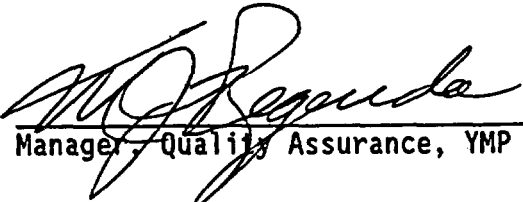# APPROVAL

RAYTHEON SERVICES NEVADA

QUALITY ASSURANCE PROGRAM DESCRIPTION
For
THE YUCCA MOUNTAIN SITE CHARACTERIZATION PROJECT

Approved by: _____ Date: _9/10/91_
Manager, Quality Assurance, YMP

Approved by: _____ Date: _9/10/91_
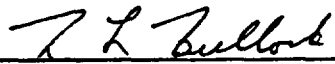Manager, Quality Assurance, RSN

Approved by: _____ Date: _9-11-91_
Technical Project Officer/
Yucca Mountain Operations Manager

ENCLOSURE 2

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RAYTHEON SERVICES NEVADA

QUALITY ASSURANCE PROGRAM DESCRIPTION
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SECTION 1

ORGANIZATION

1.0 GENERAL

The Raytheon Services Nevada (RSN) Organization is described herein.

1.1 ORGANIZATION STRUCTURE

Raytheon Services Nevada is responsible to the DOE Yucca Mountain Site Characterization Project Office (YMPO) for providing architecture and engineering services to support the investigations at Yucca Mountain. Responsibilities include Title I and II Design of surface and subsurface facilities, Title III Inspection of Mining, Drilling, Facilities Construction, Nondestructive Testing, Materials Testing, Field Surveying, Microfilming of YMP Records, and Engineering Support Services. RSN is responsible for the establishment and implementation of a Quality Assurance Program. RSN may delegate to others, such as contractors, agents or consultants, the work of establishing and implementing the QA Program or any part thereof, but retains the overall responsibility for the program.

The overall organizational structure, lines of communication, authorities and duties of persons and organizations affecting quality is established in this document. The Quality Assurance Program provides for the achievement of quality by the line organization and the verification of quality by the QA organization. While the line organizations are responsible for performing the activities properly, the QA organization will verify the proper performance of work through implementation of appropriate controls. The organizational structure is defined in Figure 1 of this Section. The responsibilities and authority of key personnel are as follows:

1.1.1 **General Manager, RSN** has the responsibility for establishing, administering, and enforcing the overall QA program.

1.1.2 **Deputy General Manager** reports to the General Manager and is responsible for the QA program as it applies to the engineering support.

1.1.3   The <u>YMP Technical Project Officer (TPO)</u> is responsible to the Yucca Mountain Site Characterization Project Office Project Manager for directing activities in support of the project in accordance with this QAPD and implementing procedures. The TPO has responsibility for approval of the QAPD, changes thereto, and interpretation thereof. All technical implementing procedures will be the responsibility of the TPO. The TPO will be the prime interface with other participants. The Yucca Mountain Project organization will consist of Field Operations, Systems Engineering, Design, and Administration.

1.1.3.1   The Site Characterization Design Department is responsible for providing for the design of the Site Characterization Facility (SCF) and other facilities as assigned by the Project Office. Designs will produce analyses, drawings and specifications as appropriate to the assigned project.

The Design Department will provide qualified personnel to accomplish the requirements above and will have a group to manage the criteria flow, set and monitor schedules and to review drawings and specifications to set criteria.

1.1.3.2   The Systems Engineering Department will provide qualified personnel to: manage interfaces, control configuration, control computers and software, and manage and control the project procedures.

1.1.3.3   The Field Operations Department is responsible for providing qualified personnel to control field changes, provide material testing, monitor construction, provide geophysical logging, consult on drilling operations, and provide geological and hydrological services.

1.1.3.4   The Project Administration Department will provide qualified personnel for budgetary control, long-range planning, Planning and Control Systems (PACs), record processing including the Project Microfilm Center, and general clerical support as required.

1.1.3.5   The Integrated Data System Department has the responsibility for the Integrated Data System (IDS), including the Data Acquisition Systems, Information Resources, and Scientific Information Systems. The IDS Department will be staffed until RSN no longer has responsibility for the IDS.

1.1.4   Full-time Matrix Support Organizations

1.1.4.1   The <u>Program Support Manager</u> has responsibility for
           Information Systems, Finance and Administration, Internal
           Audit, Planning and Analysis, and Procurement.

1.1.4.2   The <u>Human Resources Manager</u> has responsibility for
           compensation and benefits, personnel administration and
           employment, security, and outside training and productivity.

