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United States Nuclear Regulatory Commission

Sargent & Lundy Nuclear Quality Assurance Program
Topical Report SL-TR-1A, Revision 16 Transmittal

United States Regulatory Commission
Document Control Desk
Washington, DC 20555

Gentlemen:

In accordance with 10 CFR 50.4 (b)(7)(ii), enclosed is a signed copy of Revision 16 of our Nuclear Quality Assurance Program. This revision was accepted in a letter from Mr. Stephen Dembek of the NRC to me dated March 1, 2002.

Yours very truly,

R. L. Kurtz
Quality Assurance Manager

RLK:RPS:mt
Enclosure
Copy:
P. L. Wattelet (1/0)

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LIST OF EFFECTIVE PAGES

Pages	Revision
Statement of Policy	14
00-1 to 00-8	16
01-1 to 01-8	16
02-1 to 02-6	16
03-1 to 03-9	14
04-1 to 04-5	14
05-1 to 05-2	14
06-1 to 06-3	16
07-1 to 07-8	16
08-1 to 08-2	14
09-1 to 09-2	14
10-1 to 10-6	14
11-1 to 11-3	14
12-1 to 12-5	14
13-1 to 13-2	14
14-1	14
15-1 to 15-3	14
16-1 to 16-2	14
17-1 to 17-4	16
18-1 to 18-5	16

SARGENT & LUNDY LLC

NUCLEAR QUALITY ASSURANCE PROGRAM

TOPICAL REPORT

SL-TR-1A

APPROVED
BY: R. L. Kurtz

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QUALITY ASSURANCE MANAGER

P. L. Wattelet

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CHIEF EXECUTIVE OFFICER

REVISION 16

DATE: 04-01-2002

00.00 INTRODUCTION

This Sargent & Lundy LLC (S&L) Nuclear Quality Assurance Program was established by management policy. It is intended to be used primarily to assure the quality of modifications and design analyses for operating nuclear plants *and gaseous diffusion plants*, and of the design and construction of radioactive material packaging and of independent spent fuel storage installations (ISFSIs). It is, however, written to also assure the quality of design analyses and modifications for nuclear plants that are under construction or are being decommissioned. The program is employed where the structures, systems and/or components are classified as important to safety insofar as they prevent or mitigate the consequences of postulated accidents that could cause undue risk to the health and safety of the public. Safety-related structures, systems and components of nuclear power plants controlled by this Quality Assurance Program are identified in the Safety Analysis Report (usually Section 3.2) and in more detailed lists developed in response to NRC Generic Letter 83-28. Quality assurance commitments for other types of important to safety items, as found in licensees' or U.S. Department of Energy contractors' quality assurance programs and other licensing basis documents, are specified to S&L in contract documents. Project instructions or project work plans shall delineate the applicability of this program to these other types of items.

The applicable criteria in this program shall be applied in a graded approach to radioactive material packaging and ISFSIs. The application shall be to an extent that is commensurate with the importance to safety, such as

described in Appendix A of Regulatory Guide 7.10 (see item s in this chapter), or its equivalent for ISFSIs, such as the classification system described in NUREG/CR-6407 titled "Classification of Transportation Packaging and Dry Spent Fuel Storage System Components According to Importance to Safety."

The applicable criteria in this program shall be applied in a graded approach to operating gaseous diffusion plants to an extent that is commensurate with the importance to safety and is consistent with the quality assurance program implemented by the United States Enrichment Corporation (USEC), or its successor, in accordance with 10 CFR 76.93.

To implement the program, standard operating procedures have been prepared. Revisions to the Nuclear Quality Assurance Program and the standard operating procedures will be made, in accordance with a standard operating procedure, for any of the following reasons:

a. the program or standard operating procedures may be incomplete, unclear or incorrect;

b. the resolution of a nonconformance may require change to some portion of the program or standard operating procedures;

c. the personnel implementing or auditing the program or standard operating procedures determine that the program and/or procedures do not effectively control a work function;

d. the standards, codes, regulatory requirements, or organization may be changed.

S&L policy makes compliance with the S&L Nuclear Quality Assurance Program and implementing procedures mandatory for all personnel performing activities relating to safety.

For limited scope projects, such as modification work for operating plants, implementation of various elements of this Nuclear Quality Assurance Program will depend on S&L's assigned responsibilities on the project.

The S&L Nuclear Quality Assurance Program, as represented herein, complies with Title 10 of the Code of Federal Regulations, Part 50, Appendix B, titled "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants." S&L is committed to meeting and implementing the applicable provisions of the following requirements except as indicated below and/or as these provisions may be modified by a commitment in an applicable SAR:

a. ANSI/ANS-3.1 - 1987 - Selection, Qualification and Training of Personnel for Nuclear Power Plants. For qualifications of the Quality Assurance Manager, S&L is committed to ANSI/ANS-3.1 - 1978.

b. Regulatory Guide 1.26, February, 1976 - Quality Group Classification and Standards for Water-, Steam-, and Radioactive-Waste-Containing Components of Nuclear Power Plants.

c. Regulatory Guide 1.28, February, 1979 - Quality Assurance Program Requirements (Design and Construction) (ANSI/ASME N45.2 - Quality Assurance Program Requirements for Nuclear Facilities).

If the quality assurance program of a potential supplier is based on ANSI/ASME NQA-1, the evaluation of the supplier's program, in accordance with Section 07.01, shall include an evaluation of compliance with the applicable criteria of Regulatory Guide 1.28, August, 1985 (ANSI/ASME NQA-1 - Quality Assurance Requirements for Nuclear Facility Applications).

