, or apparatus, including supporting data and analyses, where prevention of its use by GEH's competitors without license from GEH constitutes a competitive economic advantage over GEH and/or other companies.

b. Information that, if used by a competitor, would reduce their expenditure of resources or improve their competitive position in the design, manufacture, shipment, installation, assurance of quality, or licensing of a similar product.

(5) To address 10 CFR 2.390(b)(4), the information sought to be withheld is being submitted to the NRC in confidence. The information is of a sort customarily held in confidence by GEH and is in fact so held. The information sought to be withheld has, to the best of my knowledge and belief, consistently been held in confidence by GEH, not been disclosed publicly, and not been made available in public sources. All disclosures to third parties, including any required transmittals to the NRC, have been made, or must be made, pursuant to regulatory provisions or proprietary and/or confidentiality agreements that provide for maintaining the information in confidence. The initial designation of this information as proprietary information, and the subsequent steps taken to prevent its unauthorized disclosure are as set forth in the following paragraphs (6) and (7).

(6) Initial approval of proprietary treatment of a document is made by the manager of the originating component, who is the person most likely to be acquainted with the value and sensitivity of the information in relation to industry knowledge, or who is the person most likely to be subject to the terms under which it was licensed to GEH. Access to such documents within GEH is limited to a "need to know" basis.

(7) The procedure for approval of external release of such a document typically requires review by the staff manager, project manager, principal scientist, or other equivalent authority for technical content, competitive effect, and determination of the accuracy of the proprietary designation. Disclosures outside GEH are limited to regulatory

bodies, customers, and potential customers, and their agents, suppliers, and licensees, and others with a legitimate need for the information, and then only in accordance with appropriate regulatory provisions or proprietary and/or confidentiality agreements.

(8) The information identified in paragraph (2) above is classified as proprietary because it contains details of GEH's processes, design and manufacturing facilities.

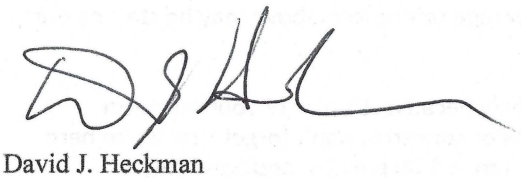
(9) Public disclosure of the information sought to be withheld is likely to cause substantial harm to GEH's competitive position and foreclose or reduce the availability of profit-making opportunities. The facility design and licensing methodology is part of GEH's comprehensive safety and technology base, and its commercial value extends beyond the original development cost. The value of the technology base goes beyond the extensive physical database and analytical methodology and includes development of the expertise to determine and apply the appropriate evaluation process. In addition, the technology base includes the value derived from providing analyses done with NRC-approved methods.

The research, development, engineering, analytical and NRC review costs comprise a substantial investment of time and money by GEH. The precise value of the expertise to devise an evaluation process and apply the correct analytical methodology is difficult to quantify, but it clearly is substantial. GEH's competitive advantage will be lost if its competitors are able to use the results of the GEH experience to normalize or verify their own process or if they are able to claim an equivalent understanding by demonstrating that they can arrive at the same or similar conclusions.

The value of this information to GEH would be lost if the information were disclosed to the public. Making such information available to competitors without there having been required to undertake a similar expenditure of resources would unfairly provide competitors with a windfall and deprive GEH of the opportunity to exercise its competitive advantage to seek an adequate return on its large investment in developing and obtaining these very valuable analytical tools.

I declare under penalty of perjury that the foregoing is true and correct to the best of my knowledge.

Executed on this 7th day of January 2022.



David J. Heckman
GE Hitachi Nuclear Energy Americas, L.L.C.

Attachment 2
GEH Supplemental Information for SNM-960 License Amendment Request

(Contains Proprietary Information)

Attachment 3
SNM-960 Revised License Renewal Application, Chapter 01

(Contains Security Related Information)

Attachment 4
SNM-960 Revised License Renewal Application, Chapters 02, 04, and 10

CHAPTER 2.0
ORGANIZATION AND ADMINISTRATION

2.1 POLICY

The Vallecitos Nuclear Center (VNC) 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 license SNM-960 and applicable NRC regulations. Employees are provided a simple mechanism to report and have safety concerns addressed.

2.2 ORGANIZATIONAL RESPONSIBILITIES AND AUTHORITY

2.2.1 KEY POSITIONS (FIGURE 2.1)

Responsibilities, authorities, and interrelationships among the VNC organizational functions with responsibilities for safe operations and design changes are specified in approved position descriptions and in documented and approved practices. A single individual may be responsible for more than one position or a position may be split between two or more individuals.