1.1.4.3   The <u>Environment, Safety and Health Manager</u> has the respon-
           sibility for assuring that Environmental, Safety and Health
           considerations are incorporated in Designs and complied with
           at Facilities.

1.1.4.4   The <u>Manager, Quality Assurance, RSN (MQA/RSN)</u> reports to the
           General Manager and has been delegated the responsibility
           for establishing, maintaining and managing the overall RSN
           Quality Assurance Program.

           The Manager, Quality Assurance, RSN has delegated the
           responsibility for the Yucca Mountain Project (YMP) Quality
           Assurance Program to the Manager, Quality Assurance, YMP.

1.1.4.4.1 The <u>Manager, Quality Assurance, YMP (MQA/YMP)</u> reports
           directly to the MQA/RSN and has the management respon-
           sibility and authority to direct and control quality
           assurance functions to ensure that Program quality assurance
           objectives are consistently met. The MQA/YMP has direct
           access to, and maintains liaison with, the TPO, other
           managers and management of other affected organizations.
           This reporting relationship provides the organizational
           freedom and authority to identify quality problems;
           initiate, recommend, or provide solutions; and prevent or
           control further processing, delivery, or use of nonconform-
           ing items or activities, until disposition is obtained.

           The MQA/YMP is responsible for coordination, integration,
           and overview of Program quality assurance activities and for
           ensuring that appropriate quality management, policy,
           training, and verification controls are in place. The
           MQA/YMP has appropriate management and quality assurance
           knowledge and experience and has no responsibilities that
           prevent his full attention to quality activities. This
           position has sufficient freedom from cost and schedule when
           opposed to quality considerations.

           The responsibilities of the MQA/YMP are to:

a. Establish integrated Program quality assurance policies and requirements in controlled documents.

b. Coordinate development of the YMP quality assurance program documents including the QAPD, and quality assurance procedures.

c. Provide quality assurance guidance and direction to affected organizations.

d. Serve as the focal point for YMP quality assurance activities; provide coordination within RSN and assure that Program activities affecting quality are conducted in accordance with the RSN QA Program Requirements.

e. Overview Program quality assurance activities by conducting verifications and selectively participating in verification activities, such as assessments, readiness reviews, or audits, and issues schedules for audits and surveillances.

f. Review controlled documents for inclusion of quality assurance requirements.

g. Assure development and implementation of a quality assurance indoctrination program for all Program personnel.

h. Establish and maintain the indoctrination and training requirements for QA personnel as well as maintaining their qualification and training records.

i. Maintain effective communication with Project and upper management personnel relative to the status of the quality assurance program; status of resolution of issues, trends, and significant conditions adverse to quality.

j. Manage the QA staff.

k. Ensure that QA personnel who perform activities affecting quality are qualified by experience, education or training to perform assigned tasks.

l. Verify the adequacy and effectiveness of organizations and subtier organizations QA programs.

m.   Reviews and approves the QAPD, revisions to and the
     interpretation thereof.

1.1.4.4.1.1 <u>Quality Assurance Sections</u> The MQA/YMP is assisted in the
     execution of duties by three QA sections (i.e., Quality
     Assurance Engineering, Quality Control, and Audits and
     Surveillance) that report to the MQA/YMP. These sections
     have the responsibility to direct and control quality
     assurance functions as delegated by the MQA/YMP.

1.1.5   As-Needed Matrix Support Organizations

     The following organizations provide matrix support on an as
     needed basis as described in implementing procedures:

1.1.5.1   Defense and Special Energy Operations Division

1.1.5.2   Engineering Division

1.1.5.3   NTS Operations Division

1.2 DELEGATION OF WORK

When RSN delegates work to other program participants, a qualified
individual or organization from within the delegating office shall be
accountable for the quality of the delegated work.

1.3 RESOLUTION OF DISPUTES

Should disputes involving quality arise at any given organizational
level, the dispute shall be elevated to the MQA/YMP and the other
responsible manager(s), and if necessary to the General Manager. If a
dispute between RSN and another project participant cannot be resolved,
the dispute will be elevated to the DOE YMP Director, Quality Assurance
(DQA) for resolution.

1.4 RESOLUTION OF ALLEGATIONS

Allegations of inadequate quality shall be resolved in accordance with
appropriate DOE Administrative Procedures.

1.5 STOP WORK PROVISIONS

Provisions for issuing and lifting Stop Work Orders/Requests shall be
developed and implemented by the MQA/YMP. Provisions shall include the
following factors:

a.   Criteria and methodology for Stop Work and for lifting Stop Work Orders/Requests.

b.   Exact definition of work being stopped.

c.   Authorities and responsibilities.