For design activities for which Section III of the ASME Boiler and Pressure Vessel Code permits a supplier not accredited by ASME to perform these activities, the evaluation of the supplier's program shall include an evaluation of compliance with Appendix B to 10 CFR 50.

d. Regulatory Guide 1.29, September 1978 - Seismic Design Classification.

e. Regulatory Guide 1.58, September 1980 - Qualification of Nuclear Power Plant Inspection, Examination, and Testing Personnel; (ANSI/ASME N45.2.6 - Qualifications of Inspection, Examination, and Testing Personnel for Nuclear Power Plants).

The QA experience cited for Level I, II and III should be interpreted to mean actual experience in carrying out the types of inspection, examination or testing activity being performed.

f. Regulatory Guide 1.64, Revision 2, June 1976 - Quality Assurance Requirements for the Design of Nuclear Power Plants; (ANSI N45.2.11 - Quality Assurance Requirements for the Design of Nuclear Power Plants). S&L takes exception to Regulatory Position 2 regarding design verification reviews. Refer to S&L position in Section 03.04.

g. Regulatory Guide 1.74, February 1974 - Quality Assurance Terms and Definitions; (ANSI N45.2.10 - Quality Assurance Terms and Definitions). S&L deviates from these documents in the following definitions:

(1) Certification - the act of determining, verifying, and attesting in writing to the qualifications of personnel, processes, procedures, or items in accordance with specified requirements.

(2) Inspection - examination or measurement to verify whether an item or activity conforms to specified requirements.

(3) Surveillance - the act of monitoring or observing to verify whether an item or activity conforms to specified requirements.

(4) Testing - an element of verification for the determination of the capability of an item to meet specified requirements by subjecting the item to a set of physical, chemical, environmental, or operating conditions.

h. Regulatory Guide 1.88, Revision 2, October 1976 - Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records; (ANSI N45.2.9 - Requirements for Collection, Storage, and Maintenance of Quality Assurance Records for Nuclear Power Plants). S&L takes exception to the four-hour minimum fire-rating requirement for a single record storage facility. Refer to S&L position in Section 17.03.

i. Regulatory Guide 1.116, May 1977 - Quality Assurance Requirements for Installation, Inspection, and Testing of Mechanical Equipment and Systems (ANSI N45.2.8 - Supplementary Quality Assurance Requirements for Installation, Inspection and Testing of Mechanical Equipment and Systems for the Construction Phase of Nuclear Power Plants).

j. Regulatory Guide 1.123, July 1977 - Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants; (ANSI N45.2.13 - Quality Assurance Requirements for Control of Procurement of Items and Services for Nuclear Power Plants).

k. Regulatory Guide 1.127, Revision 1, March 1978 - Inspection of Water-Control Structures Associated with Nuclear Power Plants.

l. Regulatory Guide 1.144, September 1980 - Auditing of Quality Assurance Programs for Nuclear Power Plants; (ANSI/ASME N45.2.12 -Requirements for Auditing of Quality Assurance Programs for Nuclear Power Plants).

For certain activities, S&L takes exception to Regulatory Position C.3.b(1) regarding external audits. Refer to position in Section 07.03.

m. Regulatory Guide 1.146, August 1980 - Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants; (ANSI/ASME N45.2.23 - Qualification of Quality Assurance Program Audit Personnel for Nuclear Power Plants).

n. ANSI/ASME N45.2.5-1978 - Supplementary Quality Assurance Requirements for Installation, Inspection, and Testing of Structural Concrete, Structural Steel, Soils and Foundations During the Construction Phase of Nuclear Power Plants.

o. IEEE Standard 336-1977 - IEEE Standard Installation, Inspection, and Testing Requirements for Instrumentation and Electric Equipment During the Construction of Nuclear Power Generating Stations.

p. NRC Letter to All Licensees of Operating Reactors and Holders of Construction Permits, "Plant Record Storage on Optical Disks (Generic Letter 88-18)", October 20, 1988.

q. *NRC Regulatory Issue Summary 2000-18, Guidance on Managing Quality Assurance Records in Electronic Media," October 23, 2000. S&L uses the guidance in this summary for authentication of electronic records, i.e., the guidance in Nuclear Information and Records Management Association, Inc. (NIRMA) Technical Guide 11-1998,*

"Authentication of records and Media." See Chapter 17.00 for further details.

r. NRC Letter to All Holders of Operating Licensees and Construction Permits for Nuclear Power Reactors, "Actions to Improve the Detection of Counterfeit and Fraudulently Marketed Products (Generic Letter 89-02), March 21, 1989.

s. NRC Letter to All Holders of Operating Licenses and Construction Permits for Nuclear Power Reactors, "Licensee Commercial-Grade Procurement and Dedication Programs (Generic Letter 91-05), April 9, 1991.

t. Regulatory Guide 7.10, June 1986 - Establishing Quality Assurance Programs for Packaging Used in the Transport of Radioactive Material.

The Topical Report is reviewed annually for continuing conformance to regulatory requirements and industry codes and standards. Changes in the Topical Report are submitted to the Nuclear Regulatory Commission in accordance with 10 CFR 50.4 (b)(7)(ii). Any reductions in commitments to the NRC contained in this Topical Report must be accepted by the NRC before implementation. Changes to this Topical Report that do not reduce commitments may be implemented prior to NRC review. The examples given in 10 CFR 50.54 (a)(3) of changes in licensees' QA program descriptions, that do not require prior NRC approval, are also applicable to this Topical Report. Those changes, that do not require prior NRC approval, must be submitted to the NRC at intervals of no greater than two years.

