Department of Energy
Washington, DC 20585

DEC 6 1990

Mr. John J. Linehan
Director, Division of High-Level
Waste Management
Office of Nuclear Material Safety
and Safeguards
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Dear Mr. Linehan:

As requested by Mr. John Buckley, of your office, enclosed for your information are the correlation matrices for the SAIC T&MSS QA Program which correlate basic QA requirements in accordance with the NQA-1, 1989; OCRWM QA Requirements Document, Revision 4; and the NRC Review Plan, Revision 2.

Should you have any questions or if my office may assist you further, please contact me at (202) 586-1462.

Sincerely,

Linda J. Desell

Linda J. Desell, Acting Chief
Regulatory Integration Branch
Office of Systems and Compliance
Office of Civilian Radioactive
Waste Management

3 Enclosures

1. SAIC T&MSS QA Program Basic Requirements Matrix Document in accordance with NQA-1, 1989

2. SAIC T&MSS QA Program Basic Requirements Matrix Document in accordance with OCRWM QARD, Revision 4

3. SAIC T&MSS QA Program Basic Requirements Matrix Document in accordance with NRC Review Plan, Revision 2

cc w/enclosures:
R. Loux, State of Nevada
M. Baughman, Lincoln County, NV
D. Bechtel, Clark County, NV
S. Bradhurst, Nye County, NV

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED T&MSS QAPD - P...	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	I. ORGANIZATION	Prepared: [signature] 12/3/90 Approved: [signature] for T&M, QA Manager 12/3/90	
NQA-1, 1989 Basic Requirements	Organization The organizational structure, functional responsibilities, levels of authority, and lines of communication for activities affecting quality shall be documented. Persons or organizations responsible for assuring that an appropriate quality assurance program has been established and verifying that activities affecting quality have been correctly performed shall have sufficient authority, access to work areas, and organizational freedom to (1) identify quality problems; (2) initiate, recommend, or provide solutions to quality problems through designated channels; (3) verify implementation of solutions; and (4) assure that further processing, delivery, installation, or use is controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred. Such persons or organizations shall have direct access to responsible management at a level where appropriate action can be effected. Such persons or organizations shall report to a management level such that required authority and organizational freedom are provided, including sufficient independence from cost and schedule considerations.	Section 1.0, 1.1, 1.2, 1.3, 1.3.1, 1.3.2, 1.3.3, 1.3 1.3.5, 1.6 and Exhibits 1-5	Sections 1.0, 1.3.5, 2.0 adequately addressed in QAPD; procedure not necessary.
NQA-1, 1989 Supplement 1S-1	2.1 The organizational structure and the responsibility assignments shall be such that:	Section 1.0	
	a. Quality is achieved and maintained by those who have been assigned responsibility for performing work; and	Section 1.3	
	b. Quality achievement is verified by persons or organizations not directly responsible for performing the work.	Section 1.3.5	
	2.2 The individual(s) or organization(s) responsible for establishing and executing a quality assurance program under this standard may delegate any or all of the work to others, but shall retain responsibility therefore.	1.6	

UNCONTROLLED

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Received ... 12/6/90

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NQA-1, 1989 Supplement 1S-1	2.3	Responsibility for the control of further processing, delivery, installation, or operation of nonconforming items shall be designated in writing.	1.3.5, 15.0	SP 1.23 R-0, in its entirety
	3.1	Where more than one organization is involved in the execution of activities covered by this standard, the responsibility and authority of each organization shall be clearly established and documented.	1.5, 1.6	AP-5.19Q R-1, Sec. 1.0, 2.0, 4.0, 5.0
	3.2	The external interfaces between organizations and the internal interfaces between organizational units, and changes thereto, shall be documented. Interface responsibilities shall be defined and documented.	1.5	AP 5.19Q R-1, in its entirety

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	II. QUALITY ASSURANCE PROGRAM		
NQA-1, 1989 Basic	A documented quality assurance program shall be planned, implemented, and maintained in accordance with this standard, or portions thereof. The program shall identify the activities and items to which it applies. The establishment of the program shall include consideration of the technical aspects of the activities affecting quality. The program shall provide control over activities affecting quality to an extent consistent with their importance. The program shall be established at the earliest time consistent with the schedule for accomplishing the activities.	2.1	SP 1.2 R-2, in its entirety; Secs. 4.2, 4.4, & 4.5 specifically. AP 5.28Q, R-0, in its entirety,
	The program shall provide for the planning and accomplishment of activities affecting quality under suitably controlled conditions. Controlled conditions include the use of appropriate equipment, suitable environmental conditions for accomplishing the activity, and assurance that prerequisites for the given activity have been satisfied. The program shall provide for any special controls, processes, test equipment, tools, and skills to attain the required quality and for verification of quality.		SP 1.2, R-2. All SPs, OPs, and WIs
	The program shall provide for indoctrination and training, as necessary, of personnel performing activities affecting quality to assure that suitable proficiency is achieved and maintained.	2.2.11	SP 1.31 R-0, OP 1.5 R-0, OP 1.8, R-0, in their entirety.
	Management of those organizations implementing the quality assurance program, or portions thereof, shall regularly assess the adequacy of that part of the date program for which they are responsible and shall assure its effective implementation.	2.2.12	SP 1.32, R-1, in its entirety

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 2S-1	Supplementary Requirements for the Qualification of Inspection and Test Personnel		
	1. General	7.6.1.	QP 1.8 R-0, in its entirety
	The requirements of this section provides requirements for qualification of personnel who perform inspection and testing to verify conformance to specified requirements for the purpose of acceptability. The requirements of this section do not apply to the qualification of personnel for performance of nondestructive examination.		
	2. Certification		
	2.1 Qualification Requirements		
	The responsible organization shall designate those activities that require qualified inspection and test personnel and the minimum requirements for such personnel. Further, the responsible organization shall establish written procedures for the qualification of inspection and test personnel and for the assurance that only those personnel who meet the requirements of this Supplement are permitted to perform inspection and test activities.	10.0, 7.6.1	QP 1.8 R-0, Sec. 2.0, QP 1.8 R-0, Sec. 5.0
	When a single inspection or test requires implementation by a team or group, personnel not meeting the requirements of this Standard may be used in data-taking assignments or in plant or equipment operation, provided they are supervised or overseen by a qualified individual.		QP 1.8 R-0, Sec. 4.0

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 2S-1	2.2 Personnel Selection Personnel selected for performing inspection and test activities shall have the experience or training commensurate with the scope, complexity, or special nature of the activities.	2.2.11	OP 1.8 R-0, Exhibit 1, Sec. V
	2.3 Indoctrination Provisions shall be made for the indoctrination of personnel as to the technical objectives and requirements of the applicable codes and standards and the quality assurance program elements that are to be employed.	2.2.11	SP 1.31 R-1, Sec 5.2.2, 5.2.4
	2.4 Training The need for a formal training program shall be determined, and such training activities shall be conducted as required to qualify personnel who perform inspections and tests. On-the-job training shall also be included in the program, with emphasis on first-hand experience gained through actual performance of inspections and tests.	2.2.11	SP 1.31 R-1, Sec. 4.0 OP 1.8 R-0, Sec. 5.1.2, Sec. 5.1.3
	2.5 Determination of Initial Capability The capabilities of a candidate for certification shall be initially determined by a suitable evaluation of the candidate's education, experience, training, and either test results or capability demonstration.	2.2.11	OP 1.8 Rev 0, Sec. 5.1.1, 5.1.2, 5.1.3, "Note" & Sec. 4.0, 2nd Para, R-0 SP 1.31 Rev 1, Sec. 5.1.1
	2.6 Evaluation of Performance The job performance of inspection and test personnel shall be reevaluated at periodic intervals not to exceed three years. Reevaluation shall be by evidence of continued satisfactory performance or redetermination of capability in accordance with the requirements of Paragraph 2.5 above.	2.2.11	OP 1.8 R-0, Sec. 5.4 in its entirety

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NQA-1, 1989 Supplement 2S-1	If during this evaluation or at any other time, it is determined by the responsible organization that the capabilities of an individual are not in accordance with the qualification requirements specified for the job, that person shall be removed from that activity until such time as the required capability has been demonstrated. Any person who has not performed inspection or testing activities in his qualified area for a period of one year shall be reevaluated by a redetermination of required capability in accordance with the requirements of Paragraph 2.5 above.	2.2.11, 2.2.11.3	SP 1.31 R-1, Sec. 5.1.1 OP 1.8 R-0, Sec. 5.4.1, 5.4.2, 5.4.3
	2.7 Certificate of Qualification		
	The qualification of personnel shall be certified in writing in an appropriate form, including the following information:	10.1, 18.1.2B	OP 1.8 R-0, Sec. 5.3 Form T&MSS-61-33 5/90
	1. Employer name;	2.2.11.1	
	2. Identification of person being certified;		
	3. Activities certified to perform;		
	4. Basis used for certification, which includes such factors as:		
	a. Education, experience, indoctrination, and training		
	b. Test results, where applicable		
	c. Results of capability demonstration		
	5. Results of periodic evaluation;	2.2.11.1	SP 1.31 R-1, Sec. 5.4.e,
	6. Results of physical examination, when required;		OP 1.8 R-0, Sec. 5.5

