6/12/97

GE Nuclear Energy

General Electric Company
Vallecitos Nuclear Center
P.O. Box 460, Vallecitos Road
Pleasanton, CA 94566

70-754

June 4, 1997

Michael F. Weber, Chief
Licensing Branch
Division of Fuel Cycle Safety and Safeguards
Office of Nuclear Material Safety and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Reference: License SNM-960, Docket 70-754.

Dear Mr. Weber:

Enclosed are replacement pages to Appendix A, "License Conditions for the Vallecitos Nuclear Center", and Appendix B, "Demonstration for Special Nuclear Material License Renewal for the Vallecitos Nuclear Center", to our current License SNM-960. These pages amend, delete and replace the existing pages in the subject document. The purposes of these changes are to correct typographical errors, update organizational changes, and update the organization chart and personnel resumés.

Description of changes:

App. A, page A-10-2	Table 10.4: Change the unit for the stream bottom Cs-137 action level to 1.5×10^{-5} μCi/gm (the previous unit, pCi/gm, was incorrect).
App. A, page A-10-3	Table 10.5: Change the units for the vegetation action levels for gross alpha and gross beta to 1.0×10^{-5} μCi/gm and 5.0×10^{-5} μCi/gm, respectively (the previous units, pCi/gm, were incorrect).
App. B, Sect. 1.0, p. 1-6	Paragraph 1.5.11: Change to "This building has been closed."

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App. B, Sect. 2.0, p. 2-1	Replace references to "Irradiation Processing Operation (IPO)" with "Vallecitos and Morris Operations (V&MO)". Replace "Vice President & General Manager, GE-NE" with "President, GE Nuclear Energy".
App. B, Sect. 2.0, pp. 2-3 and 2-4	Rearrange and renumber component descriptions. Add and modify words in the descriptions. Add to paragraph 2.6: "(currently Region IV Walnut Creek Field Office)".
App. B, Sect. 2.0, p. 2-14	Replace Figure 2.1, "Vallecitos Nuclear Center Administrative Organization Chart".
App. B, Sect. 2.0, p. 2-15	Replace Figure 2.2, "Nuclear Safety Organization".
App. B, Sect. 2.0, p. 2-16	Replace Figure 2.3, "Radiation Safety Structure".
App. B, Sect. 2.0, p. 2-17	Replace Figure 2.4, "Criticality Safety Structure".
App. B, Sect. 2.0, Add. A, p. 2-3A	Replace A.2, J. H. Cherb's resumé with C. W. Bassett's resumé.
App. B, Sect. 2.0, Add. A, p. 2-4A	Replace A.3, G. E. Cunningham's resumé with B. M. Murray's resumé.
App. B, Sect. 2.0, Add. A, p. 2-5A	Replace A.4, B. M. Murray's resumé with blank page (pending).
App. B, Sect. 2.0, Add. A, p. 2-6A	Replace A.5, A. F. Mindt's resumé with A. M. Roger's resumé.
App. B, Sect. 3.0, p. 3-4	Section 3.5.1, last paragraph: Replace "max. 18,500" with "nominal 27,000" to update ventilation operating conditions. Section 3.5.2, second paragraph: Add units ("μCi/ml") to discharge levels for gross alpha and gross beta-gamma.
App. B, Sect. 3.0, p. 3-5	Paragraph 3.7: Delete "major" and "a dispensary attended part time by a registered nurse" to represent actual operations.

If you or your staff have any questions about any of these corrections or updates, please contact me at (510) 862-4455.

Sincerely,

B. M. Murray
Senior Licensing Engineer

Enclosures (Original + 5 copies)

cc: USNRC Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

10.2 ENVIRONMENTAL SAMPLING

10.2.1 Groundwater Sampling

Two groundwater sampling stations are maintained on site. One is located south of the main active operations areas in the main groundwater flow. The second is located upstream. They are sampled on a quarterly basis.

Table 10.3. Groundwater Action Levels

Parameter	Action Level ($\mu Ci/cm^3$)
Gross Alpha	3.0×10^{-8}
Gross Beta-Gamma	5.0×10^{-8}

Additional wells are located around Building 102 to monitor potential contamination from a leak in the building storage pool (repaired in 1975). No action levels are assigned to these wells.

10.2.2 Stream Bottom

The bottom soil at the point where the natural drainage ditches exit the site is sampled annually.