01.00 ORGANIZATION

01.01 S&L organizational structure and functional responsibility assignments are based on the recognition of quality assurance as an inter-disciplinary process with quality-related activities being performed by individuals at all levels. The responsibilities of persons implementing quality-related requirements are established, assigned, and documented. Assignments are such that:

a. attainment of quality objectives is accomplished by individuals assigned responsibility for specifying quality or performing work to quality assurance procedures;

b. verification of conformance to established quality requirements is accomplished by project personnel who are independent of those responsible for establishing or performing the activity;

c. personnel performing key quality assurance functions have direct access to management.

S&L's management organizational structure is shown in Figure 01.01-1, Sargent & Lundy Management Organization Chart. Company services are organized into business groups and functional support groups. The business groups are Nuclear Power Technologies and other business groups as determined by the Chief Executive Officer. The functional support groups are Engineering and Finance & Administration. The Chief Executive Officer exercises administrative control over the Directors of business groups, as well as the Director of Engineering and the Director of Finance &

Administration. Although the individual groups are distinct entities, the management and execution of their respective functions and responsibilities may involve staff sharing with other groups.

The Director of the Nuclear Power Technologies business group oversees nuclear services provided for operating and decommissioning plants and other specialized projects.

In a similar fashion, the Directors of the other business groups oversee services provided within their areas of responsibilities.

The Director of Engineering exercises administrative control over the *Project Services and Plant Support Services* Departments.

The Director of Finance & Administration exercises administrative control over the Managers of the Administrative Services, Facilities & Operations, and Human Resources Divisions. The Facilities & Operations Division is responsible for the configuration control of computer software used in production, including the review and filing of software verification and validation documentation.

The Quality Assurance Manager reports to the Chief Executive Officer.

Personnel from the Director of Engineering's staff and the appropriate support services divisions in the Finance & Administration Group normally report to the Directors of these two functional support groups. However, some personnel from these two groups may be temporarily assigned

to projects controlled by a Director of a business group, as required, to perform the necessary technical and administrative functions pertaining to design engineering, procurement, and inspection. The Director of Engineering is responsible for establishing processes, methods and techniques for achieving technical objectives. The Director of a business group has overall responsibility for the technical adequacy and acceptability of S&L nuclear design work within the responsibility of the group, and for providing feedback to the Director of Engineering on the effectiveness of the engineering processes, methods, and techniques.

Project Instructions and governing company standards are established to control quality-related activities. These instructions and company standards are reviewed by Quality Assurance for conformance to this program's requirements before issuance.

Within a business group, a project organization is established for each project in which S&L has essentially all the engineering responsibility and for services projects (or tasks) for units under construction, in operation or in decommissioning which may have been engineered by others. The size and composition of the project organization is dependent on the project responsibilities as delineated by the project scope of work. Since S&L serves a wide variety of clients with different service requirements, different project organizations may be established to best accommodate the scope of work.

For each project, the project organization is comprised of qualified individuals. In cases where an onsite design

engineering and/or services project organization is required and falls under the cognizance of the QA Program, organizational charts, functional descriptions of responsibilities and relationships, job descriptions of key personnel positions, or equivalent forms of documentation are prepared showing the lines of responsibility. Delegation of authority passes from the responsible Director of a business group and Project Director through the Project Manager to Senior Project Engineers and responsible engineers and consultants.

The responsibility for implementation of the S&L Quality Assurance Program on a project is assigned to the Project Manager. The project team provides the S&L interface with the client and major contractors, and establishes the technical requirements on the project to assure compliance with applicable codes, standards, and regulations. In project matters, the Senior Project Engineers report to the Project Manager, who reports to the Project Director, who represents S&L management on the project.

Interfacing relationships and lines of communication among S&L, the client, vendors, and major contractors on a project are established by and/or described in documents such as, but not limited to, the scope of work, the project work plan, procurement documents, and project instructions. Internal interfaces within S&L are established in company standards and procedures, project instructions, and quality assurance procedures.

The Chief Executive Officer establishes quality assurance policy and objectives. The Chief Executive Officer has delegated to the Quality Assurance Manager responsibility for providing and maintaining the Quality Assurance Program, for providing programmatic policy and direction on quality assurance, and for coordinating and verifying its implementation on projects.

01.02 Quality Assurance, as indicated in Figure 01.01-1, S&L Management Organization Chart, is independent of any S&L project organization. The Quality Assurance Manager has the authority and organizational freedom to identify quality problems within S&L, recommend or provide solutions and verify their implementation, and to stop unsatisfactory work or otherwise control further processing of a nonconforming item until the proper disposition of the unsatisfactory condition has been achieved. S&L personnel are required to bring to the attention of the Quality Assurance Manager conditions which may merit stop-work consideration. The Quality Assurance Manager provides expertise as applicable in interpretation of quality assurance requirements in codes and standards, in regulations, in NRC Regulatory Guides and in the Quality Assurance Articles, Section III, Nuclear Power Plant Components, ASME Boiler and Pressure Vessel Code.