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NQA-1, 1989 Supplement 2S-1	7. Signature of employer's designated representative who is responsible for such certification;	2.2.11.1	OP 1.8 R-0, Form T&MSS-61-33, 5/90
	8. Date of certification and date of certification expiration		
	2.8 Physical		
	The responsible organization shall identify any special physical characteristics needed in the performance of each activity, including the need for initial and subsequent physical examination.		OP 1.8 R-0, Sec. 5.5
	3. Record Files		
	Records of personnel qualification shall be established and maintained by the employer. These records shall include information required by Paragraph 2.7 above.	2.2.11.1	OP 1.8 R-0, Secs. 7.0, 5.3.2, & 5.4.3 SP 1.31 R-1, Secs. 5.4 & 6.2
NQA-1, 1989 Appendix 2A-1	Nonmandatory Guidance on the Qualifications of Inspection and Test Personnel		
	2. Functional Qualifications	2.2.11.1	OP 1.8 R-0, Exhibit 1, Sec. I
	Three levels of qualification may be utilized depending on the complexity of complexity of the functions involved. The recommendations for each level are not limiting with regard to organizational position or professional status but, rather, are limiting with regard to functional activities.		
	2.1 Level I Personnel Capabilities	2.2.11.1	OP 1.8 R-0, Exhibit 1, Sec. II, III and IV
	A Level I person should be capable of performing and documenting the results of inspections or test that are required to be performed in accordance with documented procedures, acceptance standards, and/or industry practices as defined in user's written procedures.		

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NQA-1, 1989 Appendix 2A-1	2.2 Level II Personal Capabilities A Level II person should have all of the capabilities of a Level I person for the inspection or test category or class in question. Additionally, a Level II person should have demonstrated capabilities in planning inspections and tests; in setting up tests, including preparation and setup of related equipment, as appropriate; in supervising or maintaining surveillance over the inspections and tests; in supervising and certifying lower level personnel; and in evaluating the validity and acceptability of inspection and test results.	2.2.11.1	OP 1.8 R-0, Exhibit 1 Secs III & IV
	2.3 Level III Personnel Capabilities A Level III person should have all of the capabilities of a Level II person for the inspection or test category or class in question. In addition, the individual should also be capable of evaluating the adequacy of specific programs used to train and certify inspection and test personnel whose qualifications are covered by this Appendix.		

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NQA-1, 1989 Appendix 2A-1	3. Education and Experience Qualifications	2.2.11.1	OP 1.8 R-0, Exhibit 1, Sec V
	These education and experience recommendations should be considered with recognition that other factors commensurate with the scope, complexity, or special nature of the activity may provide reasonable assurance that a person can competently perform a particular task. Other factors which may demonstrate capability in a given job are previous performance or satisfactory completion of capability testing. These factors and the basis for their equivalence should be documented.		
	3.1 Level I		OP 1.8 R-0, Exhibit 1, Sec VI
	3.1.1 Two years of related experience in equivalent inspection or testing activities; or		
	3.1.2 High school graduation and six months of related experience in equivalent inspection or testing activities; or		
	3.1.3 Completion of college level work leading to an associate degree in a related discipline plus three months of related experience in equivalent inspection or testing activities.		
	3.2 Level II		OP 1.8 R-0, Exhibit 1, Sec VII
	3.2.1 One year of satisfactory performance as a Level I in the corresponding inspection or test category or class; or		
	3.2.2 High school graduation plus three years of related experience in equivalent inspection or testing activities; or		
	3.2.3 Completion of college work leading to an associate degree in a related discipline plus one year of related experience in equivalent inspection or testing activities; or	2.2.11.1	OP 1.8 R-0 Sec. 7 of Ex. 1

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NQA-1, 1989 Appendix 2A-1	3.2.4	Graduation from a four-year college plus six months of related experience in equivalent inspection activities or testing activities.	2.2.11.1	
	3.3	Level III		OP 1.8 R-0, Exhibit 1, Sec. VIII
	3.3.1	Six years satisfactory performance as a Level II in the corresponding inspection or test category or class; or		
	3.3.2	High school graduation plus ten years of related experience in equivalent inspection or testing activities; or high school graduation plus eight years of experience in equivalent inspection or testing activities with at least two years as a Level II and with at least two years associated with nuclear facilities; or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility; or		
	3.3.3	Completion of college level work leading to an associate degree and seven years of related experience in equivalent inspection or testing activities with at least two years of this experience associated with nuclear facilities; or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility; or		
	3.3.4	Graduation from a four-year college plus five years related experience in equivalent inspection or testing activities with at least two years of this experience associated with nuclear facilities; or, if not, at least sufficient training to be acquainted with the relevant quality assurance aspects of a nuclear facility.	2.2.11.1	(Not addressed; to be addressed in revision to OP 1.8)

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NQA-1, 1989 Supplement 2S-2	Supplementary Requirements for the Qualification of Nondestructive Examination Personnel		N/A to T&MSS scope of activity
	1. General This section provides amplified requirements for the qualification of personnel who perform radiographic (RT), magnetic particle (MT), ultrasonic (UT), liquid penetrant (PT), eddy current (ET), neutron radiographic (NRT), and leak testing (LT) [hereinafter referred to as nondestructive examination (NDE)] to verify conformance to specified requirements.		
	2. Certification	*	
	2.1 Applicable Documents The American Society of Nondestructive Testing Recommended Practice No. SNT-TC-1A, June 1980 Edition, and its applicable supplements shall apply as requirements to NDE personnel covered by this Supplement.		
	2.2 Program The responsible organization shall establish written procedures for the control and administration of NDE personnel training, examination, and certification.		
NQA-1, 1989	2.3 Records Records of personnel qualification shall be established and maintained by the employer.	N/A	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 2S-3	Supplementary Requirements for the Qualification of QA Program Audit Personnel		
	2. Qualification of Auditors	18.1.2, *	
	2.1 Responsibility of Auditing Organization		
	The responsible auditing organization shall establish the audit personnel qualifications and the requirements for the use of technical specialists to accomplish the auditing of quality assurance programs. Personnel selected for quality assurance auditing assignments shall have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited. Auditors shall have, or be given, appropriate training or orientation to develop their competence for performing required audits. Competence of personnel for performance of the various auditing functions shall be developed by one or more of the methods given in (1) through (3) below:		OP 1.5 R-1, Sec. 1.0 OP 1.5 R-1, Sec. 4.0 OP 1.5 R-1, Sec. 5.1.1 OP 1.5 R-1, Sec. 5.1.1
	1. Orientation to provide a working knowledge and understanding of this Standard and the auditing organization's procedures for implementing audits and reporting results.		OP 1.5 R-1, Sec. 5.1.1.a
	2. Training programs to provide general and specialized training in audit performance. General training shall include fundamentals, objectives, characteristics, organization, performance, and results of quality auditing. Specialized training shall include methods of examining, questioning, evaluating, and documenting specific audit items and methods of closing out audit findings.		OP 1.5 R-1, Sec. 5.1.1.b OP 1.5 R-1, Sec. 5.1.1.b

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NQA-1, 1989 Supplement 2S-3	3. On-the-job training, guidance, and counseling under the direct supervision of a Lead Auditor. Such training shall include planning, performing, reporting, and follow-up action involved in conducting audits.		OP 1.5 R-1, Sec. 5.1.1c
	3. Qualification of Lead Auditors		OP 1.5 R-1, Sec. 5.2.1
	An individual shall meet the requirements of Paras. 3.1 through 3.4 below prior to being designated as a Lead Auditor.	18.1.2, *	
	3.1 Communication Skills		OP 1.5 R-1, Sec. 5.2.1b
	The prospective Lead Auditor shall have the capability to communicate effectively, both in writing, and orally. These skills shall be attested to in writing by the Lead Auditor's employer.		
	3.2 Training		OP 1.5 R-1, Sec. 5.2.1c
	Prospective Lead Auditors shall have training to the extent necessary to assure their competence in auditing skills. Training in the following areas shall be given based upon management evaluation of the particular needs of each prospective Lead Auditor.		
	3.2.1 Knowledge and understanding of this Standard and other nuclear-related codes, standards, regulations, and regulatory guides, as applicable.		OP 1.5 R-1, Sec. 5.2.1.c(1)
	3.2.2 General structure of quality assurance programs as a whole and applicable elements as defined in this Standard.		OP 1.5 R-1, Sec. 5.2.1.c(2)
	3.2.3 Auditing techniques of examining, questioning, evaluating, and reporting; methods of identifying and following up on corrective action items; and closing out audit findings.		OP 1.5 R-1, Sec. 5.2.1.c(3)