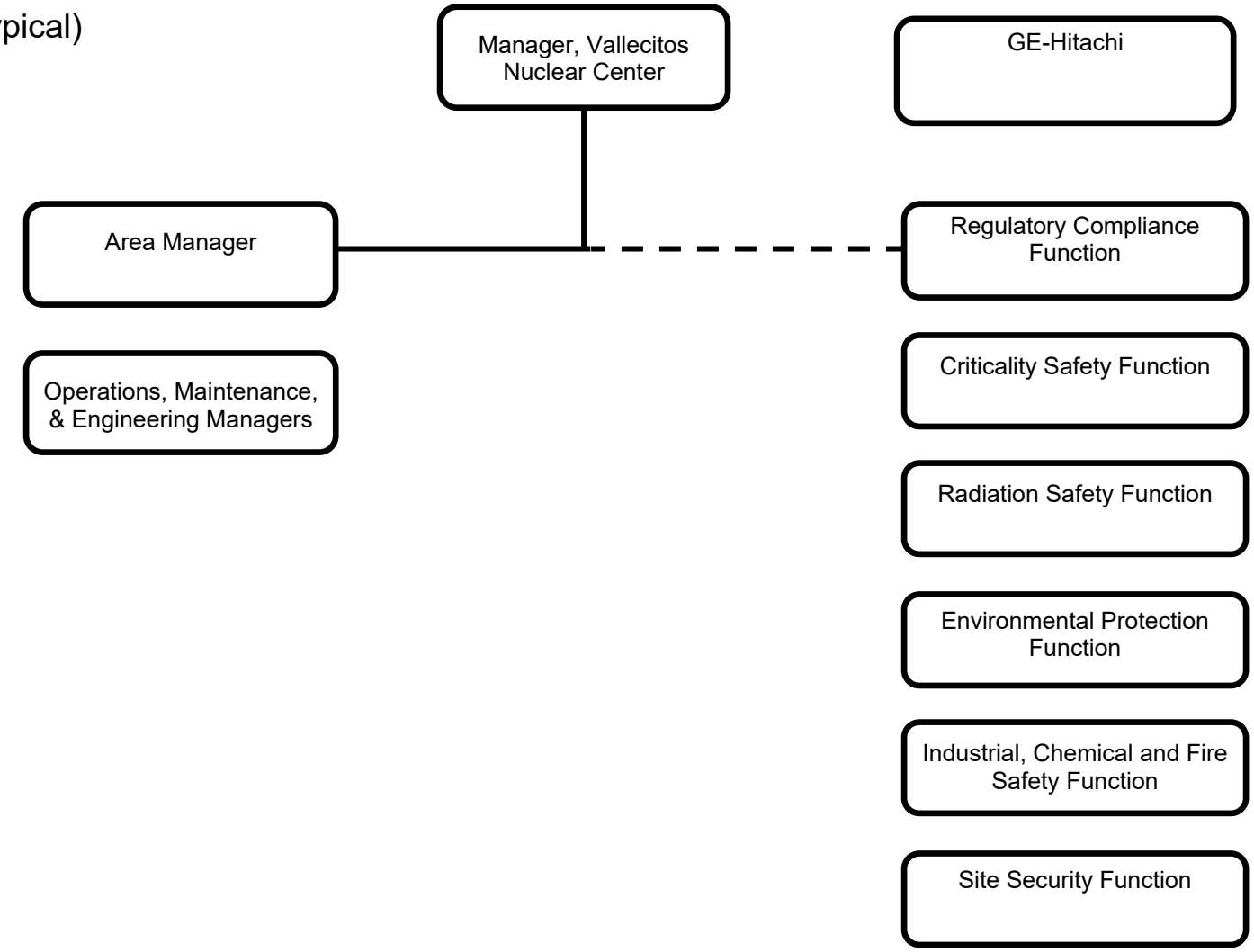
2.2.1.1 Manager, Vallecitos Nuclear Center

The Manager, Vallecitos Nuclear Center is the individual who has overall responsibility for safety and activities conducted at the facility. The Manager, Vallecitos Nuclear Center directs operations by procedure, or through other management personnel. The activities of the Manager, Vallecitos Nuclear Center are performed in accordance with VNC's policies, procedures, and management directives. The Manager, Vallecitos Nuclear Center provides for safety and control of operations and protection of the environment by delegating and assigning responsibility to qualified Area Managers who are charged with maintaining and operating the facility in accordance with applicable building codes and regulations.

The minimum qualifications of the Manager, Vallecitos Nuclear Center are a bachelor's degree and two years experience in nuclear operations or a high school diploma and five years supervisory or technical experience in a nuclear, manufacturing or other technical field. The Manager, Vallecitos Nuclear Center is knowledgeable of the safety program concepts as they apply to the overall safety of a

nuclear facility and has the authority to shutdown any process or facility. The Manager, Vallecitos Nuclear Center must approve restart of any operation shutdown.