The responsibilities and functions of the Quality Assurance Manager include, but are not limited to:

a. developing for management approval by the Chief Executive Officer standard operating procedures necessary for implementation of the program;

b. recommending to the Chief Executive Officer desirable changes in the Nuclear Quality Assurance Program;

c. reviewing procedure, administrative standards and instructions prepared by groups, departments, divisions, and project organizations for conformance to the Nuclear Quality Assurance Program and procedure requirements;

d. interfacing with clients and the Nuclear Regulatory Commission on audits and quality assurance matters;

e. interfacing with project organizations and support divisions to assist in the implementation of quality assurance requirements on a project;

f. maintaining and controlling the distribution of the Nuclear Quality Assurance Manual and revisions thereto;

g. training and instructing S&L personnel performing quality-related activities in the implementation of the Nuclear Quality Assurance Program and standard operating procedures;

h. developing and conducting audits and surveillance on design, procurement and other activities of S&L personnel assigned to the home office and to the field;

i. providing quality assurance input in S&L procurement documents;

j. reviewing, evaluating and reporting on S&L suppliers' quality assurance programs and/or procedures;

k. certain types of inspection as specified in Section 10.00 of the Program and in implementing procedures;

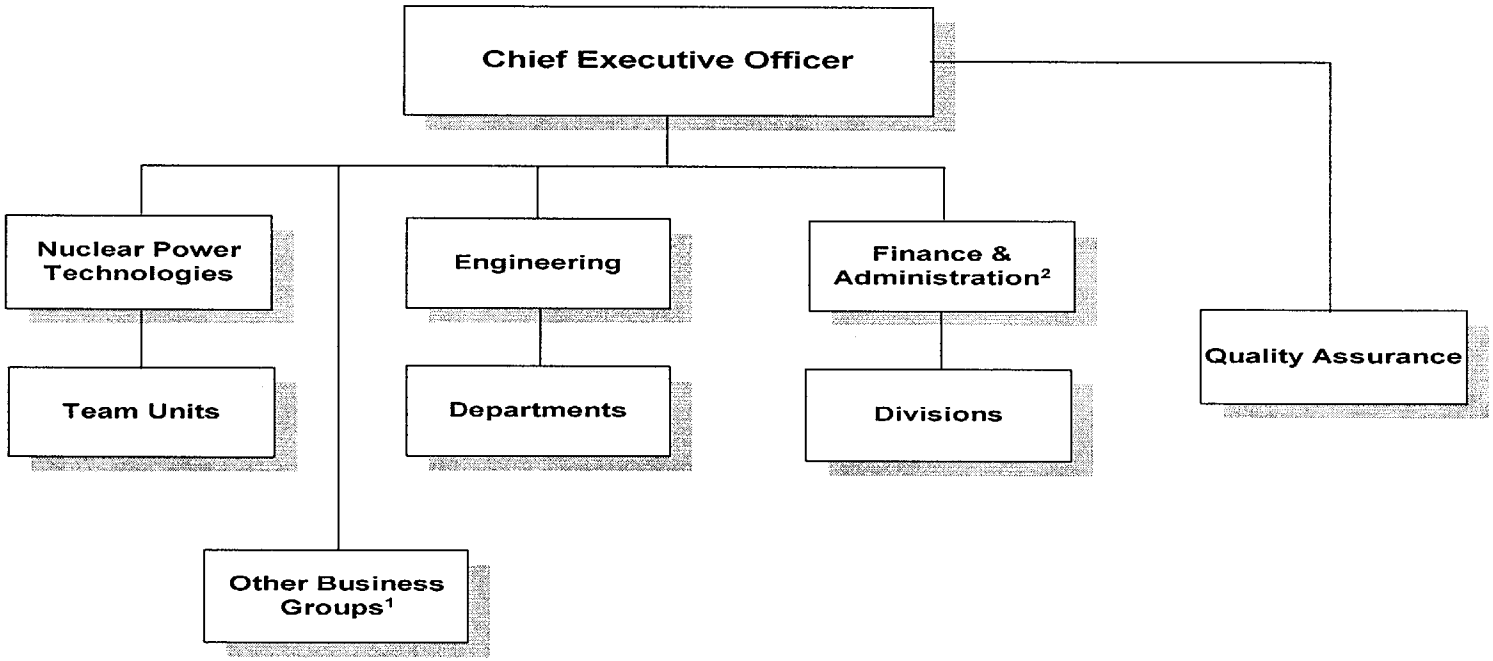
l. audit and surveillance of suppliers' compliance to their approved quality assurance programs;

m. providing direct quality assurance services as requested by clients, including such services as preparation of QA programs and procedures, auditing and surveillance of the client's organization and its suppliers, and training of client personnel in quality assurance activities;

n. furnishing qualified personnel to clients for assistance in quality-related activities.

When responsible for procurement, S&L delegates, or a client may delegate to the Quality Assurance Manager, authority to identify supplier quality control problems and to stop unsatisfactory work or otherwise control further processing of an item by a supplier.

Sargent & Lundy Management Organization Chart
Figure 01.01-1



[1]Other Business Groups and their area of responsibility are determined by the Chief Executive Officer.

[2]Configuration control of computer software used in production, including review and filing of software verification and validation documents, is the reponsibility of the Finance & Administration functional support group.

02.00 QUALITY ASSURANCE PROGRAM

02.01 This Quality Assurance Program has been established in accordance with the requirements of 10 CFR Part 50, Appendix B. During the preparation of the Program and the standard operating procedures, steps are taken to verify that the S&L Nuclear Quality Assurance Program and procedures responds to each of the applicable criteria of 10 CFR Part 50, Appendix B, Quality Assurance Criteria for Nuclear Power Plants; 10 CFR 71, Subpart H, Quality Assurance; 10 CFR 72, Subpart G, Quality Assurance; and to the requirements of the applicable Regulatory Guides, and ANSI/ASME Standards referenced in Section 00.00, Introduction (except as noted therein). NRC Regulatory Guides are reviewed for suitability and used as appropriate for S&L activities.

Those responsible for defining the content of the Nuclear Quality Assurance Program are the Chief Executive Officer and the Quality Assurance Manager. The Quality Assurance Manager is responsible for approval of this Quality Assurance Program and implementing procedures. The Chief Executive Officer provides senior management approval of this Quality Assurance Program and the standard operating procedures.

The Nuclear Quality Assurance Program is made available to personnel responsible for quality-related work through controlled distribution in accordance with a standard operating procedure.