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NQA-1, 1989 Supplement 2S-3	3.2.4 Audit planning in the quality-related functions for the following activities: design, purchasing, fabrication, handling, shipping, storage, cleaning, erection, installation, inspection, testing, statistics, nondestructive examination, maintenance, repair, operation, modification of nuclear facilities or associated components, and safety aspects of the nuclear facility.	18.1.3	OP 1.5 R-1, Sec. 5.2.1.c(4)
	3.2.5 On-the-job training to include applicable elements of the audit program.	18.1.2B	OP 1.5 R-1, Sect. 5.2.1.c(5)
	3.3 Participation note The prospective Lead Auditor shall have participated in a minimum of five (5)quality assurance audits within a period of time not to exceed three years prior to the date of qualification, one audit of which shall be a nuclear quality assurance audit within the year prior to his qualification.	2.2.11.1	OP 1.5 R-1, Sect. 5.2.1.d &
	3.4 Examination The prospective Lead Auditor shall pass an examination which shall evaluate his comprehension of and ability to apply the body of knowledge identified in paragraph 3.2 above. The test may be oral, written, practical, or any combination of the three types. The development and administration of the examination shall be in accordance with Section 5 of this Supplement.	2.2.11.1	OP 1.5 R-1, Sec. 5.2.1.e
	4. Maintenance of Qualification	18.1.2	
	4.1 Maintenance of Proficiency Lead Auditors shall maintain their proficiency through one or more of the following: regular and active participation in the audit process; review and study of codes, standards, procedures, instructions, and other documents related to quality assurance	2.2.11.1	OP 1.5 R-1, Sec. 5.3.1.a & b

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NQA-1, 1989 Supplement 2S-3	instructions, and other documents related to quality assurance program and program auditing; or participation in training programs. Based on annual assessment, management may extend the qualification, require retraining, or require requalification. These evaluations shall be documented.	2.2.11.1	OP 1.5 R-1, Sec. 5.3.1b & c OP 1.5 R-1, Sec. 5.3.2
	4.2 Requalification Lead Auditors who fail to maintain their proficiency for a period of two years or more shall require requalification. Requalification shall include retraining in accordance with the requirements of the paragraph 3.2 above, reexamination in accordance with paragraph 3.4 above, and participation as an auditor in at least one nuclear quality assurance audit.	2.2.11.1	OP 1.5 R-1, Sec. 5.4
	5. Administration	2.2.11.1, 18.1.2, *	
	5.1 Organizational Responsibility Training of Auditors shall be the responsibility of the employer. The responsible auditing organization shall select and assign personnel who are independent of any direct responsibility for performance of the activities which they will audit. The Lead Auditor shall, prior to commencing the audit, concur that assigned personnel collectively have experience or training commensurate with the scope, complexity, or special nature of the activities to be audited.		OP 1.5 R-1, Sec. 5.2.1.e OP 1.1 R-1, Sec. 4.1.4 OP 1.1 R-1, Sec. 4.1.5 OP 1.5 R-1, Sec. 4.0 & 5.1.1
	5.2 Qualification Examination The development and administration of the examination for a Lead Auditor required by paragraph 3.4 above is the responsibility of the employer. The employer may delegate this activity to an independent certifying agency, but shall retain responsibility for conformance of the examination and its administration to this	2.2.11.1	OP 1.5 R-1, Sec. 5.2.1.e

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NQA-1, 1989	Standard. Integrity of the examination shall be maintained by the employer or certifying agency through appropriate confidentiality of files and, where applicable, proctoring of examinations. Copies of the objective evidence regarding the type(s) and content of the examination(s) shall be retained by the employer in accordance with the requirements of Section 6 below.	2.2.11.4	OP 1.5 R-1, Sec. 5.2.1e
	6. Records	18.1.2, *	
	6.1 General OP 1.5 R-1, Sec. 7.1, 7.2 Records of personnel qualifications for Auditors and Lead Auditors performing audits shall be established and maintained by the employer.		
	6.2 Certification of Qualification Each Lead Auditor shall be certified by his employer as being qualified to lead audits. This certification shall, as a minimum, document the following:	2.2.11.1	OP 1.5 R-1, Sec. 5.2.2 OP 1.5, Form T&MSS 61-14, 4-90
	1. Employer's name		
	2. Lead Auditor's name		
	3. Date of certification or recertification		
	4. Basis of qualification (i.e., education, experience, communication skills, training, examination, etc.)		
	5. Signature of employer's designated representative who is responsible for such certification	2.2.11.1	OP 1.5, Form T&MSS-61-14, 4/90

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NQA-1, 1989 Supplement 2S-3	6.3 Updating of Lead Auditor's Records Records for each Lead Auditor shall be maintained and updated annually	18.1.2.B, 2.2.11, 2.2.11.1, 2.2.11.3 & 2.2.11.4	OP 1.5 R-1, Sec. 5.3.2
NQA-1, 1989 Supplement 2S-4	2. Applicability This Supplement applies to personnel performing or managing activities affecting quality. Personnel to be indoctrinated or trained shall be identified. The extent of indoctrination and training shall be commensurate with the following: a. The scope, complexity, and nature of the activity; and b. The education, experience, and proficiency of the person. Activities affecting quality include designing, purchasing, fabricating, handling, shipping, storing, cleaning, erecting, installing, inspecting, testing, operation, maintaining, repairing, refueling, and modifying.	2.2.11 2.2.11	SP 1.31 R-1, Sec. 5.1 in its entirety SP 1.31 R-1, Sec. 5.3.1 & 5.1.3
	3. Indoctrination Personnel shall be indoctrinated in the following subjects as they relate to a particular function: a. General criteria, including applicable codes, standards, and company procedures; b. Applicable quality assurance program elements; and c. Job responsibilities and authority.	*	SP 1.31 R-1, Sec. 5.2 SP 1.31 R-1, Sec. 5.2

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NQA-1, 1989 Supplement 2S-4	4. Training	*	SP 1.31 R-1, Sec. 5.1.1
	Training shall be provided, if needed, to:		
	a. Achieve initial proficiency;		SP 1.31 R-1, Sec. 5.2.1a
	b. Maintain proficiency; and		SP 1.31 R-1, Sec. 5.5.5, 5.7, 5.2.1b
	c. Adapt to changes in technology, methods, or job responsibilities.		
	5. Records	*	
	Records of the implementation of indoctrination and training may take the form of: of:		SP 1.31 R-1, Sec. 5.4 & 7.1
	a. Attendance sheets;		
	b. Training logs; or		
	c. Personnel training records.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	III. DESIGN CONTROL		
NQA-1, 1989 Basic	The design shall be defined, controlled, and verified. Applicable design inputs shall be appropriately specified on a timely basis and correctly translated into design documents. Design interfaces shall be identified and controlled. Design adequacy shall be verified by persons other than those who designed the item. Design changes, including field changes, shall be governed by control measures commensurate with those applied to the original design.	N/A	N/A to T&MSS scope of work; computer software and scientific investigation are covered in Sections 19 & 20 of the QAPD & various implementing plans and procedures.
NQA-1, 1989 Supplement 3S-1	2. Design Input	N/A	
	Applicable design inputs, such as design bases, performance requirements, regulatory requirements, codes, and standards, shall be identified and documented, and their selection reviewed and approved by the responsible design organization. The design input shall be specified and approved on a timely basis and to the level of detail necessary to permit the design activity to be carried out in a correct manner and to provide a consistent basis for making decisions, accomplishing design verification measures, and evaluating design changes. Changes from approved design inputs, including the reason for the changes, shall be identified, approved, documented, and controlled.	N/A	
	3. Design Process		
	The responsible design organization shall prescribe and document the design activities on a timely basis and to the level of detail necessary to permit the design process to be carried out in a correct manner, and to permit verification that the design meets requirements. Design documents shall be adequate to support facility design, construction, and operation. Appropriate quality standards shall be identified and documented, and their selection reviewed and approved.	N/A	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QABD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 3S-1	Changes from specified quality standards, including the reasons for these changes, shall be identified, approved, documented, and controlled. Design methods, materials, parts, equipment, and processes that are essential to the function of the structure, system, or component shall be selected and reviewed for suitability of application. Applicable information derived from experience, as set forth in reports or other documentation, shall be made available to cognizant design personnel. The final design (approved design output documents and approved changes thereto) shall: a. Be relatable to the design input by documentation in sufficient detail to permit design verification; and b. Identify assemblies and/or components that are part of the item being designed. When such an assembly or component part is a commercial grade item that, prior to its installation, is modified or selected by special inspection and/or testing to requirements that are more restrictive than the supplier's published product description, the component part shall be represented as different from the commercial grade item in a manner traceable to a documented definition of the difference.	N/A	N/A
	3.1 Design Analyses Design analyses shall be performed in a planned, controlled, and documented manner. Design analyses documents shall be legible and in a form suitable for reproduction, filing, and retrieval. They shall be sufficiently detailed as to purpose, method, assumptions, design input, references, and units such that a person technically qualified in the subject can review and understand the analyses and verify the adequacy of the results without recourse to the originator. Calculations shall be identifiable by subject (including structure, system, or component to which the calculation applies), originator, reviewer, and date; or by other data such that the calculations are retrievable.	N/A	N/A