Figure 2.1
VNC Organization Chart
(Typical)



2.2.1.2 Area Manager

An Area Manager is designated as the individual who is responsible for ensuring that operations and activities necessary for safe operations and protection of the environment are conducted properly within the assigned area of the facility. Designated Area Manager responsibilities include assuring that licensed activities conducted in accordance with properly issued and approved procedures. The Area Manager also assures that new employees receive appropriate instructions in radiation safety, site emergency procedures, general industrial safety and operating procedures commensurate with assigned duties. The Manager, Vallecitos Nuclear Center approves the assignment of the Area Manager.

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

Option 1, a combination of:

- Bachelor's degree or equivalent in a science or engineering subject
- 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;

- Bachelor's degree or Associate 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 year of supervisory or technical experience in nuclear operations

The Area Manager shall be knowledgeable of the safety program procedures (including as applicable 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.

2.2.1.3 Regulatory Compliance Function

The Regulatory Compliance function is administratively independent of production responsibilities and has the authority to shutdown any process or facility in the event that adequate controls for any aspect of safety may not be assured. This function has designated overall responsibility to ensure compliance with federal, state and local regulations and laws governing operation of the licensed activities.

The manager of the Regulatory Compliance function must hold a bachelor's degree or equivalent and have two years of management experience in assignments involving regulatory activities or a high school diploma and five years supervisory or technical experience in a nuclear, manufacturing or other technical field.

2.2.1.4 Criticality Safety Function

The criticality safety function is administratively independent of production responsibilities, has oversight responsibility for the material storage area, and has the authority to shutdown potentially unsafe operations

The criticality safety function includes at least one technically trained person with a bachelor's degree or equivalent in a science or engineering subject, including one year of directly relevant criticality safety experience. Criticality safety staff with less than one year experience will be supervised by a technically trained criticality safety member or the Manager, Regulatory Compliance.

2.2.1.5 Radiation Safety Function

The radiation safety function is administratively independent of production responsibilities and has the authority to shutdown potentially unsafe operations

Designated areas of responsibility include:

- Establish the radiation protection and radiation monitoring programs, including the As Low As Reasonably Achievable (ALARA) program
- 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 analysis and approval of proposed changes in process conditions and process equipment involving radiological safety
- Provide advice and counsel to Site employees and management on matters of radiation safety
- Assess the effectiveness of the radiation safety program through audit programs.

A member of the radiation safety function shall have experience in the assigned safety function, and has authority and responsibility to conduct activities assigned to the radiation safety function. The minimum qualifications of personnel assigned functional responsibility in the radiation safety function shall be:

- The site radiation safety function leader shall hold a bachelor's degree or equivalent in a science or engineering subject, and have at least five years of experience in applied radiation protection. An alternate minimum experience qualification is a professional certification in health physics (CHP).
- A site radiation monitor technician (RMT) in the radiation safety function shall meet one of the following:
- Hold a bachelor's degree or equivalent in a science or engineering subject.
- Have a high school diploma and at least two years experience in Applied Radiation Protection or
- Have eight years experience in health physics or radiation protection.

- Have a high school diploma or equivalent with two years experience in handling radioactive materials or
- Two years of college and four months experience.

2.2.1.6 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

Designated areas of responsibility include:

- Identify environmental protection requirements from federal, state and local regulations which govern SNM-960 operations
- Establish systems and methods to measure and document adherence to regulatory environmental protection requirements and license conditions
- Provide advice and counsel to Site employees and management
- Evaluate and approve new, existing or revised equipment, processes and procedures involving environmental protection activities
- Assure proper federal and state permits, licenses and registrations for non-radiological discharges from the facilities

2.2.1.7 Industrial Health and Safety (Including Chemical and Fire Safety Functions)

Industrial Health and Safety maintains programs generally related to OSHA and Cal/OSH regulations. In regards to SNM-960 operations, functions specifically pertinent are the chemical and fire safety functions. The function is administratively independent of the production responsibilities and has the authority to shutdown operations with potentially hazardous health and safety conditions.

Designated areas of responsibility include:

- Identify industrial health, chemical safety and fire protection requirements from federal, state, and local regulations which govern the SNM-960 operations
- Develop practices regarding non-radiological chemical hazards that could affect the safety of licensed materials
- Provide advice and counsel to Site employees and management on matters of industrial health, chemical and fire safety

- Provide consultation and review of new, existing or revised equipment, processes and procedures regarding industrial safety, chemical safety and fire protection

2.2.1.8 Site Security Function

The site security function is administratively independent of the production responsibilities. Designated areas of responsibility include:

- Provide physical security for the site
- Provide advice and counsel to Site employees and management on matters of site security

2.2.2 MANAGEMENT CONTROLS

Management controls for the conduct and maintenance of VNC's health, safety and environment protection programs are contained in formally approved, written procedures prepared in compliance with a formal document control program.

It is the responsibility of the manager of an activity or area involving radioactive materials to:

Take all necessary steps to plan and organize the work within their area of responsibility, in accordance with approved procedures.

Identify needs for operational procedure revisions when there is a planned change in conditions such as types or quantities of radioactive materials or equipment modifications.