Since this program is included in the document control system, S&L personnel who receive the program electronically are provided with a master list so that they can verify that they are working with the current issue of the program. S&L personnel and other organizations who receive controlled hard copies of this program are required to acknowledge receipt of the program and revisions.

To implement the Nuclear Quality Assurance Program and comply with the standard operating procedures, the Director of Engineering, Department/Division Managers and Project Managers establish standards, procedures, and instructions for the control of quality-related activities. Specific implementing procedures are established to control activities in compliance with the requirements of the program.

S&L policy, as established by the Chief Executive Officer, makes compliance with this Nuclear Quality Assurance Manual mandatory for all personnel performing quality-related activities.

02.02 Safety-related structures, systems and components for a project are identified, and design and procurement activities are controlled by the Nuclear Quality Assurance Program and the implementing procedures.

The Nuclear Quality Assurance Program and procedures are in effect prior to initiation of activities affected thereby.

02.03 S&L standards and procedures provide for the documentation and dissemination of management policies and practices for the control of activities affecting the quality of nuclear safety-related structures, systems and components. Each level of management generates standards and/or procedures covering its areas of responsibility unless standards and/or procedures issued by another level of management adequately specify requirements. These standards/procedures establish design, performance, fabrication, installation or operation requirements for a system, structure or component; or establish methods for controlling activities within a department or division. Such standards/procedures are applied to the work performed by the personnel within the related department or division.

The mandatory requirements for nuclear quality-related activities are delineated in the standards/procedures. When a deviation from such requirements is necessary, appropriate review and approval of the proposed deviation is required and is documented.

02.04 S&L quality-related activities meet the requirements of the client, S&L, applicable codes, standards. and regulatory agencies.

02.05 The development and use of computer programs for quality-related activities are controlled by the Nuclear Quality Assurance Program. Computer programs and other software are developed in defined sequential phases as part of a software life cycle. Engineering application programs

are verified for correctness and feasibility of program functions and for achievement of requirements for each phase within the assumptions and limitations stated in the program documentation. Prior to use, programs are validated by documented testing to demonstrate proper performance. Test requirements and acceptance criteria are provided or approved by the responsible design organization. A variety of typical problems is used in the validation process. Results are checked against known solutions, solutions obtained from other verified and validated computer programs, and/or hand calculations.

Procedures require computer programs used for engineering design or analysis applications to be uniquely identified. These programs, which will not be individually verified and validated for each application, are listed in the S&L online configuration management database. To the extent appropriate, controls are established to prevent unauthorized changes to verified and validated program files. Temporary changes to listed programs may be authorized in special circumstances. However, all such changes are required to be validated and documented.

02.06 To assure that appropriate skills are utilized in the performance of quality-related activities, position descriptions and experience records have been prepared. The position descriptions include minimum educational and experience requirements for each position. Experience records are used to verify qualification of persons in quality-related positions.

The Nuclear Quality Assurance Program provides for indoctrination and training of personnel performing

activities affecting quality. Training ensures that personnel will achieve proficiency in those parts of the quality assurance program and procedures pertinent to their activities before assuming responsibility for those activities. This training is accomplished in accordance with a standard operating procedure.

Training in appropriate S&L administrative and technical standards and procedures is provided, as applicable, for personnel performing quality-related tasks. The responsible managers establish the training scope and designate who is to be trained.

A *standard operating* procedure provides for training of project personnel in project instructions controlling quality-related activities.

Training activities are documented. Identification of personnel receiving training and of the standards, procedures, and project instructions in which they were trained is documented.

02.07 Differences of opinion between Quality Assurance and other S&L organizations are resolved by the Chief Executive Officer. Resolution is documented.

02.08 Management annually assesses the adequacy of this QA Program's overall implementation. This assessment is initiated by the Chief Executive Officer. The management team is led by an S&L owner and consists of senior level personnel, such as Project Managers and Senior Project Engineers, with expertise in the engineering disciplines. The report of the assessment is approved by the Chief Executive Officer and is distributed to the responsible management for action.

06.00 DOCUMENT CONTROL

06.01 Procedures and practices are established to control the issuance of design documents, instructions, and procedures, including changes thereto, which prescribe activities affecting quality.

The Nuclear Quality Assurance Program and implementing procedures include measures which provide assurance that documents, including changes, are reviewed for adequacy and inclusion of quality requirements, approved for release by authorized personnel, and distributed for use at the location where the prescribed activity is performed. The groups and/or individuals responsible for these activities are identified.

Those participating in an activity are made aware of and use proper and current instructions, procedures, drawings, specifications, codes and standards for performing the activity. Participating organizations have procedures for control of these documents and changes thereto, to preclude the possibility of use of outdated or inappropriate documents. Master lists are distributed on a regular basis or made available electronically so that recipients can verify that they are working with current issue of this program, procedures and drawings. Master lists of other activities are provided on a timely basis.

06.02 Document control measures provide for:

a. reviewing documents and their revisions for adequacy and inclusion of quality requirements prior to release for use;

b. identifying individuals or organizations responsible for preparing, reviewing, approving, and issuing documents and revisions thereto;

c. identifying and maintaining current the proper documents and their status, e.g., "preliminary," "approved for construction," "approved for bids," etc., as appropriate;

d. coordinating and controlling interface documents;

e. assuring availability of documents at the onset of work for which they are needed;

f. establishing current and updated document distribution lists *for hardcopy distributions*;

g. obsoleting, recalling, or in some manner identifying documents not intended for current use.