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 3-S1	a. Computer programs may be utilized for design analysis without individual verification of the program for which each application provided: 1. The computer program has been verified to show that it produces correct solutions for the encoded mathematical model within defined limits for each parameter employed; and 2. The encoded mathematical model has been shown to produce a valid solution to the physical problem associated with the particular application. Computer programs shall be controlled to assure that changes are documented and approved by authorized personnel. Where changes to previously verified computer programs are made, verification shall be required for the change, including evaluation of the effects of these changes on (1) and (2) above.	N/A	N/A
	b. Documentation of design analyses shall include (1) through (6) below. 1. Definition of the objective of the analyses. 2. Definition of design inputs and their sources. 3. Results of literature searches or other applicable background data. 4. Identification of assumptions and indication of those that must be verified as the design proceeds.	N/A	N/A

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 3S-1	5. Identification of any computer calculation, including computer type, computer program (e.g., name), revision identification, inputs, outputs, evidence of or reference to computer program verification, and the bases (or reference thereto) supporting application of the computer program to the specific physical problem.	Section 19.0	To be addressed in SP 2.1 and the software QA Plan when developed
	6. Review and approval.		
	4. Design Verification	N/A	
	Design control measures shall be applied to verify the adequacy of design, such as by one or more of the following: the performance of design reviews, the use of alternate calculations, or the performance of qualification tests. The verification of computer programs shall include appropriate testing. The responsible design organization shall identify and document the particular design verification used. The results of design verification shall be clearly documented with the identification of the verifier clearly indicated. Design verification shall be performed by any competent individual(s) or group(s) other than those who performed the original design but who may be from the same organization. This verification may be performed by the originator's supervisor, provided the supervisor did not specify a singular design approach or rule out certain design considerations and did not establish the design inputs used in the design or, provided the supervisor is the only individual in the organization competent to perform the verification. Cursory supervisory reviews do not satisfy the intent of this standard.	Section 19.0	To be addressed in SP 2.1 and the Software QA Plan when developed N/A

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 3S-1	Verification shall be performed in a timely manner. Design verification, for the level of design activity accomplished, shall be performed prior to release for procurement, manufacture, construction, or release to another organization for use in other design activities except in those cases where this timing cannot be met, such as when insufficient data exist. In those cases, the unverified portion of the design shall be identified and controlled. In all cases the design verification shall be completed prior to relying upon the component, system, or structure or computer program to perform its function.		N/A
	4.1 Extent of Design Verification		
	The extent of the design verification required is a function of the importance to safety, the complexity of the design, the degree of standardization, the state of the art, and the similarity with previously proven designs. Where the design has been subjected to verification process in accordance with this standard, the verification process need not be duplicated for identical designs. However, the applicability of standardized or previously proven designs, with respect to meeting pertinent design inputs, shall be verified for each application. Known problems affecting the standard or previously proven designs and their effects on other features shall be considered. The original design and associated verification measures shall be adequately documented and referenced in the files of subsequent application of the design.	N/A	
	Where changes to previously verified designs have been made, design verification shall be required for the changes, including evaluation of the effects of those changes on overall design and any design analyses upon which the design is based that are affected by the change to previously verified design.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 3S-1	4.2 Methods		N/A
	Acceptable verification methods include, but are not limited to, any one or a combination of the following: design reviews, alternate calculations, and qualification testing.	N/A	
	4.2.1 Design Reviews	N/A	
	These are critical reviews to provide assurance that the final design is correct and satisfactory. Where applicable, (1) through (6) below shall be addressed. 1. Were the design inputs correctly selected? 2. Are assumptions necessary to perform the design activity adequately described and reasonable? Where necessary, are the assumptions identified for subsequent reverification when the detailed design activities are completed? 3. Was an appropriate design method used? 4. Were the design inputs correctly incorporated into the design? 5. Is the design output reasonable compared to design inputs? 6. Are the necessary design input and verification requirements for interfacing organizations specified in the design documents or in supporting procedures or instructions?		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 3S-1	4.2.2 Alternate Calculations		N/A
	These are the calculations or analyses that are made with alternate methods to verify correctness of the original calculations or analyses. The appropriateness of assumptions, input data used, and the computer program or other calculation method used shall also be reviewed.	N/A	
	4.2.3 Qualification Tests		
	Where design adequacy is to be verified by qualification tests, the tests shall be identified. The test configuration shall also be clearly defined and documented. Testing shall demonstrate adequacy of performance under conditions that simulate the most adverse design conditions. Operating modes and environmental conditions in which that item must perform satisfactorily shall be considered in determining the most adverse conditions. Where the test is intended to verify only specific design features, the other features of the design shall be verified by other means. Test results shall be documented and evaluated by the responsible design organization to assure that test requirements have been met.	N/A	
	If qualification testing indicates that modifications to the item are necessary to obtain acceptable performance, the modification shall be documented and the item modified and retested or otherwise verified to assure satisfactory performance. When tests are being performed on models or mockups, scaling laws shall be established and verified. The results of model testwork shall be subject to error analysis, where applicable, prior to use in final design work.		

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 3S-1	5. Change Control		N/A
	Changes to final designs, field changes, modifications to operating facilities and nonconforming items dispositioned use-as-is or repair shall be justified and subject to design control measures commensurate with those applied to the original design. These measures shall include assurance that the design analyses for the structure, system, or component are still valid. Changes shall be approved by the same affected groups or organizations which reviewed and approved the original design documents; except where an organization which originally was responsible for approving a particular design document is no longer responsible, then the Owner or his designee shall designate a new responsible organization which could be the Owner's engineering organization. The designated organization shall have demonstrated competence in the specific design area of interest and have an adequate understanding of the requirements and intent of the original design. Where a significant design change is necessary because of an incorrect design, the design process and verification procedure shall be reviewed and modified as necessary.	N/A	
	6. Interface Control		
	Design interfaces shall be identified and controlled and the design efforts shall be coordinated among the participating organizations. Interface controls shall include the assignment of responsibility and the establishment of procedures among participating design organizations for the review, approval, release, distribution, and revision of documents involving design interfaces.	N/A	AP 5.19Q R-1 in its entirety

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1. 1089 Supplement 3S-1	Design information transmitted across interfaces shall be documented and controlled. Transmittals shall identify the status of the design information or document provided and, where necessary, identify incomplete items which require further evaluation, review, or approval. Where it is necessary to initially transmit design information orally or by other informal means, the transmittal shall be confirmed promptly by a controlled document.		N/A
	7. Documentation and Records		N/A
	Design documentation and records, which provide evidence that the design and design verification processes were performed in accordance with the requirements of this standard, shall be collected, stored, and maintained in accordance with documented procedures.		
	The documentation shall include not only final design documents, such as drawings and specifications, and revisions thereto but also documentation which identifies the important steps, including sources of design inputs that support the final design.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	IV. PROCUREMENT DOCUMENT CONTROL		
NQA-1, 1989 Basic	Applicable design bases and other requirements necessary to assure adequate quality shall be included or referenced in documents for procurement of items and services. To the extent necessary, procurement documents shall require suppliers to have a quality assurance program consistent with the applicable requirements of this standard.	4.2, 4.3 *	SP 1.28 R-2, Sec. 5.1.2, 2nd Bullet, 3rd Bullet
NQA-1, 1989 Supplement 4S-1	2. Content of the Procurement Documents Procurement documents issued at all tiers of procurement shall include provisions for the following, as deemed necessary by the purchaser.	*	
	2.1 Scope of Work		SP 1.28 R-2, Sec. 5.1.1, 6th Bullet
	A statement of the scope of the work to be performed by the supplier shall be in the procurement documents.	4.1	
	2.2 Technical Requirements		SP 1.28 R-2, Sec. 5.1.2, 3rd Bullet, 5th Bullet, Sec. 5.1.4, 1st Bullet, 3rd Bullet, 4th Bullet
	Technical requirements shall be specified in the procurement documents. Where necessary, these requirements shall be specified by reference to specific drawings, specifications, codes, standards, regulations,procedures, or instructions, including revisions thereto that describe the items or services to be furnished. The procurement documents shall provide for identification of test, inspection, and acceptance requirements of the purchaser for monitoring and evaluating the supplier's performance.	4.2	