Integrate the results of reviews, inspections, engineering assessments and investigations to correct or improve operational procedures, controls and performance.

2.3 TRAINING

Personnel training 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 VNC, commensurate with assigned duties. Training and qualification requirements are met prior to personnel fully assuming the duties of their positions, and before assigned tasks are independently performed. Training relative to safety includes instructions to workers in accordance with 10 CFR 19.12, storage, transfer, and use of radioactive materials, minimization of exposures to radiation and limits, maintaining radiation exposures and radioactivity in effluents ALARA, radiation safety principles, radiation exposure reports, and risks involved in receiving low level radiation exposure. Training relative to safety is also provided on an as needed basis for chemical and fire safety, emergency response, and the responsibility to promptly report any condition that may lead to, or cause a violation of regulations, license requirement, or create unnecessary exposure.

2.3.1 ALARA COMMITTEE

The ALARA Committee is described in Chapter 4, Section 4.2.

2.3.2 VALLECITOS TECHNOLOGICAL SAFETY COUNCIL

Oversight responsibilities of the Vallecitos Technological Safety Council (VTSC) include SNM 960 licensed activities. The VTSC is an independent review body and consists of a minimum of five members of GE-Hitachi Nuclear Energy's technical and/or management personnel. Its proceedings, findings and recommendations are reported in writing to the Manager, Vallecitos Nuclear Center, manager Regulatory Compliance, and to appropriate functional Managers responsible for operations, which have been reviewed by the committee. Such reports shall be retained for at least three years.

2.4 CHANGE MANAGEMENT

Change Authorization is prepared whenever the work involves changes to:

- Facilities, equipment, or processes so that safety or regulatory compliance considerations differ from those previously analyzed.
- Radioactive material limits.
- Hazardous or potentially hazardous industrial materials where such change is significant in terms of quantities or use.
- The Change Authorization is processed in accordance with a written procedure and reviewed by the appropriate operational and safety functions.

CHAPTER 4.0
RADIATION SAFETY

4.1 RADIATION PROTECTION PROGRAM

A radiation protection program has been established to ensure compliance with the requirements of 10 CFR 20. A system of written Procedures establishes the site radiation protection and regulatory compliance programs. The radiation safety function leader issues the procedures with review and comment from the managers of the major organizational components located on the site. Requirements are established to prevent or minimize the hazards of radioactivity and radioactive materials. The useage of terminology in this Chapter is consistent with the definitions in 10 CFR 20.1003. Key personnel, minimum qualifications and radiation protection independence from operations are addressed in Chapter 2, Section 2.2.1. Ventilation and containment systems are addressed in Chapter 1, Sections 1.1.3.1.10 and 1.1.3.2.3.

The content and implementation of the radiation protection program is reviewed annually pursuant to 10 CFR 20.1101. The annual radiation protection program review considers means to enhance the effectiveness of the program.

Instructions to workers in accordance with 10 CFR 19.12 regarding the use of radiation and radioactive materials is described in Chapter 2, Section 2.3.

Records as required by 10 CFR 20.2102 and 20.2103 are maintained in such a manner as to demonstrate compliance with license requirements and regulations.

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 radiation protection activities are described in written procedures and their associated records will be maintained for at least three years:

- Safety review committee meetings
- Surveys of equipment for release to unrestricted areas
- Instrument calibrations
- Safety audits and other reviews of the radiation program

- Personnel training and retraining
- Radiation work permits
- Surface contamination and dose rate surveys
- Radiological safety analyses
- Facility changes involving licensed activities not requiring NRC approval

Records associated with the environmental protection activities described in Chapter 9 are generated and retained in such a manner as to comply with the relevant requirements of 10 CFR 20 and this license.

4.2 ALARA (AS LOW AS REASONABLY ACHIEVABLE) PROGRAM

VNC's radiological protection program applicable to SNM 960 activities uses, to the extent practical, procedures and engineering controls based upon sound radiation protection principles to achieve occupational doses and doses to members of the public that are as low as reasonably achievable (ALARA) pursuant to 10 CFR 20.1101. Methods used to maintain exposures ALARA including the use of controls such as equipment and process design are documented in written procedures.

A VNC ALARA committee is established to review and recommend actions to minimize radiation exposures, consider alternative engineered controls, establish program goals and other dose reduction techniques. Committee members include personnel from radiation safety, operations, maintenance, and engineering as required to conduct periodic ALARA reviews in accordance with written procedures.

The ALARA committee reviews the ALARA program including an evaluation of radiation levels in the facility, contamination levels, worker exposures and effluent releases as appropriate. The review determines if exposures, releases and contamination levels are in accordance with the ALARA concept. Recommendations of the ALARA committee are documented and tracked to completion.

Dose rates in areas accessible to personnel are also maintained ALARA and controlled by written procedures or special approval documented in a radiation work permit.