Table 10.4. Stream Bottom Action Levels

Parameter	Action Level
Gross Alpha	3.0×10^{-5} μCi/gm
Co-60	8.0×10^{-6} μCi/gm
Cs-137	1.5×10^{-5} μCi/gm

10.2.3 Vegetation

Vegetation is sampled annually.

Table 10.5. Vegetation Action Levels

Gross Alpha	1.0×10^{-5} μCi/gm
Gross Beta-Gamma (after adjustment for K-40)	5.0×10^{-5} μCi/gm

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1.5.9 400 Area

The 400 Area consists of two buildings, 400 and 401. Building 401 is devoted chiefly to offices, while Building 400 currently is used for storage of nonradioactive materials.

1.5.10 Building 104

This building is used for warehousing.

1.5.11 Building 300

This building has been closed.

2.0 ORGANIZATION AND ADMINISTRATION

All Vallecitos Nuclear Center (VNC) activities are conducted under the management of General Electric Nuclear Energy (GE-NE).

Several components of GE-NE perform activities at VNC. However, the Manager, Vallecitos and Morris Operations (V&MO), who is responsible for regulatory compliance at VNC, reports to the President, GE Nuclear Energy.

2.1 ORGANIZATION

An organization chart for VNC is included at the end of this section as Figure 2.1. An organization chart for the Nuclear Safety function is included as Figure 2.2.

2.2 DELEGATION OF RESPONSIBILITY

The management of the components at VNC has established a policy of protection of employees, the public, and the environs from potential industrial, radiation, and nuclear hazards that could occur through activities conducted in each component's facilities. He has delegated the responsibility for implementing this basic policy through line managers to the manager and supervisor of each activity in which radioactive materials are handled, used or stored. Additionally, V&MO has experienced and competent staff personnel to provide expert advice and guidance to all components in matters of radiation and criticality safety. The Manager, V&MO, has been delegated responsibility to act as the chief compliance safety officer for all VNC operations. Industrial safety is provided for VNC by the Industrial Safety & Hygiene function located in San Jose.

With respect to the radiation and criticality safety programs, the basic line and staff relationships are illustrated in Figures 2.3 and 2.4, respectively.

d. Radiological Engineering. Assist in improved operation of VNC facilities and the overall radiation protection program through the analyses of existing systems, equipment and operation thereof and the recommendation of improved systems, equipment or methods. Generally, these studies will be safety oriented.

e. Training. Establish and administer a site-wide training program at VNC to ensure adequate knowledge of radiation control procedures.

f. Criticality Safety. Perform criticality control analyses to establish safe batches, geometries, concentrations, and spacing of special nuclear materials and equipment. Audit the criticality control environment and conduct educational programs in criticality matters.

g. Emergency Preparedness and Response. Maintain the site-wide emergency procedures; coordinate and audit training.

h. Nuclear Materials Safeguards. Estab[illegible] and administer the basic system of special nuclear material control. Assure that SNM control policies and practices of all components are coordinated with the requirements of nuclear safety, licensing and shipping groups. Perform reviews of compliance with internal control procedures and regulatory requirements.

i. Physical Security. Develop and operate security programs to safeguard special nuclear materials and corporate property.

2.5 OTHER FUNCTIONS CONTRIBUTING TO OVERALL SAFETY

In addition to the principal radiation and nuclear safety functions of the staff components previously described, the following functions make significant contributions to the overall safety program.

a. Transportation and Materials Distribution Function. Assure all radioactive materials shipments are in compliance with applicable Federal and State regulations (functions both at San Jose and VNC).

b. Industrial Safety and Hygiene Function. Develop programs to protect the employees from industrial hazards, including operation of medical and safety education programs (located at San Jose).

c. Environmental Safety Function. Develop programs to protect the employees and the general public from exposure to hazardous materials and assure proper disposal of hazardous wastes (located at VNC and San Jose).

2.6 TECHNICAL PERSONNEL CAPABILITIES

The primary responsibility for operational radiation safety for the operations conducted in the various Vallecitos facilities involving special nuclear material rests with the supervisor or manager of each facility. Equally important are the knowledge and experience of personnel in the Nuclear Safety function. Since the issuance of License SNM-960 in 1966, the Commission's Region V office (currently, Region IV Walnut Creek Field Office) has inspected VNC to assure that adequate levels of technical expertise are maintained in all positions. Resumés for key personnel are included as Addendum A to this section.