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REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989	2.3	Quality Assurance Program Requirements		
Supplement 4S-1		Procurement documents shall require that the supplier have a documented quality assurance program that implements portions or all of the requirements of this standard. The extent of the program required shall depend upon the type and use of the item or service being procured. The procurement documents shall require the supplier to incorporate appropriate quality assurance program requirements in subtier procurement documents.	4.3	SP 1.28 R-2, Sec. 5.1.2 Bullets 1 & 2
	2.4	Right of Access		
		At each tier of a procurement, the procurement documents shall provide for access to the supplier's plant facilities and records for inspection or audit by the purchaser, his designated representative, and/or other parties authorized by the purchaser.	4.4	SP 1.28 R-2, Sec. 5.1.2 3rd Bullet
	2.5	Documentation Requirements		
		The procurement documents at all tiers shall identify the documentation required to be submitted for information, review, or approval by the purchaser. The time of submittal shall also be established. When the purchaser requires the supplier to maintain specific quality assurance records, the retention times and disposition requirements shall be prescribed.	4.5	SP 1.28 R-2, Sec. 5.1.2 4th Bullet
	2.6	Nonconformances		
		The procurement documents shall include purchaser's requirements for reporting and approving disposition of nonconformances.	4.7	SP 1.28 R-2, Sec. 5.1.2 5th Bullet

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 4S-1	2.7 Spare and Replacement Parts The procurement documents shall require the identification of appropriate spare and replacement parts or assemblies and the appropriate delineation of the technical and quality assurance related data required for ordering these parts or assemblies.	4.8	SP 1.28 R-2, Sec. 5.1.4, 3rd Bullet
	3. Procurement Document Review	4.10, *	
	A review of the procurement documents and changes thereto shall be made to assure that documents transmitted to the prospective supplier(s) include appropriate provisions to assure that items or services will meet the specified requirements.		OP 1.4 R-1, Sec. 1.0 SP 1.28 R-2, in its entirety
	Reviews shall be performed and documented to provide objective evidence of satisfactory accomplishment of such review prior to contract award.		OP 1.4 R-1, Sec. 5.1 in its entirety; SP 1.28 R-2, Sec. 5.2.1, NOTE
	Changes made as a result of the bid evaluations or precontract negotiations shall be incorporated into the procurement documents. The review of such changes and their effects shall be completed prior to contract award. This review shall include the following considerations: a. Appropriate requirements specified in Section 2 of this Supplement. b. Determination of any additional or modified design criteria. c. Analysis of exceptions or changes requested or specified by the supplier and determination of the effects such changes may have on the intent of the procurement documents or quality of the item or service to be furnished.	4.10, 4.11	SP 1.28 R-2, Sec. 5.4.4 SP 1.28 R-2, Sec. 5.4.3

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 4S-1	Reviews required by this section shall be performed by personnel who have access to pertinent information and who have an adequate understanding of the requirements and intent of the procurement documents.	4.10	Mgt. & Quality Assurance IAW SP 1.28 R-2 & OP 1.4 R-1
	4. Procurement Document Changes Procurement document changes shall be subject to the same degree of control as utilized in the preparation of the original documents.	4.11, *	SP 1.28 R-2, Sec. 5.6

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	V. INSTRUCTIONS, PROCEDURES, AND DRAWINGS		
NQA-1, 1989 Basic	A. Activities affecting quality shall be prescribed by and performed in accordnace with documented instructions, procedures, or drawings of a type appropriate to the circumstances. These documents shall include or reference appropriate quantitative or qualitative acceptance criteria for determining that prescribed activities have been satisfactorily accomplished.	5.0, *	SP 1.1 R-2, Sec. 2.0, 4.1, 4.2 and 5.1.1.1. SP 1.30 R-2, Sec. 2.0, 5.1.1. (No specific statement in a procedure; however the various SPs, OPs, & WIs do reflect this.)

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	VI. DOCUMENT CONTROL		
NQA-1, 1989 Basic	The preparation, issue, and change of documents that specify quality requirements or prescribe activities affecting quality shall be controlled to assure that correct documents are being employed. Such documents, including changes thereto, shall be reviewed for adequacy and approved for release by authorized personnel.	6.2, *	SP 1.34 R-1, Sec. 4.0 SP 1.30 R-1, in its entirety SP 1.1 R-2, in its entirety
NQA-1, 1989 Supplement 6S-1	1. General		
	The documents which shall be controlled in accordance with this Supplement are only those documents which specify quality requirements or prescribe activities affecting quality such as instructions, procedures, and drawings.	6.0, *	SP 1.34 R-1, Sec. 4.0 SP 1.1 R-2, Sec. 2.0 SP 1.30 R-1, Sec. 2.0
	The term DOCUMENT CONTROL used throughout this Supplement is defined as the act of assuring that documents are reviewed for adequacy, approved for release by authorized personnel, and distributed to and used at the location where the prescribed activity is performed.		SP 1.34 R-1,4.0 Intent met by SP 1.1 R-2 and SP 1.30 R-1, WI-REC-002 R-0
	2. Document Preparation, Review, Approval, and Issuance	6.1, *	
	The Control System shall be documented and shall provide for (a) through (c) below		SP 1.34 R-1, SP 1.1 R-2, SP 1.30 R-1
	a. Identification of documents to be controlled and their specified distribution;	6.2.1, 6.2.2	
	b. Identification of assignment of responsibility for preparing, reviewing, approving, and issuing documents;	6.1 A	
	c. Review of documents for adequacy, completeness, and correctness prior to approval and issuance.	6.1 B	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 6S-1	3. Document Changes		
	3.1 Major Changes		
	Changes to documents, other than those defined as minor changes in Paragraph 3.2 below, are considered as major changes and shall be reviewed and approved by the same organizations that performed the original review and approval unless other organizations are specifically designated. The reviewing organization shall have access to pertinent background data or information upon which to base their approval.	6.3, *	SP 1.1 R-2, Para. 3.2.4, 3.2.5, 5.1.2.5, 5.2.2.10 SP 1.30 R-1, Para. 5.1.2.4, SP 1.2 R-2, Para. 3.2.3, 3.2.4 , 4.5, 5.2.21, 5.2.23, 5.4.28
	3.2 Minor Changes		
	Minor changes to documents, such as inconsequential editorial corrections, shall not require that the revised documents receive the same review and approval as the original documents. To avoid a possible omission of a required review, the type of minor changes that do not require such a review and approval and the persons who can authorize such a decision shall be clearly delineated.	6.3, *	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	VII. CONTROL OF PURCHASED ITEMS AND SERVICES		
NQA-1, 1989 Basic	The procurement of items and services shall be controlled to assure conformance with specified requirements. Such control shall provide for the following as appropriate: source evaluation and selection, evaluation objective evidence of quality furnished by the supplier, source inspection, audit, and examination of items or services upon delivery or completion.	7.2, 7.4, 7.6, *	SP 1.25 R-1 & R-2, 1.28 in its entirety. OP 1.3 R-1, OP 1.7 R-2, of OP 1.4 R-1 in its entirety
NQA-1, 1989 Supplement 7S-1	2. Procurement Planning Procurement activities shall be planned and documented to assure a systematic approach to the procurement process. Procurement planning shall result in the documented identification of procurement methods and organizational responsibilities. Planning shall determine the following: a. What is to be accomplished. b. Who is to accomplish it. c. How it is to be accomplished. d. When it is to be accomplished. Planning shall be accomplished as early as practicable, and no later than at the start of those procurement activities which are required to be controlled, to assure interface compatibility and a uniform approach to the procurement process. Planning shall result in the documented identification of methods to be used in procurement activities, sequence of actions and milestones indicating the completion of these activities, and the preparation of	7.1, *	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	applicable procedures prior to the initiation of each individual activity listed below. Planning shall provide for the integration of (a) through (i) below:	7.1	
	a. Procurement document preparation, review, and change control.		SP 1.28 R-2, in its entirety
	b. Selection of procurement sources.		OP 1.3 R-1, OP 1.7 R-2, in its entirety
	c. Bid evaluation and award.		SP 1.28 R-2, Sec. 5.4.3
	d. Purchaser control of supplier performance.		OP 1.7 R-2, OP 1.3 R-2 in its entirety
	e. Verification (surveillance, inspection, or audit) activities by purchaser, including notification for hold and witness points.		SP 1.28 R-2, Sec. 5.7.2.6, & 5.7.2.7, SP 1.25, Rev 1, Sec. 5.3.3
	f. Control of nonconformances.		
	g. Corrective action.		
	h. Acceptance of item or service.		SP 1.28 R-2, Sec. 7.0, 5.1.1 & 5.1.2
	i. Quality assurance records.		SP 1.25 R-1, Sec. 5.6, 7.0 OP 1.4, R-1, OP 1.3 R-1, OP 1.7 R-2, Sec. 7.0
	3. Supplier Selection	7.2, *	
	3.1 Source Evaluation and Selection		
	The selection of suppliers shall be based on evaluation of their capability to provide items or services in accordance with the requirements of the procurement documents prior to award of contract.		OP 1.3 R-1, Sec. 4.1 and its entirety