1.6 PROGRAM APPLICABILITY

This Quality Assurance Program Description applies to all items and activities of all organizations affecting quality. The organization structures and responsibilities are clearly established in this plan and implementing procedures so that the results described below are obtained.
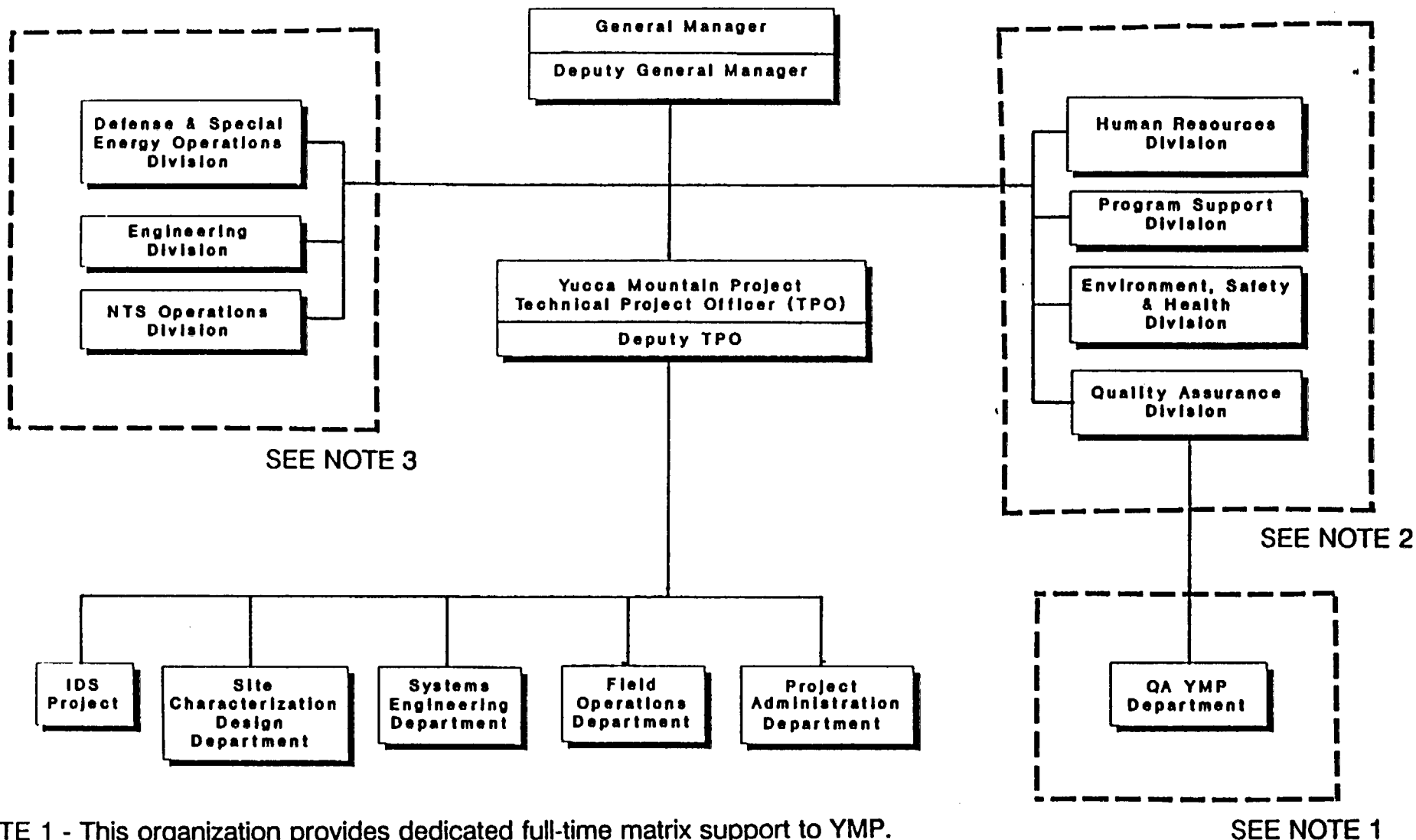
1.6.1   Quality is achieved and maintained by those who have been assigned responsibility for performing the work.

1.6.2   Quality achievement is verified by persons or organizations not directly responsible for performing the work. Verification of conformance to established requirements (acceptance) is accomplished by the QA organization unless specifically exempted in this Quality Assurance Program Description. Design verification is accomplished by the Design organization.

1.7 ORGANIZATION INTERFACES

If more than one organization is involved in the execution of activities affecting quality, then the responsibility and authority of each organization will be established clearly and documented.