2.7 IMPLEMENTATION OF CRITICALITY CONTROL PROGRAM

The program for protection against accidental conditions of criticality is implemented by means of functional responsibility assignments. Managers whose operations require the use of quantities of special nuclear materials approaching a theoretical minimum critical mass, or greater, are responsible for integrating and measuring the efforts of line and staff participants in this program. The principal participants and their responsibilities are outlined below.

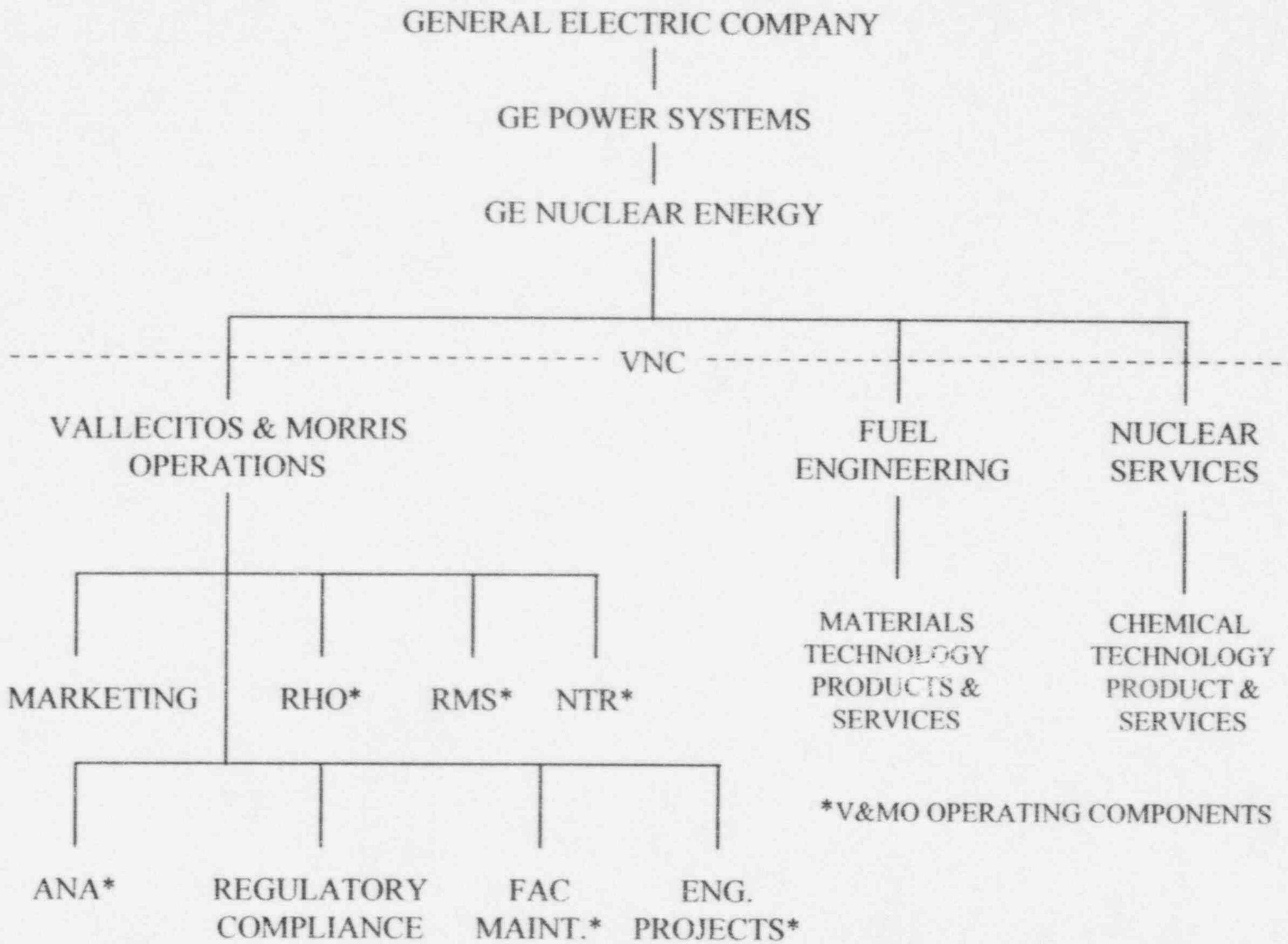

FIGURE 2.1. VALLECITOS NUCLEAR CENTER ADMINISTRATIVE ORGANIZATION CHART
(Components shown below the dotted line are located at VNC)