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	Procurement source evaluation and selection measures shall be implemented by the purchaser and shall provide for identification of the purchaser's organizational responsibilities for determining supplier capability.	7.2	OP 1.3 R-1, in its entirety
	Measures for evaluation and selection of procurement sources, and the results therefrom, shall be documented and shall include one or more of (1) through (3) below:		OP 1.3 R-1, Sec. 4.1
	1. Evaluation of the supplier's history of providing an identical or similar product which performs satisfactorily in actual use. The supplier's history shall reflect current capability.	7.2.1	OP 1.3 R-1, Sec. 4.2
	2. Supplier's current quality records supported by documented qualitative and quantitative information which can be objectively evaluated.	7.2.2	
	3. Supplier's technical and quality capability as determined by a direct evaluation of his facilities and personnel and the implementation of his quality assurance program.	7.2.3	
	4. Bid Evaluation	7.3, *	OP 1.3 R-1, Sec. 4.2
	Bid evaluation shall determine the extent of conformance to the procurement documents. This evaluation shall be performed by individuals or organizations designated to evaluate the following subjects, as applicable to the type of procurement:		
	a. Technical considerations.		
	b. Quality assurance requirements.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	c. Supplier's personnel.	7.3, 7.2	
	d. Supplier's production capability.		*
	e. Supplier's past performance.		
	f. Alternates.		
	g. Exceptions.		
	Prior to the award of the contract, the purchaser shall resolve or obtain commitments to resolve unacceptable quality conditions resulting from the bid evaluation.		OP 1.3 R-1, Sec. 4.3
	5. Supplier Performance Evaluation	7.4, *	
	The purchaser of items and services shall establish measures to interface with the supplier and to verify supplier's performance as deemed necessary by the purchaser. The measures shall include (a) through (f) below:		OP 1.3 R-1, Sec. 5.1.2 SP 1.28 R-2, in its entirety
	a. Establishing an understanding between purchaser and supplier of the provisions and specifications of the procurement documents.	7.4.1	
	b. Requiring the supplier to identify planning techniques and processes to be utilized in fulfilling procurement document requirements.	7.4.1.A	
	c. Reviewing supplier documents which are generated or processed during activities fulfilling procurement requirements.	7.4.1.B	
	d. Identifying and processing necessary change information.	7.4.1.C	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	e. Establishing method of document information exchange between purchaser and supplier.	7.4.1.D	
	f. Establishing the extent of source surveillance and inspection activities.	7.4.1.E	OP 1.3 R-1, Sec. 4.6, 4.7
	These verification activities shall be conducted as early as practicable. The purchaser's verification activities, however, shall not relieve the supplier of his responsibilities for verification of quality achievement.	7.4.2	SP 1.28 R-2, Para. 5.7.2.7
	5.1 Extent of Activities		
	The extent of verification activities, including planning, shall be a function of the relative importance, complexity, and quantity of the item or services procured and the supplier's quality performance. Verification activities shall be accomplished by qualified personnel assigned to check, inspect, audit, or witness the activities of suppliers.	7.4.2	SP 1.28 R-2, Sec. 1.0, OP 1.2 R-0, OP 1.3 R-1 in their entirety.
	5.2 Records		
	Activities performed to verify conformance to requirements of procurement documents shall be recorded. Source surveillances and inspections, audits, receiving inspections, nonconformances, dispositions, waivers, and corrective actions shall be documented.	7.11	OP 1.2 R-0, OP 1.1 R-0, SP 1.25 R-1, SP 1.28 R-2, OP 1.3 R-1, OP 1.4 R-1, and OP 1.7 R-2
	The purchaser shall assure that his documentation is evaluated to determine the supplier's quality assurance program effectiveness.	7.4.2	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	6. Control of Supplier Generated Documents Supplier generated documents shall be controlled, handled, and approved in accordance with established methods. Means shall be implemented to assure that the submittal of these documents is accomplished in accordance with the procurement document requirements. These measures shall provide for the acquisition, processing, and recorded evaluation of technical, inspection, and test data against acceptance criteria.	7.10	SP 1.28 R-2, Sec. 5.1.2, 4th Bullet
	7. Control of Changes in Items or Services The purchaser and supplier shall assure that measures to control changes in procurement documents are established, implemented, and documented and are in accordance with this Standard.	7.5	SP 1.28 R-2, Sec. 5.6
	8. Acceptance of Item or Service 8.1 General Methods shall be established for the acceptance of an item or and service being furnished by the supplier. Prior to offering the item or service for acceptance, the supplier shall verify that the item or service being furnished complies with the procurement requirements. Where required by code, regulation, or contract requirement, documentary evidence that items conform to procurement documents shall be available at the nuclear facility site prior to installation or use.	7.6	SP 1.25 R-1, Sec. 5.3 and 5.3.2 and Exhibit 1

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	8.2 Methods of Acceptance		
	Purchaser methods used to accept an item or related service from a supplier shall be a Supplier Certificate of Conformance, source verification, receiving inspection, or post-installation test at the nuclear facility site, or a combination thereof.	7.6	* SP 1.25 R-1, Sec. 5.3
	8.2.1 Certificate of Conformance	7.6, *	
	When a Certificate of Conformance is used, the minimum criteria of (1) through (6) below shall be met.		SP 1.25 R-1, Exhibit 1
	1. The certificate shall identify the purchased material or equipment, such as by the purchase order number.		
	2. The certificate shall identify the specific procurement requirements met by the purchased material or equipment, such as codes, standards, and other specifications. This may be accomplished by including a list of the specific requirements or by providing on-site, a copy of the purchase order and the procurement specifications or drawings, together with a suitable certificate. The procurement requirements identified shall include any approved changes, waivers, or deviations applicable to the subject material or equipment.		
	3. The certificate shall identify any procurement requirements that have not been met, together with an explanation and the means for resolving the nonconformances.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	4. The certificate shall be signed or otherwise authenticated by a person who is responsible for this quality assurance function and whose function and position are described in the purchaser's or supplier's quality assurance program.	7.6	SP 1.25, Exhibit 1
	5. The certification system, including the procedures to be followed in filling out a certificate and the administrative procedures for review and approval of the certificates, shall be described in the purchaser's or supplier's quality assurance program.		
	6. Means shall be provided to verify the validity of supplier certificates and the effectiveness of the certification system, such as during the performance of audits of the supplier or independent inspection or test of the items. Such verification shall be conducted by the purchaser at intervals commensurate with the supplier's past quality performance.		
	8.2.2 Source Verification		
	When source verification is used, it shall be performed at intervals consistent with the importance and complexity of the item or service, and it shall be implemented to monitor, witness, or observe activities. Source verification shall be implemented in accordance with plans to perform inspections, examinations, or tests at predetermined points. Upon purchaser acceptance of source verification, documented evidence of acceptance shall be furnished to the receiving destination of the item, to the purchaser, and to the supplier.	7.4.1, 7.4.2	Intent met by SP 1.25, R-1, Exhibit 2

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NQA-1, 1989 Supplement 7S-1	8.2.3 Receiving Inspection When receiving inspection is used, purchased items shall be inspected as necessary to verify conformance to specified requirements, taking into account source verification and audit activities and the demonstrated quality performance of the supplier. Receiving inspection shall be performed in accordance with established procedures and inspection instructions, to verify by objective evidence such features as proper configuration; identification; dimensional, physical, and other characteristics; freedom from shipping damage; and cleanness. Receiving inspection shall be coordinated with review of supplier documentation when procurement documents require such documentation to be furnished prior to receiving inspection.	7.6.1, *	SP 1.25 R-1, Sec. 5.3.1 and Exhibit 3
	8.2.4 Post-Installation Testing When post-installation testing is used, post-installation test requirements and acceptance documentation shall be mutually established by the purchaser and supplier.	7.6.2, *	SP 1.25 R-1, Sec. 5.3.6 and Exhibit 4
	8.3 Acceptance of Services Only In certain cases involving procurement of services only, such as third party inspection; engineering and consulting services; and installation, repair, overhaul, or maintenance work, the purchaser shall accept the service by any or all of the following methods: 1. Technical verification of data produced. 2. Surveillance and/or audit of the activity.	7.7 *	SP 1.25 R-1, Sec. 5.3.7 and Exhibit 5