4.3 RADIATION SAFETY PROCEDURES AND RADIATION WORK PERMITS

Radiation protection procedures are issued to ensure safe operation of routine work and compliance with state and federal regulations, permits and licenses. A process is established for procedure generation, modification, approval, distribution and training. The radiation safety function leader approves procedures related to radiation protection.

Non-routine activities, (e.g. those not covered by documented procedures), performed by VNC and non-VNC employees, are administered by a Radiation Work Permit (RWP) system. The RWP system is also described in documented procedures.

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 for non-routine operations not addressed by an operating procedure when special radiation control requirements are necessary. RWPs are approved by a member of the radiation safety function. Each affected individual reviews the RWP requirements. Work is monitored by the radiation safety function as required. RWPs have expiration dates and the status of issued RWPs is reviewed on a routine basis by a Radiation Monitor Technician (RMT), Area Manager or designated alternate.

4.4 AIR SAMPLING PROGRAM

Room air is continuously sampled in normally occupied areas in which dispersible SNM is handled. Samples are analyzed for gross alpha and gross beta-gamma. Samples used to determine worker intakes are collected in such a way that the concentrations of airborne radioactive material measured is representative of the air which workers breathe. Air sampling results are monitored by the radiation safety function to evaluate the effectiveness of personnel exposure controls.

Filters from air samplers are changed weekly during normal operating periods or at more frequent intervals following the detection of an event that may have released airborne contamination.

Air samplers may be equipped with a vacuum gage to indicate flow rate of air sampled. Air sampler flow indicators are calibrated annually.

Routine air sampling is supplemented by portable air sample surveys as required to evaluate non-routine activities or breaches in containment.

4.5 CONTAMINATION CONTROL

4.5.1 SURVEYS

Routine contamination survey monitoring is performed in potentially contaminated areas in accordance with 10 CFR 20.1501.

Removable contamination measurements are performed commensurate with the nature of the work being conducted, the quantities of material being used, and operational experience. Survey frequencies are determined by the radiation safety function and documented in procedures. Survey results are compared to action guide values as specified in plant procedures and appropriate responses are taken.

The removable surface contamination action levels for routine surveys in non-controlled areas are the removable contamination values in Table 1 as referenced in Section 1.3.1.

When contamination levels in excess of the above action limits are found, actions are initiated to protect personnel.

The contamination levels for release for unrestricted use of equipment and material are described in Chapter 1.

4.5.2 ACCESS CONTROL

An access control program has been established to ensure that routine access points to contaminated areas are properly posted and operative. Contaminated area boundaries are established to prevent the spread of contamination and are identified with the appropriate signs, step off pads, change facilities, protective clothing facilities, and personnel monitoring instruments in sufficient quantities and locations.

Alternate access points to contaminated areas may be established for specific activities that are not accommodated by use of routine access points. Such access is governed by approved procedures or RWP's which establish controls to prevent the spread of contamination.

4.5.3 PROTECTIVE CLOTHING

Protective clothing is provided as required to persons enter a contaminated area 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, shoe covers, rubber and cloth gloves. Other specialized equipment can be employed if needed. The protective clothing is removed upon exit from the contaminated area.

4.5.4 POSTING AND LABELING

Based on radiation surveys, air sampling results, process knowledge and radioactive material storage and usage conditions, areas are posted with the appropriate radiation and radioactivity caution signs in accordance with 10 CFR 20.1901, 1902 and 1903.

Containers of licensed material are labeled with the appropriate radioactive material caution information in accordance with 10 CFR 20.1904 and 1905. Prior to removal or disposal of empty uncontaminated containers to unrestricted areas, radioactive material labels are removed or defaced.

4.6 CONTROL OF ACCESS TO HIGH RADIATION AREAS

In accordance with 10 CFR 20.1601, each entrance or access point to a high radiation area has one or more of the following features:

1. A control device that, upon entry into the area, causes the level of radiation to be reduced below that level at which an individual might receive a deep-dose equivalent of 0.1 rem in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates;

2. A control device that energizes a conspicuous visible or audible alarm signal so that the individual entering the high radiation area and the supervisor of the activity are made aware of the entry;

3. Entryways that are locked, except during periods when access to the areas is required, with positive control over each individual entry; or

4. Continuous direct surveillance by an authorized individual capable of preventing unauthorized access.

4.7 EXTERNAL EXPOSURE

Individuals are monitored for exposures to radiation in accordance with 10 CFR 20.1502 to demonstrate compliance with the occupational dose limits specified in 10 CFR 20.1201. Deep-dose equivalent and shallow-dose equivalent from external sources of radiation are determined by individually assigned dosimeters. Dosimeters are issued to and used by individuals likely to receive, in one year from sources external to the body, a dose in excess of 10 percent of the applicable occupational exposure limits in 10 CFR 20.1201, and declared pregnant women likely to receive during the entire pregnancy, from radiation sources external to the body, a deep dose equivalent in excess of 0.1 rem. 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. Dosimeters are also issued to and used by individuals entering a high radiation area or a very high radiation area.