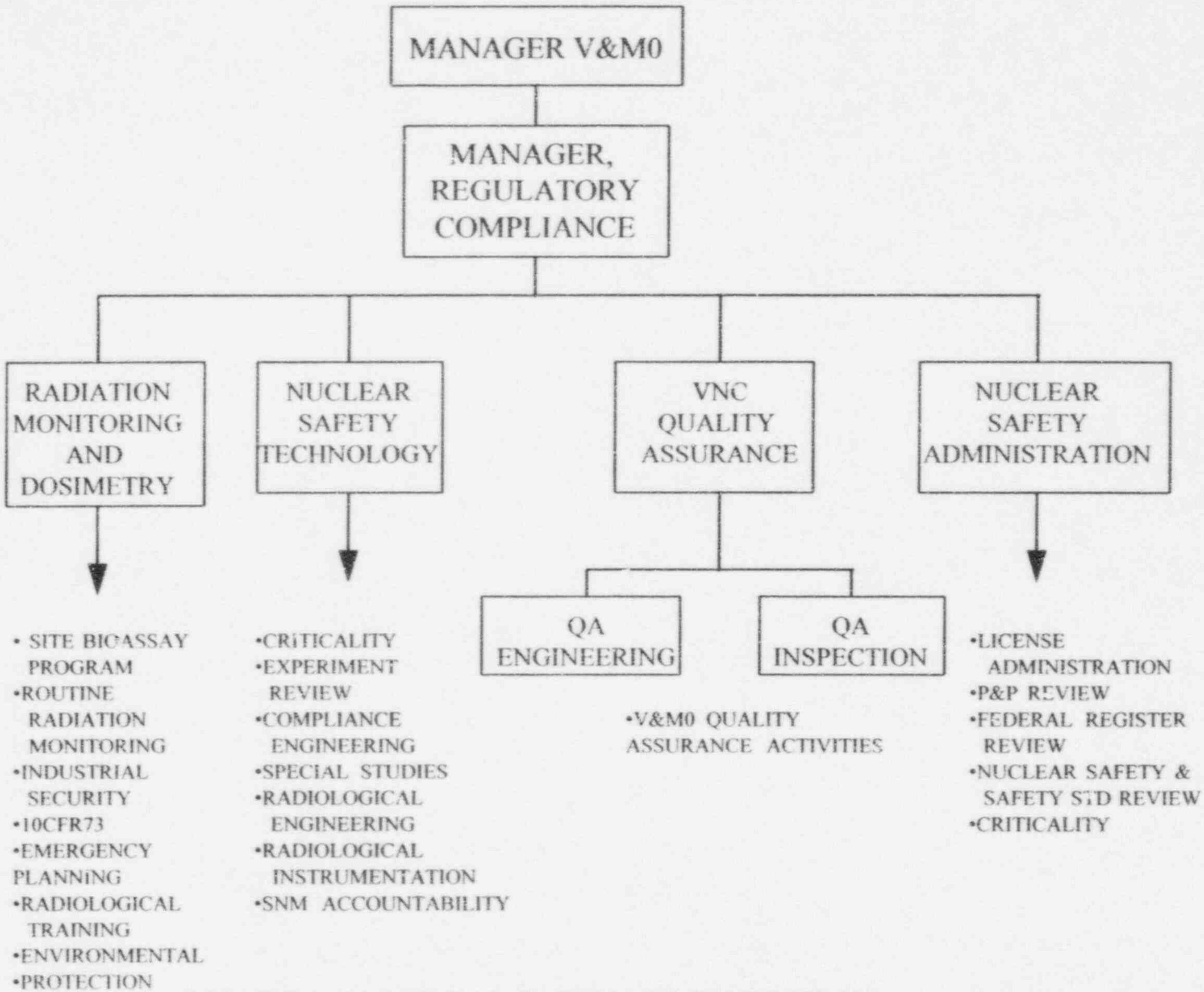

FIGURE 2.2. NUCLEAR SAFETY ORGANIZATION

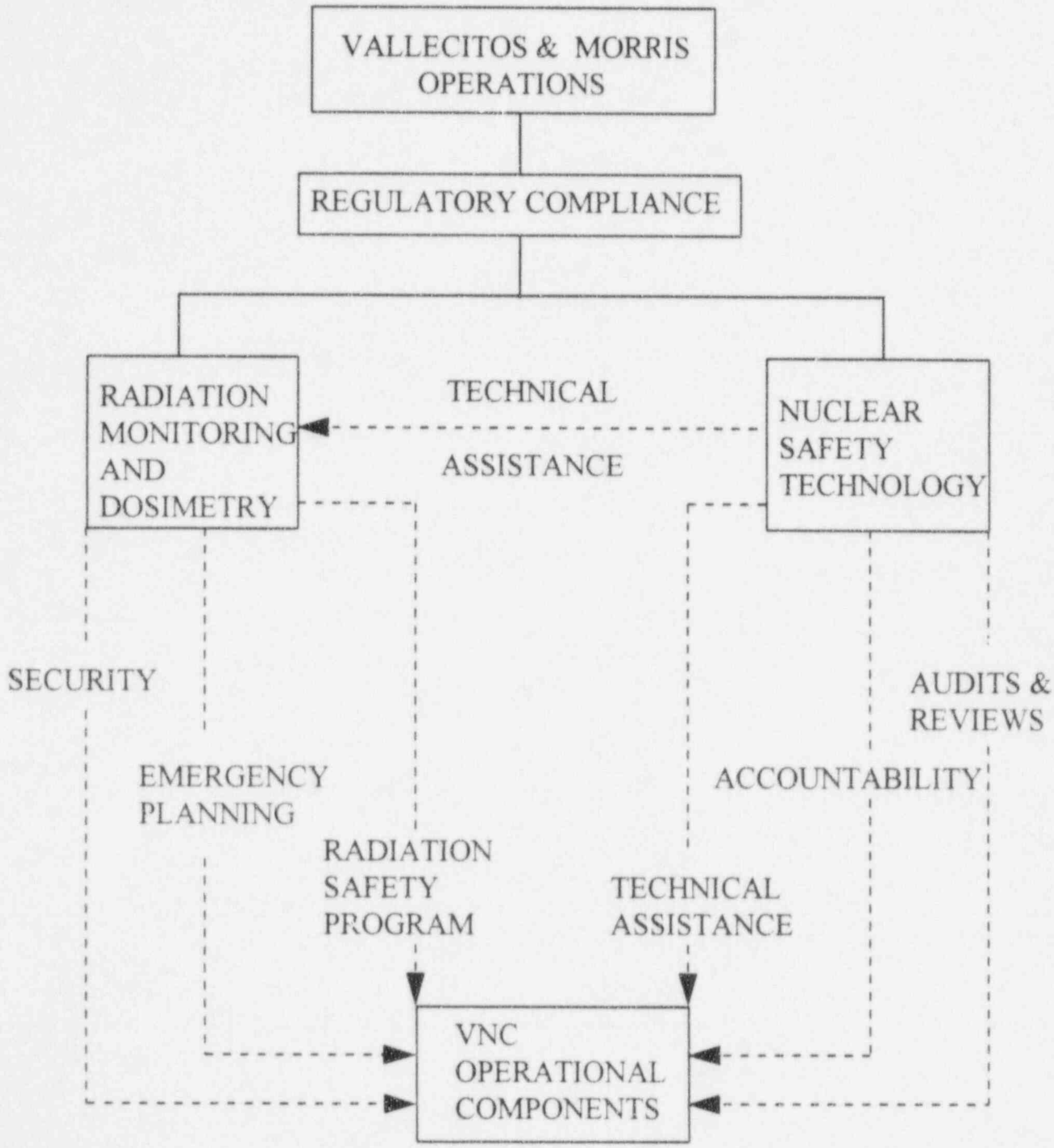

FIGURE 2.3 RADIATION SAFETY STRUCTURE

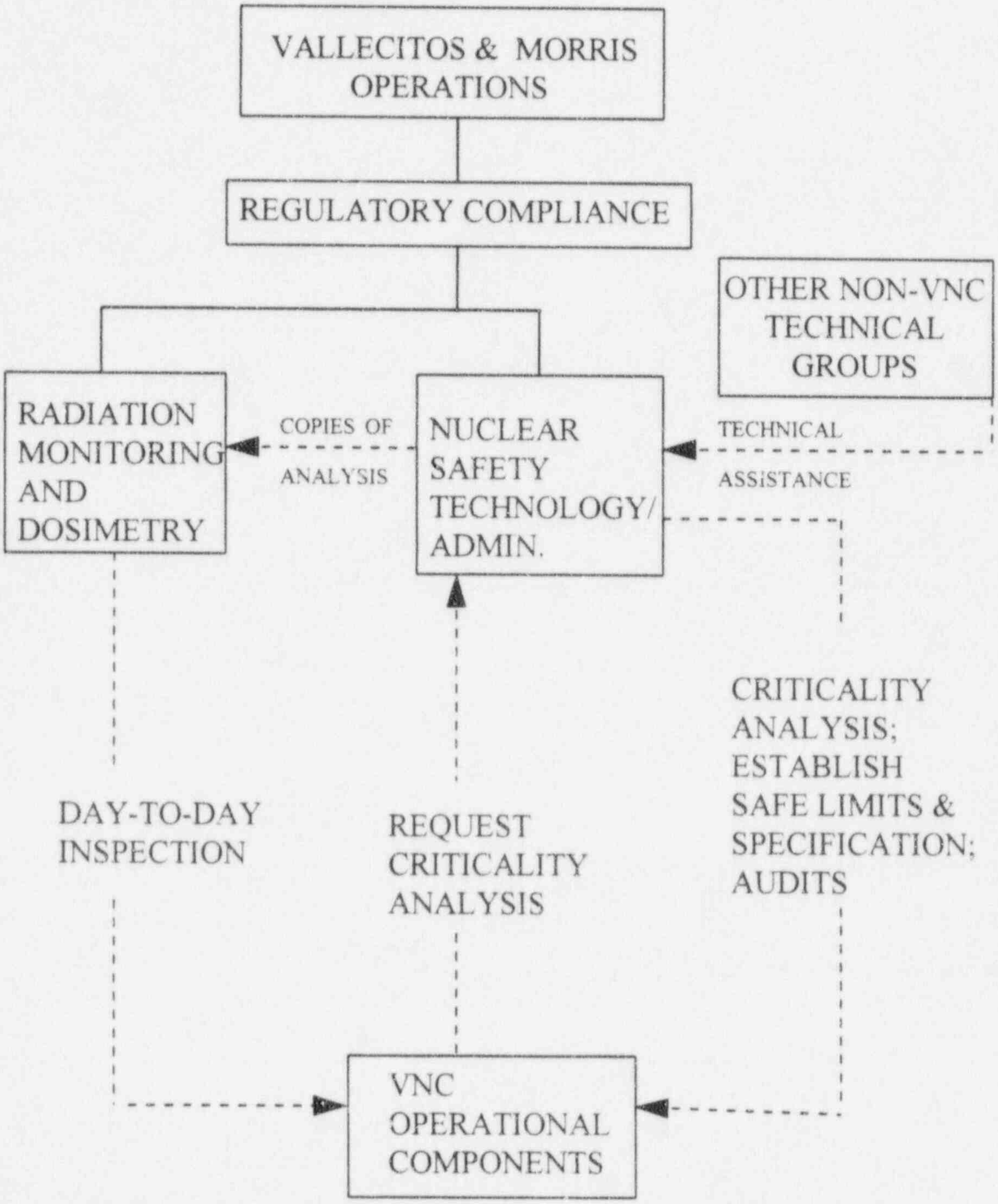

FIGURE 2.4. CRITICALITY SAFETY STRUCTURE

A.2 C. W. Bassett; Manager, Regulatory Compliance; B.S., Physics, Purdue University, 1973; M.S., Systems Management, University of Southern California, 1981.

Mr. Bassett joined the General Electric Company (GE), Vallecitos Nuclear Center (VNC) in 1992. He has been involved in radiation protection activities since coming to VNC as a Senior Compliance Engineer. In this capacity he performed compliance audits of the various NRC and State licenses which the site holds, as well as review of changes to Standard Operating Procedures and Change Authorizations. He also provided Nuclear Safety oversight of the operations at the Nuclear Test Reactor (NTR), including review and approval of Experiment Approvals and Engineering Requests. Since joining GE-VNC, Mr. Bassett also has acted as the Site Emergency Planning Coordinator with responsibilities that included audit and upkeep of the Site Emergency Plan and Procedures; placement and training of site emergency personnel; and planning, conducting, and critiquing of emergency drills and exercises.