Changes to documents are reviewed and approved with a degree of control commensurate with the original document, by the same organizations that performed the original review and approval unless other qualified organizations are specifically designated by S&L management. However, nontechnical editorial changes to design documents may not require that the revised document receive the same review and approval as the original document. In such cases, these types of changes and the person who can authorize such a decision are delineated in the procedure controlling issuance of the document. Reviewers have access to pertinent background information upon which to base the

review, and have an adequate understanding of the requirements and intent of the original document.

The Nuclear Quality Assurance Program and implementing procedures require that approved changes be reviewed for applicability to related instructions, procedures, drawings, and other appropriate documents, and that those affected documents be changed through controls consistent with the original issue. Approved changes are required to be traceable as well as implemented by all organizations involved.

06.03 The scope of the S&L document control system includes procedures and instructions for such activities as construction, modification, installation, test and inspection, procurement documents, nonconformance reports, manuals, design documents (e.g., calculations, drawings, specifications and analyses), and documents related to computer codes and as-built information.

07.00 CONTROL OF PURCHASED MATERIAL, EQUIPMENT AND SERVICES

07.01 Implementing procedures to the Nuclear Quality Assurance Program establish measures to assure that purchased items and services are clearly and adequately specified in procurement documents and that suppliers are capable of producing items and furnishing services, whether purchased directly or through subsuppliers, which conform to procurement document requirements. These procedures include provisions for supplier evaluation, review of procurement requirements, and surveillance of the supplier, when S&L is responsible for the procurement or requested by the client.

Results of evaluations performed on suppliers prior to contract award are documented, and available for audit.

Evaluation of procurement sources is performed by S&L engineering and quality assurance personnel, as appropriate. Recommendation of procurement sources is based on these evaluations. The evaluations cover review of capabilities and facilities for technical, manufacturing, erecting, installing, and quality performance, and include any or all of the following as appropriate:

a. historical performance data, particularly in product quality and on-time performance;

b. review and comment on supplier quality assurance program and procedures;

c. source audits to verify supplier implementation of his quality assurance program, as required;

d. source qualification programs.

The quality assurance programs of potential suppliers are evaluated to determine compliance with the applicable criteria of 10 CFR Part 50, Appendix B, with ANSI/ASME N45.2 or NQA-1 and applicable Regulatory Guides, with ASME Section III, Divisions 1 and 2, and with other ANSI Standards. The evaluation is accomplished prior to an award by S&L or submittal of the recommendation letter to the client, as applicable, and thereby precedes initiation of quality-related activities. Proposals from bidders are reviewed by S&L in accordance with approved quality assurance procedures by the appropriate divisions, and Quality Assurance. The evaluation of proposals includes review for bidder capability to meet Nuclear Quality Assurance Program requirements in procurement documents.

S&L may recommend to the client that an audit be performed, prior to award of purchase order or contract, to evaluate current implementation of the supplier quality assurance program. Preaward meetings with suppliers to resolve any questions are held prior to any recommendation for purchase, when required.

When S&L is responsible for procurement or when S&L is requested by the client, S&L assures that procurement documents require the successful bidder to submit the following, as applicable, to S&L for review by cognizant divisions in accordance with procedures:

a. special process procedures such as, but not limited to, welding, heat treating, nondestructive examination;

b. recommended supplier inspection point program;

c. appropriate documentation as established by applicable codes, standards, regulations, and procurement documents;

d. notices of nonconformances and deviations;

e. test procedures in accordance with applicable codes and standards;

f. documentation of quality of any commercial, "off-the-shelf" items.

07.02 On client request or per procurement requirements, surveillances are performed in facilities of suppliers furnishing materials, parts, components, or services to assure compliance with quality requirements. Surveillances are conducted by qualified personnel in accordance with documented procedures that specify the characteristics or processes to be witnessed or verified and accepted, the method of surveillance and documentation required, and those responsible for implementation of the procedure.

When appropriate, provisions are established by procedures for the identification of mandatory inspection hold points.

S&L supplier surveillances may include but are not limited to monitoring of in-process manufacturing, witnessing of tests, inspections and nondestructive examinations (per inspection point programs), monitoring of conformance to accepted welding procedures and a review of supporting documentation thereof, monitoring of control and calibration

of measuring equipment, surveillance of heat treating processes, and observation of packing and shipping activities. As requested by the client, or as determined by S&L, supplier surveillances may include review of pertinent supplier documentation during fabrication, shipping and final inspection, review of documentation to be shipped to a plant or construction site, and review of completed project checklists and release tags prior to release of equipment for shipping.

The intervals and depth of the surveillances are determined by client or S&L requirements, but are consistent with the relative importance, complexity, and quantity, and the frequency of procurement of the item or service being furnished.

07.03 Audits of suppliers are conducted, per Section 18.00 and implementing procedures at maximum three-year intervals, except as stipulated below, to assure compliance with quality requirements. Supplier audits include auditing of suppliers' certificates of conformance when these certificates are used as a basis for accepting the item or service.

Audits of suppliers, after award of a contract, and annual evaluations of suppliers are not necessary for procurement actions when the items or related services are all of the following:

a. relatively simple and standard in design, manufacture and test, and

b. adaptable to standard or automated inspections or tests of the end product to verify quality characteristics after delivery, and

c. such that receiving inspection does not require operations that could adversely affect the integrity, function or cleanliness of the item.

For the following cases, audits and annual evaluations of suppliers are also not necessary. S&L may accept these procurements by the following methods in lieu of those given in the NRC Regulatory Guide 1.144:

a. For short-term engineering and consulting services, such as qualification testing or a design performed by a consultant which will be independently verified by S&L, acceptance may be by technical verification of data produced as discussed in Section 03.04, by surveillance of the activity by a design engineer or a QA engineer, and/or by review of objective evidence for conformance to the procurement document requirements, such as by review of a stress report, as discussed in Section 03.04.

b. For procurement of computer programs, including maintenance contracts which provide updates to the programs and which provide for error reports, acceptance may be verification and validation of the portion of the program and updates to be utilized in accordance with Section 3.04.