1.7.1   The external interfaces between organizations and the internal interfaces between organizational units and changes thereto are documented. All interface responsibilities will be defined and documented. The interfaces between RSN, and the other Nevada Test Site (NTS) Support Contractors, the Project Office, and the Participating Organizations are briefly described below. Specific interfaces are described in DOE Administrative Procedures and RSN Implementing Procedures.

1.7.1.1   Reynolds Electrical and Engineering Company (REECo) - RSN is responsible for inspection and surveillance of drilling, mining, and construction performed by REECo and its subcontractors. RSN may purchase equipment through REECo and utilizes their calibration facility for the calibration of measuring and test equipment.

1.7.1.2   <u>Lawrence Livermore National Laboratory (LLNL)</u> - RSN receives
           direction through the Project Office to support LLNL in site
           investigations. RSN provides LLNL support in site package
           design, handling, and fabrication as part of the on-site waste
           package characterization program.

1.7.1.3   <u>Los Alamos National Laboratory (LANL)</u> - RSN receives direction
           through the Project Office to support LANL in site investiga-
           tions. RSN receives direction pertaining to the IDS from
           LANL.

1.7.1.4   <u>Sandia National Laboratories (SNL)</u> - RSN receives direction
           through the Project Office to support SNL in site investiga-
           tions.

1.7.1.5   <u>Science Applications International Corporation/ Technical &
           Management Support Services (SAIC/T&MSS)</u> is the integrating
           contractor for the Project Office and interfaces with RSN in
           providing broad technical, operational, and managerial support
           for Yucca Mountain Site Characterization Project activities.

1.7.1.6   <u>United States Geologic Survey (USGS)</u> - RSN receives direction
           through the Project Office to support USGS in site investiga-
           tions. Additionally, RSN provides USGS with Geology/Hydrology
           personnel who work in accordance with the USGS QAPD and Proce-
           dures. RSN Quality Assurance is not responsible for audit or
           surveillance of these activities.

1.7.1.7   <u>Yucca Mountain Site Characterization Project Office (YMPO)</u> -
           The Project Office manages and provides technical direction of
           the activities of RSN through the issuance of technical and
           programmatic direction and QA programmatic direction. RSN is
           responsible to the Project Office for technical activities
           assigned in the YMP Work Breakdown Structure Dictionary (WBS),
           and project-specific technical plan.

1.7.2   From an overall Yucca Mountain Site Characterization Project
           standpoint, the above interfaces are exchanges of technical
           requirements of work to be performed and liaison until
           completion of work. The Yucca Mountain Site Characterization
           Project DOE Administrative Procedures (APs) provide the
           implementing interface controls utilized by RSN while RSN's
           implementing procedures describe the methods of conducting
           inter-organizational interfaces.

NOTE 1 - This organization provides dedicated full-time matrix support to YMP.
NOTE 2 - These organizations provide on-going part-time matrix support to YMP.
NOTE 3 - These organizations provide as-needed matrix support to YMP.

FIGURE 1 -1

RSN Yucca Mountain Project LINE and MATRIX Organization

SECTION 19

COMPUTER SOFTWARE

19.0 **GENERAL**

RSN will comply with the requirements of Section 19 of DOE/RW-0214.

19.1 **SOFTWARE DEVELOPED FOR THE INTEGRATED DATA SYSTEM (IDS)**

RSN is responsible for developing a software product which implements the applicable design requirements contained within the LANL Functional Requirements Document and complies with the quality provisions specified in Section 19 of the QARD (DOE/RW-0214). RSN will generate a Software Development Plan (SDP) and a Software Quality Assurance Plan (SQAP) for the IDS. RSN will review these documents to ensure compliance with Section 19 of the QARD. These documents will be provided to LANL for approval prior to the initiation of any quality-affecting software activities. All software for the IDS including new development, previously developed software, modified software, or third party software will be addressed within the SDP and SQAP.

19.2 **RSN USE OF EXISTING SOFTWARE IN THE DESIGN OF THE SCF FOR YMP**

A separate software quality assurance plan will be developed to describe the use of existing software in the design of SCF based on the applicable requirements of Section 19 of the QARD. Procedures will be developed to describe how this will be accomplished. This software quality assurance plan will be submitted to DOE for approval prior to the initiation of any quality-affecting software activities.

19.3 **ADDITIONAL SOFTWARE APPLICATIONS**

If additional software which falls outside the scope of Sections 19.1 and 19.2 is developed or used by RSN, software quality assurance plans will be developed and submitted to DOE or the cognizant organization for review and approval prior to the initiation of any quality-affecting software activities.