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 documented in plant procedures. Radiation exposure action levels are specified in Section 4.10.

When the results of individual monitoring are unavailable or are invalidated by unusual exposure conditions, external exposures are estimated by the radiation safety function on the basis of data obtained by investigation.

4.8 INTERNAL EXPOSURE

Individuals are monitored for the occupational intake of radioactive material at levels sufficient to demonstrate compliance with the occupational dose limits of 10 CFR 20.1201. Monitoring for the intake of radioactive material is performed for individuals likely to receive, in one year, an intake in excess of 10 percent of the applicable ALI, and for declared pregnant women likely to receive, during the entire pregnancy, a committed effective dose equivalent in excess of 0.1 rem. For the purposes of assessing dose when required pursuant to10 CFR 20.1204, suitable and timely measurements are made of:

1. Concentrations of radioactive materials in air in work areas; or
2. Quantities of radionuclides in the body; or
3. Quantities of radionuclides excreted from the body; or

4. Combinations of these measurements.

When concentrations of radioactive material in air are used to assess dose it is assumed an individual inhales radioactive material at the airborne concentration in which the individual is present unless respiratory protective equipment is used. If respiratory protectve equipment is used the airborne concentration inhaled is equal to the airborne concentration in the area divided by the approved protection factor as described in Section 4.12.2

The committed effective dose equivalent is calculated by assuming that the inhalation of one ALI (stochastic value) results in a committed effective dose equivalent of 5 rem.

Action levels are established in plant procedures to prevent an individual from exceeding the occupational dose limits specified in 10 CFR 20.1201. Radiation exposure action levels are specified in Section 4.10.

4.8.1 IN VIVO PROGRAM

An in vivo program is available to evaluate the intake of alpha emitting radionuclides. Analyses are performed on an as needed basis when radioactive materials which cannot be directly detected by the whole body counter and which are not tagged with isotopes detectable by the whole body counter are handled. In vivo monitoring may also be used to monitor individuals involved in non-routine operations or incidents.

4.9 SUMMING INTERNAL AND EXTERNAL EXPOSURE

In accordance with 10 CFR 20.1202, internal and external doses as described in the preceding sections of this application are summed for the purposes of limiting occupational doses and recording individual monitoring results. Total effective dose equivalent is determined by summing the committed effective dose equivalent and the deep dose equivalent. Total organ dose equivalent is determined by summing the committed dose equivalent to the maximally exposed organ or tissue (other than the lens of the eye) and the deep dose equivalent.

4.10 COMPLIANCE WITH OCCUPATIONAL DOSE LIMITS

To ensure compliance with occupational dose limits, work activity restrictions are imposed when an individual's exposure exceeds 80% of the applicable 10 CFR 20.1201 occupational dose annual limit as follows:

	10CFR20 annual limit	Action Level
Total effective dose equivalent	5 rem	4 rem
The sum of the deep-dose equivalent and the committed dose equivalent to any individual organ or tissue other than the lens of the eye	50 rem	40 rem
Lens dose equivalent	15 rem	12 rem
Shallow-dose equivalent to the skin of the whole body or to the skin of any extremity.	50 rem	40 rem

4.11 DOSE REPORTS

In accordance with 10 CFR 19.13, an annual dose report is provided to each individual with monitoring results exceeding 100 mrem TEDE or 100 mrem to any individual organ or tissue, during the calendar year in a format consistent with the NRC Form 5 occupational exposure report. Reports are also provided at the request of a monitored individual or by a worker formerly engaged in licensed activity.

4.12 RESPIRATORY PROTECTION PROGRAM

The respiratory protection program is conducted in accordance with the applicable portions of 10 CFR 20.1703 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) or equivalent is utilized.

To the extent practical, process or other engineering controls (e.g. containment or ventilation) are used to control the concentration of radioactive material in air.

4.12.1 QUALIFICATIONS OF RESPIRATOR USERS

Individuals designated to use respiratory protection equipment are evaluated by a physician or other licensed health care professional 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 protection equipment training and fitting by a qualified instructor. Additional training on the use and limitations of self-contained breathing devices is provided to individuals that may be required to use them.

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 face pieces operated in a negative pressure mode or (2) it is capable of verifying a fit factor of >100 for face pieces operated in a positive pressure mode. Mask fits are re-evaluated as necessary typically on an annual basis.

4.12.2 RESPIRATORY PROTECTION EQUIPMENT

Only NIOSH approved or equivalent 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.

4.12.3 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 conducted in accordance with the applicable portions of 10 CFR 20.

4.13 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 are 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.

4.13.1 ANALYTICAL LABORATORY COUNTING EQUIPMENT AND CAPABILITIES

The following is a summary of the capabilities of the analytical laboratory counting room for radiation safety samples.