07.04 S&L suppliers may install safety-related items in nuclear plant or, for financial reasons, S&L may elect to purchase a safety-related item and transfer ownership to a client at the point of receipt at the site, in a client's warehouse, or at some other time prior to installation.

In this case of ownership transfer, there shall be a written agreement with the client delineating the division of responsibility for quality assurance. In the case where S&L or its suppliers conduct receiving inspection of items, the inspection is performed in accordance with the client's QA program and implementing procedures, or Chapter 10.00 of this program and implementing procedures.

Receiving inspections ensure that:

a. materials, components, or equipment are properly identified and correspond to the identification of the purchase document and the receiving documentation;

b. materials, components, equipment and acceptance records satisfy the inspection instructions prior to installation or use;

c. damaged items are reported.

If a S&L supplier will be installing safety-related items in a nuclear plant or if ownership is to be transferred, receipt inspection also ensures that specified inspection, test and other records (such as certificates of conformance attesting that the material, components, and equipment conform to specified requirements), are available at the

nuclear plant prior to installation, use or ownership transfer.

S&L receiving inspections for other items do not include responsibility for availability of inspection, test and other records at plant sites prior to installation or use of the corresponding equipment. This function is assumed by the client.

07.05 When S&L will be supplying records for purchased items to a client, the following records shall be furnished:

a. Documentation that identifies the purchased items and the specific procurement requirements (e.g., codes, standards, and specifications) met by the item.

b. Documentation identifying any procurement requirements that have not been met.

c. A description of those nonconformances from the procurement requirements dispositioned "use-as-is" or "repair."

07.06 Where the design utilizes commercial grade items, the following requirements are a permissible alternative for acceptance, to other requirements of this chapter:

a. An approved design document identifies the commercial grade item. (An alternate commercial grade item may be applied, provided S&L provides verification that the alternate commercial grade item will perform the intended function and will meet design requirements

applicable to both the replaced item and its application.)

b. S&L performs source evaluation and selection, where determined necessary, based on complexity and importance to safety.

c. S&L identifies commercial grade items in the purchase order by the vendor's published product description.

d. After receipt of a commercial grade item, S&L determines the following:

(1) Damage was not sustained during shipment;

(2) The item received was the item ordered;

(3) Inspection and/or testing is accomplished, as required by the purchaser, to assure conformance with the manufacturer's published requirements;

(4) Documentation, as applicable to the item, was received and is acceptable.

17.00 QUALITY ASSURANCE RECORDS

17.01 Requirements are established in this program and implementing procedures for generation, collection, compilation, storage, and retrieval of documentation necessary to provide records of quality for S&L quality-related activities.

Unless S&L is directed to forward all project-related quality assurance records to the client, procedures require retention of quality assurance records such as, but not limited to design input documents, project design documents (design criteria, drawings, calculations, specifications, and standards), personnel qualification statements and certifications, personnel training records, audit and surveillance reports and replies thereto, inspection reports, calibration procedures/reports, nonconformances and corrective action reports, change control documents, deviations, design review reports, applicable correspondence and meeting notes.

17.02 Procedures require that sufficient records be prepared as work is performed to provide assurance of the quality of the activities performed, and that such records be consistent with applicable codes, standards, and specifications. The quality assurance records are identified and filed in a timely and orderly manner to allow for access and retrievability. They are carefully handled to maintain legibility and preserve the original quality of the records to the maximum extent.

17.03 Inspection and test records, other than for computer software, contain the following where applicable:

a. A description of the type of observation;

b. The date and results of the inspection and test;

c. Information related to conditions adverse to quality;

d. Inspector or data recorder identification;

e. Evidence as to the acceptability of the results;

f. Action taken to resolve any discrepancies noted.

17.04 Procedures, consistent with regulatory requirements, have been prepared and include the requisites for transmittal, retention, maintenance and retrieval of records. Records are stored in a facility or in separate remote locations that provide controlled access, minimize the risk of damage or destruction from fire, flood, tornadoes, condensation, vermin and decay and satisfy the requirements described in Regulatory Guide 1.88, except for the minimum fire rating requirement for a single record facility. Instead, S&L provides for a:

a. 2 hour fire rated vault meeting NFPA 232-1975, or

b. 2 hour fire rated class B file containers meeting the requirements of NFPA 232-1975, or

c. 2-hour fire rated file room meeting the requirements of NFPA 232-1975 with the following additional provisions:

(1) early warning fire detection and automatic fire suppression capability with electronic supervision at a constantly attended central station;

(2) records storage in fully enclosed metal cabinets;

(3) adequate access and aisle ways;

(4) prohibition in the room of work not directly associated with record storage or retrieval;

(5) prohibition in the room of smoking, eating, or drinking;

(6) 2-hour fire rated dampers or doors in all boundary penetrations.

17.05 Quality assurance records are maintained by S&L until a project is complete unless otherwise directed by the client. At completion of the project, the quality assurance records are delivered to the client in accordance with procedures.

17.06 Records associated with radwaste packaging shall include the instructions, procedures, and drawings required by 10 CFR 71.111 to prescribe quality assurance activities and

shall include closely related specifications such as required qualifications of personnel, procedures, and equipment. Records shall be retained for 3 years beyond the date when S&L or its suppliers last engages in the related

activity. If any portion of the written procedures or instructions is superceded, S&L or its suppliers shall retain the superceded material for 3 years after it is superceded.