During a 20-year Navy career, Mr. Bassett spent five years in the Nuclear Navy in assignments involving radiation protection and reactor operations and maintenance. He attended Navy Nuclear Power School, Navy Prototype training, and served aboard the navy fleet ballistic missile submarine, USS Will Rogers (SSBN 659). He qualified on submarines on the USS Will Rogers as well as total nuclear plant qualification and reactor operator qualification. Mr. Bassett also spent ten years commissioned service in the Navy, serving in the Aviation Antisubmarine Warfare community in various assignments which included operations, training, maintenance, safety, and administrative duties.

In 1996, Mr. Bassett was appointed Manager, Regulatory Compliance. His responsibilities include nuclear safety, the development of radiological safety criteria at VNC, and monitoring the radiological conditions to assure safety of workers and the public.

A.3 B. M. Murray; Senior Licensing Engineer; B.S., Mechanical Engineering, Chico State College, 1963.

Mr. Murray has had 34 years of experience in nuclear safety and operations activities at the Vallecitos Nuclear Center. He has expert capabilities in radiological engineering and risk evaluations, and his previous assignment included radiological engineering responsibilities for both the VNC and San Jose sites, responsibility for criticality safety, and SNM accountability. He was assigned to the position of Senior Licensing Engineer in March, 1997. Responsibilities include the licensing and liaison activities between VNC and the various regulatory agencies.

From 1963 to 1965, Mr. Murray's assignments on a training program included nuclear safety operations and technical analysis, BWR operations, and test reactor operations. He received a General Electric Test Reactor Operator's License in 1964.

From 1965 to 1974, Mr. Murray held the positions of Facility Engineer, Product Manager, and Isotope Production Supervisor in the Remote Handling Operation. His assignments included equipment design, project managing, sealed source fabrication, supervision of a processed isotope production crew, and facility planning and modification.

Mr. Murray's assignments as Nuclear Safety Engineer during the period 1974 to the present time include: technical risk evaluations, computer-aided shielding calculations, internal and external dosimetry measurement and evaluation, radioactive effluent system evaluations and release limits, hypothetical accident evaluations, facility operating license application input preparation, stack monitoring system evaluations and recommendations, operating standards and procedures preparation and review, health physics instruments evaluation and specification, and review of proposed site activities. He became a California Registered Professional Mechanical Engineer in 1974. He attended and completed course work for the Health Physics Society School on Internal Radiation Dosimetry, Principles and Practices in June, 1983, and the University of New Mexico-sponsored Nuclear Criticality Short Course in May, 1985. He completed a three-year training program for mid-career engineers in state-of-the-art analysis techniques from 1983 to 1986.

A.4

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A.5 A. M. Rogers; Specialist, Radiation Monitoring; A.S., Nuclear Medicine, George Washington University, 1983.

Mr. Rogers was trained as a Clinical Laboratory Technologist and Nuclear Medicine Technologist after joining the U.S. Army in 1980. As a Nuclear Medicine Technologist from 1982 to 1986 he was assigned to Madigan Army Medical Center, Ft. Lewis, Washington, and Noble Army Hospital, Ft. Knox, Kentucky. His duties included a wide variety of nuclear medicine procedures, including biological function studies, radiochemistry, radiopharmacy, in-vitro/in-vivo studies, dosimetry, radioimmunoassay, and radiological control. He was assigned as NCOIC of the Radiopharmacy and Radioimmunoassay Laboratory until his term of enlistment ended in 1986.

From 1992 to 1995 Mr. Rogers worked for the Department of Energy as a Health Physics Technician at Los Alamos National Laboratory, Los Alamos, New Mexico. Mr. Rogers was assigned as a Senior Health Physics Technician at Los Alamos Meson Physics Facility (LAMPF), an 800-MeV linear accelerator. He held a supervisory position on a rotating shift crew providing operational health physics coverage for the entire accelerator. He was the senior lead technician and was responsible for writing and implementing health physics operational plans for special projects at the Los Alamos Neutron Scattering Center. He also was responsible for writing detailed site-specific procedures for radiological control in compliance with government regulations and was a site ALARA committee board member.