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	3. Review of objective evidence for conformance to the procurement document requirements such as certifications, stress reports, etc.		SP 1.25 R-1, Sec. 5.3.7 and Exhibit 5
	9. Control of Supplier Nonconformances		
	The purchaser and supplier shall establish and document methods for disposition of items and services that do not meet procurement document requirements.	7.8, *	SP 1.25 R-1, Sec. 1.25, Sect. 5.6
	These methods shall contain provision for (a) through (e) below:		SP 1.28 R-2, Sect 5.1.2, 5th Bullet and Exhibit 2
	a. Evaluation of nonconforming items.		
	b. Submittal of nonconformance notice to purchaser by supplier as directed by the purchaser. These submittals shall include supplier recommended disposition (e.g., use-as-is or repair) and technical justification. Nonconformances to the procurement requirements or purchaser approved documents, which consist of one or more of the following, shall be submitted to the purchaser for approval of the recommended disposition:		
	1. Technical or material requirement is violated.		
	2. Requirement in supplier documents, which has been approved by the purchaser, is violated.		
	3. Nonconformance cannot be corrected by continuation of the original manufacturing process or by rework.		
	4. The item does not conform to the original requirement even though the item can be restored to a condition such that the capability of the item to function is unimpaired.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 7S-1	c. Purchaser disposition of supplier recommendation.		
	d. Verification of the implementation of the disposition.		
	e. Maintenance of records of supplier submitted nonconformances.		
	10. Commercial Grade Items	7.9, *	
	Where the design utilizes commercial grade items, the following requirements are an acceptable alternate to other requirements of this Supplement. except as noted in (b) below and the requirements of Supplement 4S-1.		SP 1.43 R-0, OP 1.4 R-1, Form TMSS/002/4
	a. The commercial grade item is identified in an approved design output document. An alternate commercial grade item may be applied, provided the cognizant design organization 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.	7.9.2	
	b. Source evaluation and selection, where determined necessary by the purchaser based on complexity and importance to safety, shall be in accordance with Paragraph 3.1 of this Supplement.	7.9.3	
	c. Commercial grade items shall be identified in the purchase order by the manufacturer's published product description (for example, catalog number).	7.9.1	
	d. After receipt of a commercial grade item, the purchaser shall determine that:	7.9.5	
	1. Damage was not sustained during shipment.		
	2. The item received was the item ordered.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
1989 Supplement 7S-1	3. Inspection and/or testing is accomplished, as required by the purchaser to assure conformance with the manufacturer's requirements. 4. Documentation, as applicable to the item was received and is acceptable.	7.9.5	QP 1.4, Form TMSS/002/4, 6/90

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	VIII. IDENTIFICATION AND CONTROL OF ITEMS		
NQA-1, 1989 Basic	Controls shall be established to assure that only correct and accepted items are used or installed. Identification shall be maintained on the items or in documents traceable to the items, or in a manner which assures that identification is established and maintained.	8.0, *	SP 1.25 R-1, Secs. 5.4, 5.5, 5.6 SP 1.28 R-2 in its entirety
NQA-1, 1989 Supplement 8S-1	2. Identification Methods	8.1, 8.2, 8.3, *	Only applies to samples and data from scientific investigations for T&MSS.
	2.1 Item Identification Items of production (batch, lot, component, part) shall be identified from the initial receipt and fabrication of the items up to and including installation and use. This identification shall relate an item to an applicable design or other pertinent specifying document.		SP 2.2 is under development for Scientific Investigation SP 2.1 is under development for Software Control.
	2.2 Physical Identification Physical identification shall be used to the maximum extent possible. Where physical identification on the item is either impracticable or insufficient, physical separation, procedural control, or other appropriate means shall be employed.	8.1.C, 8.3.A	
	2.3 Markings Identification markings, when used, shall be applied using materials and methods which provide a clear and legible identification and do not detrimentally affect the function or service life of the item. Markings shall be transferred to each part of an identified item when subdivided and shall not be obliterated or hidden by surface treatment or coatings unless other means of identification are substituted.	8.3.B	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 8S-1	3. Specific Requirements	8.3, *	
	3.1 Identification and Traceability of Items When specified by codes, standards, or specifications that include specific identification or traceability requirements (such as identification or traceability of the item to applicable specification and grade of material; heat, batch, lot, part, or serial number; or specified inspection, test, or other records) the program shall be designed to provide such identification and traceability control.		
	3.2 Limited Life Items Where specified, items having limited calendar or operating life or cycles shall be identified and controlled to preclude use of items whose shelf life or operating life has expired.	8.3 E	*Needs to be addressed in SP 2.2
	3.3 Maintaining Identification of Stored Items Provisions shall be made for the control of item identification consistent with the planned duration and conditions of storage, such as: 1. Provisions for maintenance or replacement of markings and identification records due to damage during handling or aging. 2. Protection of identifications on items subject to excessive deterioration due to environmental exposure; 3. Provisions for updating existing plant records.	13.0	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	IX. CONTROL OF PROCESSES		
NQA-1, 1989 Basic	Processes affecting quality of items or services shall be controlled. Special processes that control or verify quality, such as those used in welding, heat treating, and nondestructive examination, shall be performed by qualified personnel using qualified procedures in accordance with specified requirements.	9.0 Only applies to Scientific Investigations, * Refer to Sect. 20.0	Not applicable to T&MSS Scope
NQA-1, 1989 Supplement 9S-1	2. Process Control Processes shall be controlled by instructions, procedures, drawings, checklists, travelers, or other appropriate means. These means shall assure that process parameters are controlled and that specified environmental conditions are maintained.	Sect. 20.0	WI-MET-001 to WI-MET-005 WI-AQ-001 to WI-AQ-013 WI-RM-101,104,105,113,114, 116,123,125,139,141,144, 146-149,153,156,170,190,197, 201-206,310,312,470,471,601, 602,604,610,611,620,624,630, 631,632,702,760 and 901
	3. Special Processes Each special process shall be performed in accordance with appropriate instructions which include or reference procedure, personnel, and equipment qualification requirements.	N/A	Not applicable to T&MSS scope of work
	3.1 Responsibility It is the responsibility of the organization performing the special process to adhere to the approved procedures and processes.		
	3.1.1 Qualification of personnel, procedures, and equipment shall comply with specified requirements.		
	3.1.2 Conditions necessary for accomplishment of the process shall be included in procedures or instructions. These conditions shall include proper equipment, controlled parameters of the process, and calibration requirements.		

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NQA-1, 1989 Supplement 9S-1	3.2	Acceptance Criteria The requirements of applicable codes and standards, including acceptance criteria for the process, shall be specified or referenced in the procedures or instructions.	N/A	N/A
	3.3	Records Records shall be maintained as appropriate for the currently qualified personnel, processes, and equipment of each special process.		
	3.4	Special Requirements For special processes not covered by existing codes and standards or where quality requirements specified for an item exceed those of existing codes or standards, the necessary requirements for qualifications of personnel, procedures, or equipment shall be specified or referenced in the procedures or instructions.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	X. INSPECTION		
NQA-1, 1989 Basic	Inspections required to verify conformance of an item or activity to specified requirements shall be planned and executed. Characteristics to be inspected and inspection methods to be employed shall be specified. Inspection results shall be documented. Inspection for acceptance shall be performed by persons other than those who performed or directly supervised the work being inspected.	10.0	SP 1.25 R-2, Sec. 5.2, 5.4.1
NQA-1, 1989 Supplement 10S-1	2. Personnel		
	2.1 Reporting Independence		
	Inspection personnel shall not report directly to the immediate supervisors who are responsible for performing the work being inspected.	10.1	SP 1.25 R-2 Sec. 4.1
	2.2 Qualification		
	Each person who verifies conformance of work activities for purposes of acceptance shall be qualified to perform the assigned task. Inspections by persons during on-the-job training for qualification shall be performed under the direct observation and supervision of a qualified person and verification of conformances shall be by the qualified person until certification is achieved.	2.2.11.1	SP 1.25 R-2, Sec. 4.2 OP 1.8 R-0, Sec. 4.0, 1st Paragraph
	3. Inspection Hold Points		
	If mandatory inspection hold points are required beyond which work shall not proceed without the specific consent of the designated representative, the specific hold points shall be indicated in appropriate documents. Consent to waive specified hold points shall be recorded prior to continuation of work beyond the designated hold point.	10.1	Only applies to receipt & source inspection; SP 1.28 R-2, 5.1.4, Bullet 4 All Work Instructions (WIs)