17.07 Records associated with ISFSIs must include the following: design records, records of use and the results of reviews, inspections, tests, audits, monitoring of work performance, and material analysis.

Records pertaining to the design fabrication, erection, testing, maintenance, and use of ISFSI structures, systems, and components important to safety shall be maintained under the control of, and as directed by, the licensee until the NRC terminates the ISFSI license.

17.08 *Electronic records may be authe4nticated in accordance with the guidance given in NIRMA Technical Guide 11. This authentication shall be made in one of three ways: a hardcopy authorization from the authentication authority to add the authority's electronic signature to the document; an electronic signature controlled by a user ID/password combination; or a digital signature.*

When authentication authority is transferred to a designee, measures are identified and documented to ensure that only those designees properly authorized do authenticate records/media. These measures include a counter (secondary) signature.

System administrator(s) assign passwords to be used for electronic signatures.

18.00 AUDITS

18.01 S&L utilizes a system of planned and periodic audits and surveillances to verify compliance with and to assess the effectiveness of all aspects of the S&L Nuclear Quality Assurance Program and the implementing procedures. Organizations subject to audit and surveillance by S&L include:

a. S&L business and functional support groups, departments, divisions and project groups;

b. S&L suppliers, or other suppliers as requested by a client.

Audits and surveillances include evaluation of quality system practices and/or procedures and the effectiveness of their implementation, monitoring of work areas and activities, and review of pertinent documents and their control and maintenance.

18.02 Audits and surveillances within S&L are carried out by Quality Assurance in accordance with the requirements of standard operating procedures. The objectives of these audits and surveillances are:

a. to verify that the policies, procedures, and instructions necessary for implementation of *this* program are established in a timely manner;

b. to determine the degree of compliance with this program and its implementing procedures by personnel performing quality-related functions;

c. to determine the degree of compliance on each project with project instructions, standards, procedures and other applicable documents, such as codes and national standards which provide guidance for the project;

d. to assess the effectiveness of this program and its implementing procedures.

Audits and surveillances are conducted by S&L personnel who have no direct responsibility in the areas they audit and review. Auditors are required to possess the educational, training, and experience qualifications for auditing and surveillance as specified in implementing procedures.

The Nuclear Quality Assurance Program requires that the work of support divisions and nuclear project teams be audited on applicable elements of this program, implementing quality assurance procedures, project instructions, standards and procedures on the basis of the safety importance of the activity being performed, but at least biennially for nuclear projects *or projects supporting gaseous diffusion plants* which are in the operating or decommissioning phase, and annually or once during the life of the activity, whichever is shorter, for projects in the construction phase. Projects supporting radioactive material packaging or ISFSIs are audited at least annually. An audit schedule is prepared each year identifying the audits to be performed and their scheduled dates. Scheduling is dynamic and resources are supplemented when QA program effectiveness is in doubt. Surveillances led by qualified lead auditors may be substituted for portions or all of an audit, if a lead auditor evaluates the surveillance(s) as examining the same

activity to be audited and the surveillance(s) is performed within the same biennial or annual audit period.

Under special circumstances, the Quality Assurance Manager may grant postponements of audits as specified in standard operating procedures.

Audits and surveillances are initiated early in the design and procurement phase. The following areas fall within the scope of the S&L audit program:

a. preparation, review, approval, and control of early procurements;

b. indoctrination and training programs;

c. interface control among the client, S&L, and other organizations.

Audit and surveillance reports are approved by the Quality Assurance Manager or Chief Executive Officer, or their designees, and distributed to the persons directly responsible for the areas or functions audited: Chief Executive Officer, the appropriate Business Group Director, the Project Director and Project Manager, the Director of Engineering, the appropriate Engineering Department and Division Managers, and to others designated by the Quality Assurance Manager.

18.03 External audits and surveillances, as required, of suppliers are performed by Quality Assurance with assistance, as required, of personnel from appropriate projects or divisions acting as technical specialists.

18.04 Procedures for both internal and external audits provide for audit planning, execution, evaluation of results, postaudit conference with management in the audited area, and reporting. An audit plan is developed for each audit, indicating the audit scope, the activities to be audited, the applicable documents and requirements, the schedule, and the audit team. Audits are performed in accordance with written procedures or checklists. The audit checklist, when required, is intended for use as a guide and may be altered or departed from during an audit in order to achieve the audit's objectives. Such changes must be documented and become part of the audit record.

A written report is required for each audit and surveillance. The report includes:

a. a statement of the audit scope;

b. identification of the auditors and lead auditor;

c. identification of persons and/or areas audited;

d. description of each nonconformance identified;

e. request to responsible personnel for reply on corrective action within a stated period;

f. an evaluation statement regarding the effectiveness of the program elements that were audited, if appropriate;

g. recommendations for improvement of the Program, as appropriate.

Follow-up of deficient areas as described in nonconformances is required in accordance with procedures. Nonconforming areas are reaudited and/or appropriate corrective action documentation is examined as necessary to assure that effective corrective action has been taken by the responsible management.

The management of the area audited responds within 30 days of receipt of the nonconformance report, indicating corrective action to be taken and the schedule for completion. Extension of the 30-day requirement for responding to nonconformances may be granted by the Quality Assurance Manager when justifiable. Reaudits, when necessary, are conducted on a timely basis, commensurate with the scheduled completion of corrective action in accordance with quality assurance procedures. These reaudits may either be limited to verification of implementation of required corrective actions or, when corrective action results in significant reorganization or procedure revisions, when the quality of an item is suspected to be in jeopardy due to deficiencies in this quality assurance program identified during the nonconformance evaluation, or when a systematic, independent assessment of program effectiveness is considered necessary, they shall be more general. Audit and surveillance reports are filed and available for audit.