Sample Type	Instrument	Minimum Detection Limit*
Air and Exhaust	Alpha Proportional	4×10^{-15} µCi/cc
Stack Samples	Beta Proportional	7×10^{-15} µCi/cc
Smears	Alpha Proportional	7×10^{-8} µCi/cc
	Beta Proportional	3×10^{-6} µCi/cc
Water (Retention Basin)	Alpha Proportional	1.5×10^{-8} µCi/cc
	Beta Proportional	3×10^{-8} µCi/cc

*Typical value based on standard sample size and counting times.

4.13.2 PORTABLE MONITORING INSTRUMENTS

Monitoring instruments from the following list are available in adequate supply to provide for essential monitoring and for scheduled calibration and maintenance.

PORTABLE MONITORING INSTRUMENTATION

Instrument Type	Range
1. GM Detector	0-500,000 cpm, beta-gamma
2. Ionization Chamber (low energy)	0-300 mrad/h, beta-gamma
3. Ionization Chamber (CP)	1-250,000 mR/h, gamma 4-1,000,000 mrad/h, beta
4. Ionization Chamber (gas multiplication)	1-1,000,000 mR/h, gamma 20-20,000,000 mrad/h, beta
5. Geiger Tube (telescopic)	1-1,000,000 mR/h, gamma
6. Micro-R Meter	0-5,000 μR/h, gamma
7. Scintillation Counter Sodium Iodide (Tl)	0-500,000 cpm, gamma
8. Neutron Rem Meter (BF_3)	0.5-5,000 mRem/h, neutron
9. Alpha Survey Probes (gas proportional and ZnS)	200-1,000,000 dpm; alpha
10.Portable Air Samplers	0-8 cfm

4.13.3 FIXED MONITORING EQUIPMENT

Listed below are types of equipment installed for monitoring quantities or concentrations of radioactivity.

- Concentrations in air are measured using fixed filter sample heads and constant flow control regulators. Stack sampling and monitoring units include a sample collection probe with beta gamma particulate monitoring and noble gas monitoring with appropriate filter media.

- Fixed gamma monitors with ranges from 0.1 mR/h to 100 R/h are located in areas with potentially hazardous gamma fields.

- Hand-and-shoe counters and/or hand-held probes are provided at principal exit points for beta-gamma and alpha as required.

- Environmental surveillance is provided by a number of dosimeters located on the VNC site and at its perimeter. Four permanent environmental air sample stations also are located on site.

4.13.4 CALIBRATION

Portable instrumentation is maintained per manufactuer recommendations and calibrated before initial use, after major maintenance, and on a routine basis with a maximum interval of 12-months between calibrations.

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.

4.14 PERSONNEL WORK RULES

Food storage and consumption (including candy or beverages), the use of cigarettes, or the application of cosmetics are prohibited in contaminated areas. Approval, by persons responsible for radiation protection, may be granted for these activities in a posted radiation area, which is shown by the survey to be free from removable contamination and conditions are unchanging. Food containers may not be used for storing or handling radioactive material.

4.15 RADIATION PROTECTION EVENT REPORTS

VNC will notify the NRC of events involving radiation or radioactive material in accordance with 10 CFR 20.2201, 2202, 2203 and 10 CFR 70.50. These reports will be made either in writing or as required, to the NRC Operations Center and will include as appropriate:

- Date, time, and location of the event

- Description of the event, including the radiological or chemical hazards involved, isotopes, quantities, and form of material

- Actual or potential health and safety consequences to workers, public and environment
- Sequence of occurrences leading to the event
- Response actions or corrective steps taken or planned to prevent against recurrence
- Notifications made or planned to local, State or other Federal agencies
- Plans for any press releases related to the event

4.16 FACILITIES AND EQUIPMENT

A description of the facilities, processes, equipment, types and quantities of material, authorized activities and special authorizations are described in Chapter 1, Sections 1.1, 1.2, and 1.3.

CHAPTER 10.0
DECOMMISSIONING

10.1 DECOMMISSIONING FUNDING PLAN/COST ESTIMATE

A Decommissioning Funding Plan (DFP) and cost estimate has been prepared and submitted pursuant to 10 CFR 70.25 to demonstrate financial capability to support decommissioning and closure activities.

The DFP establishes decommissioning criteria, describes key assumptions, outlines major technical approaches, and provides both a detailed site specific cost estimate and a certification of financial assurance for the decommissioning of facilities and equipment containing licensed radioactive material within the scope of SNM-960. The DFP is current and future revisions will be in accordance with 10 CFR 70.25(e).

The GEH Vallecitos Nuclear Center has been in operations since 1957. The DFP was created in the 1970's and has been periodically revised in accordance with regulations and NRC guidance since that time. This Chapter and the DFP cost estimate provide information that is consistent with many aspects of NUREG/CR-1757 and is also consistent with the previously accepted requirements for providing this information. Also, the current process of determining decommissioning costs has been reviewed to ensure that the applicable evaluation criteria for unrestricted release listed in guidance from NUREG/CR-1757 have been incorporated. In addition, the DFP addresses the key elements of NUREG/CR-1757 including (1) Decommissioning Process (2) Characterization, Survey, and Free Release Criteria; and (3) Financial Assurance, Recordkeeping, and Timeliness. In 2003 as a publicly traded company, GE adopted the use of Financial Accounting Standard Board (FASB) guide 143 to account for decommissioning liability.