In 1995 Mr. Rogers joined General Electric Nuclear Energy at the Vallecitos Nuclear Center in Pleasanton, CA, and certified as a Radiation Monitoring Technician. He served in that capacity evaluating radiological conditions, specifying appropriate radiation measures, and overseeing the work environment. In addition, he performed a variety of functions involving environmental monitoring and in developing health physics operational plans for several special projects. Having assumed the duties of Specialist, Radiation Monitoring, in 1997 he now is responsible for coordinating the work of the Radiation Monitoring Technicians and the Specialist, Facilities Protection. Other responsibilities include Facilities Security Officer, Environmental Monitoring Program Administrator, Training Program Coordinator and Instructor, Respiratory Protection Program Administrator, regulatory compliance and nuclear safety audits, nuclear safety procedures and VNC Safety Standards review and implementation, instrumentation, ALARA, air monitoring, dosimetry, and special projects.

Certifications: NRRPT-certified Radiological Control Technician, 1993; General Electric Radiation Monitoring Technician, 1995; DOE-certified Radiological Control Technician, 1993; certified radioactive material shipper, 1994.

The facility has a horizontal tube facility for storage of high-level radioactive material contained in sealed encapsulations called "waste liners". The horizontal tube facility is made of two rows of 40-foot-long concrete-lined steel pipes mounted horizontally and covered with earth. Eleven of the tubes have a 6-inch inside diameter, and seven have a 10-inch inside diameter. The tubes in either row are spaced on 3-foot centers, and the rows are spaced 3 feet apart with the tubes in the bottom row offset halfway between the tubes in the upper row. Shielding is provided on the top and sides of the facility by a minimum of 6 feet of compacted earth. Shielding at the front and back ends consists of 3 feet of concrete in which the pipes have been anchored, plus concrete-filled step plugs with a minimum of 3 feet of concrete shielding in the plug. Additional aboveground space for lower level waste or other materials is available within this fenced and posted facility.

The facility is covered by a prefabricated metal building. Ventilation (nominal 27,000 cfm) is operated when material is transferred. Air is exhausted through a bank of absolute filters (>99.97% efficient) and the system is sampled when vent system is operating.

3.5.2 Liquid Wastes

Liquid wastes are routed from laboratory sinks and gravity drains leading from sources known to be or potentially contaminated through regulated pipe lines to retention tanks located in each building where such wastes are generated. Such wastes are transferred periodically to a waste treatment plant for concentrating and solidifying the liquid wastes which are described in Section 13 of this application.

Other liquid waste (excluding sanitary waste) flows through a separate piping system into any three of four 60,000-gallon retention basins. After sampling and determining that radioactivity, if any, is within permissible discharge levels (3.0×10^{-8} μCi/ml gross alpha and 5.0×10^{-8} μCi/ml gross beta-gamma), the water in the basin is released.

Sanitary wastes are treated, and the waste waters are sprinklered on site.

3.6 EMERGENCY EQUIPMENT

A vehicle is available to Radiation Safety and can be equipped quickly with a supply of protective clothing, first aid equipment, respiratory protection equipment, and portable instrumentation and sampling equipment for use during emergencies. Emergency equipment also is stored in selected areas on site.

3.7 INDUSTRIAL SAFETY EQUIPMENT

In conjunction with the radiation safety program at VNC, industrial health and safety of VNC personnel also are emphasized. Some of the protection facilities and equipment which are available include portable extinguishers, sprinkler systems, and a wide range of typical industrial safety equipment.

3.8 CRITICALITY ALARM SYSTEMS

In any Vallecitos Nuclear Center area in which special nuclear material containing more than 500 grams of U-235 is used or stored and does not otherwise qualify as a "subcritical area" as defined in Section 3.16 of Appendix A, a monitoring system, including gamma or neutron-sensing devices which will energize an audible alarm in the event of criticality, is installed and maintained. The system in use on site is described in the following paragraphs.

3.8.1 LiI Crystal System

This monitoring system consists of a lithium-iodide crystal coupled to a photomultiplier tube. Failure of any detection circuit component which would prevent criticality detection activates a warning light on the unit. Failure of any signal-producing component is detected during the monthly test.