10.1.1 The cost estimate is reviewed and adjusted annually. The cost estimate is updated to reflect completed dismantlement activities, current contamination levels or events that could result in subsurface contamination requiring remediation, inflation, changes in waste volume and/or transportation and disposal costs, prices of goods and services, changes in decommissioning techniques, and any other relevant changes in facility conditions. Checklists are used to validate the cost estimate taking into consideration specific factors to determine if changes are warranted. Examples include waste volumes, remediation activities that may have occurred that impacted waste volumes or labor, labor rates, disposal rates, transportation costs, inflation rates, and shared

services (insurance, fees, and utilities). Every three years a more detailed review is performed that includes review and validation of assumptions. These reviews meet the applicable requirements of 10 CFR 70.25(e).

10.1.2 Cost estimates used in this DFP are based on documented and reasonable assumptions including actual costs that have been incurred performing liability reduction activities. Cost estimates are sufficient to allow an independent third party to assume responsibility for decommissioning the facility including labor, equipment, sampling, laboratory and miscellaneous expenses such as overhead and contractor profit.

10.1.3 The cost estimate does not take credit for: 1) any salvage value that might be realized from the sale of potential assets during or after decommissioning, or 2) reduced taxes that might result from payment of decommissioning costs or site control and maintenance costs.

10.1.4 The cost is based on a license termination without the need for continued surveillance. The cost is accreted on an annual basis to account for inflation.

10.1.5 The cost is based on the conditions expected to be present at the end of plant life. However, adjustments are made on an annual basis as described above.

10.1.6 All the major decommissioning tasks or activities outlined in NUREG -1757 are in the cost estimate and include the planning and preparation, decontamination and/or dismantling of radioactive facility components, final radiation survey, packing materials, shipping, waste disposal, equipment/supply, laboratory and miscellaneous costs. The key assumptions are discussed in Chapter 4 and of the DFP.

10.1.7 The plan is for unrestricted release of the facilities covered by the DFP. There are no known areas of confirmed soil or groundwater contamination associated with licensed activities covered by the DFP. Restoration of contaminated areas on facility grounds and site stabilization are assumed to not be required. Nonetheless, the DFP includes a conservative estimate for the removal and disposal of soil that provides shielding for the hillside material storage area and does not anticipate removal of large amounts of soil. Therefore, no cost for restoration, stabilization or long-term surveillance is included.

10.2 COST ESTIMATE ASSUMPTIONS

The original estimates were made for all GE radioactive material licensed facilities at the Vallecitos site which included 4 reactors, the SNM-960 facilities and the State of California byproduct material license CA-0017-1.

All irradiated spent fuel in storage will have been removed from the site prior to initiation of decommissioning and closure activities. The US Department of Energy has contractual responsibility to dispose of this fuel and the cost of such disposal is separately covered under Standard Contracts entered into under the Nuclear Waste Policy Act. If, at the time of desired decommissioning continued storage is required, GEH, as necessary, will make appropriate arrangements to remove the fuel to an authorized recipient.

The estimated total cost provided in the decommissioning funding plan for the SNM-960 facility includes a 25-percent contingency to allow for unforeseen problems that might arise during the activity. The facility will be decommissioned such that the facilities can be released for unrestricted use.

The manpower requirements, timeframes and estimating equations discussed in both NUREGs were used to develop the detailed cost estimate. These estimates were based on interviews with site personnel, scaling factors from building volumes and foot prints, and comparisons to previous other decommissioning projects.

Since 2003 GEH has engaged in liability reduction activities across its facilities. These efforts have further validated that the prepared estimates are conservative and reasonable. In these activities the projected actual costs have consistently been in line with the estimated cost. These include the removal of over 10,000 cubic feet of debris from the former vaporization area of the Wilmington facility, the removal of more than 1,000,000 cubic feet of soil like material from the Wilmington facility, the removal of over 13,000 cubic feet of material from the VBWR in Vallecitos, CA and the removal of over 26,000 cubic feet of material from the process canyons in Morris, IL. All of these projects were accomplished by contract labor and the costs were comparable to the expected cost for labor, packaging, shipment and burial of the materials. The planning and professional cost associated with the future decommissioning of the sites was unaffected and continued to accrete due to inflation over the period of material removal.

10.3 FINANCIAL SURETY

Appropriate financial assurance instruments are provided to demonstrate that sufficient funds will be available when needed for required decommissioning activities. The most recent financial instruments and supporting documentation are shown in Chapter 8 of the DFP. This information is updated and submitted to NRC as needed.