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 10S-1	4. Inspection Planning		
	4.1 Planning		
	Planning for inspection activities shall be accomplished and documented. The documentation shall identify characteristics, methods, and acceptance criteria, and shall provide for recording objective evidence of inspection results.	10.1, *	SP 1.25 R-2, Sec. 5.3
	4.2 Sampling		
	Where a sample is used to verify acceptability of a group of items, the sampling procedure shall be based on recognized standard practices.	10.1	Not applicable: Under the present scope of T&MSS Participant procurement, sampling will not be used.
	5. In-Process Inspection	*	SP 1.28 R-2, Secs. 5.7.2, & 5.7.3
	5.1 Inspection	10.1	SP 1.28 R-2, Sec. 5.5.2 & 5.5.3, OP 1.3 R-1, in its entirety
	Inspection of items in-process or under construction shall be performed for work activities where necessary to verify quality. If inspection of processed items is impossible or disadvantageous, indirect control by monitoring of processing methods, equipment, and personnel shall be provided. Both inspection and process monitoring shall be provided when control is inadequate without both.		
	5.2 Combined Inspection and Monitoring		
	5.2.1 A combination of inspection and process monitoring methods, when used, shall be performed in a systematic manner to assure that the specified requirements for control of the process and quality of the item are being achieved throughout the duration of the process.	10.1	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 10S-1	5.2.2 Controls, where required, shall be established and documented for the coordination and sequencing of these activities at established inspection points during successive stages of the conducted process or construction.	10.1	SP 1.28 R-2, Sec. 5.7.2 & 5.7.3
	6. Final Inspections	10.1	
	6.1 Resolution of Nonconformances		
	Final inspections shall include a records review of the results and resolution of nonconformances identified by prior inspections. The final inspection shall be planned to arrive at a conclusion regarding conformance of the item to specified requirements.		SP 1.25 R-2, Sec. 5.6 SP 1.23 R-0, Sec. 5.4
	6.2 Inspection Requirements		
	Completed items shall be inspected for completeness, markings, calibration, adjustments, protection from damage, or other characteristics as required to verify the quality and conformance of the item to specified requirements. Quality records shall be examined for adequacy and completeness if not previously so examined.		SP 1.25 R-2, Sec. 5.3.4 and Exhibit 3 SP 1.25 R-2, Sec. 5.3.2 and Exhibit 1
	6.3 Acceptance		
	The acceptance of the item shall be documented and approved by authorized personnel		SP 1.25 R-2, Sec. 5.4
	6.4 Modifications, Repairs, or Replacements		
	Modifications, repairs, or replacements of items performed subsequent to final inspection shall require reinspection or retest, as appropriate, to verify acceptability.		SP 1.23 R-0 RE. SP 1.25 R-2, Sec. 5.6

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 10S-1	7. Inservice Inspection		
	7.1 Planning and Performance Required inservice inspection or surveillance or structures, systems, or components shall be planned and executed by or for the organization responsible for operation.	N/A	N/A to T&MSS scope of work
	7.2 Methods Inspection methods shall be established and executed to verify that the characteristics of an item continue to remain within specified limits. Inspection methods shall include evaluations of performance capability of essential emergency and safety systems and equipment, verification of calibration and integrity of instruments and instrument systems, and verification of maintenance, as appropriate.		
	8. Records Records shall, as a minimum, identify (a) through (f) below: a. Item inspected b. Date of inspection c. Inspector d. Type of observation e. Results or acceptability f. Reference to information on action taken in connection with nonconformances	10.2	SP 1.25 R-2, Sec. 7.0, 5.3.4 and Form T&MSS-61-16, & 16A, 4/90

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XI. TEST CONTROL		
NQA-1, 1989 Basic	Tests required to verify conformance of an item or computer program to specified requirements and to demonstrate satisfactory performance for service shall be planned and executed. Characteristics to be tested and test methods to be employed shall be specified. Test results shall be documented and their conformance with acceptance criteria shall be evaluated. Tests required to collect data, such as for siting or design input, shall be planned, executed, documented, and evaluated.	11.0, 19.0 *	All Work Instructions (WI). SP 2.2 & 2.1 under development.
NQA-1, 1989 Supplement 11S-1	2. Test Requirements Test requirements and acceptance criteria shall be provided or approved by the organization responsible for the design of the item to be tested unless otherwise designated. Required tests, including, as appropriate, prototype qualification tests, production tests, proof tests prior to installation, construction tests, pre-operational tests, and operational tests shall be controlled. Test requirements and acceptance criteria shall be based upon specified requirements contained in applicable design or other pertinent technical documents.	2.0, 11.0	No generic procedure on Test Control; however SP 2.2 is under development.
	3. Test Procedures Test procedures shall include or reference test objectives and provisions for assuring that prerequisites for the given test have been met, that adequate instrumentation is available and used, that necessary monitoring is performed, and that suitable environmental conditions are maintained. Prerequisites shall include the following as applicable: calibrated instrumentation, appropriate equipment, trained personnel, condition of test equipment and the item to be tested, suitable environmental conditions, and provisions for data acquisition.	11.2, 11.3	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 11S-1	In lieu of specially prepared written test procedures, appropriate sections of related documents, such as ASTM methods, supplier manuals, equipment maintenance instructions, or approved drawings or travelers with acceptance criteria, can be used. Such documents shall include adequate instructions to assure the required quality of work.	11.0, 11.3	All Work Instructions (WIs)
	4. Test Results		
	Test results shall be documented and evaluated by a responsible authority to assure that test requirements have been satisfied.	11.2I	
	5. Test Records	11.2	
	Test records shall, as a minimum, identify (a) through (g) below:	11.2J	
	a. Item tested		
	b. Date of test		
	c. Tester or data recorder		
	d. Type of observation		
	e. Results and acceptability		
	f. Action taken in connection with any deviations noted		
	g. Person evaluating test results		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 11S-2	1. General This Supplement provides amplified requirements for testing of computer programs and associated computer systems. It supplements the requirements of Basic Requirement 11 of this Standard and shall be used in conjunction with that Basic Requirement when and to the extent specified by the organization invoking this Standard.	19, *	SP 2.1 & Software QA Plan Under development
	2. Test Requirements Test requirements and acceptance criteria shall be provided or approved by the organization responsible for the design or use of the program to be tested unless otherwise designated. Required tests including (as appropriate) verification tests, hardware integration tests, and in-use tests shall be controlled. Test requirements and acceptance criteria shall be based upon applicable design or other pertinent technical documents.	11	
	2.1 Verification Tests Verification tests shall demonstrate the capability of the computer program to produce valid results for test problems encompassing the range of permitted usage defined by the program documentation. Acceptable test problem solutions are as follows: a. Hand calculations; b. Calculations using comparable proven programs; or c. Empirical data and information from technical literature. For programs used for operational control, testing shall demonstrate required performance over the range of operation of the controlled function or process.	19.1, *	

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NQA-1, 1989 Supplement 11S-2	Depending on the complexity of the computer program being tested, testing may range from a single test of the completed computer program to a series of tests performed at various stages of computer program development to verify correct translation between stages and proper working of individual modules, followed by an overall computer program test. Regardless of the number of states of testing performed, verification testing shall be sufficient to establish that test requirements are satisfied and that the computer program produces a valid result for its intended function.	19.0	SP 2.1 & Software QA Plan Under development
	2.2 In-Use Tests	*	
	Test problems shall be developed and documented to permit confirmation of acceptable performance of the computer program in the operating system. Test problems shall be run whenever the computer program is installed on a different computer, or when significant hardware or operating system configuration changes are made. Periodic in-use manual or automatic self-check routines shall be prescribed and performed for those applications where computer failures or drift can affect required performance.		
	3. Test Procedures	*	
	Test procedures or plans shall specify the following, as applicable:		
	a. Required tests and test sequence		
	b. Required ranges of input parameters		
	c. Identification of the stages at which testing is required		
	d. Criteria for establishing test cases		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 11S-2	e. Requirements for testing logic branches		
	f. Requirements for hardware integration		SP 2.1 & Software QA Plan Under development
	g. Anticipated output values		
	h. Acceptance criteria		
	i. Reports, records, standard formatting, and conventions		
	4. Test Results Test results shall be documented. Verification test results shall be evaluated by a responsible authority to assure that test requirements have been satisfied.	*	
	5. Test Records	*	
	1. Verification test records shall identify (a) through (j) below.		
	a. Computer program tested		
	b. Computer hardware used		
	c. Test equipment and calibrations, where applicable		
	d. Date of test		
	e. Tester or data recorder		
	f. Simulation models used, where applicable		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 11S-2	g. Test problems		
	h. Results and acceptability		
	i. Action taken in connection with any deviations noted		SP 2.1 & Software QA Plan Under development
	j. Person evaluating test results		
	2. In-use test results shall identify (a) through (f) below.	*	
	a. Computer program tested		
	b. Computer hardware used		
	c. Test equipment and calibrations, where applicable		
	d. Date of test		
	e. Tester or data recorder		
	f. Acceptability		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XII. CONTROL OF MEASURING AND TEST EQUIPMENT		
NQA-1, 1989 Basic	Tools, gages, instruments, and other measuring and test equipment used for activities affecting quality shall be controlled and at specified periods calibrated and adjusted to maintain accuracy within necessary limits.	12.0	SP 2.4 R-0, Sec. 4.0
NQA-1, 1989 Supplement 12S-1	2. Selection		
	Selection of measuring and test equipment shall be controlled to assure that such items are of proper type, range, accuracy, and tolerance to accomplish the function of determining conformance to specified requirements.	12.2.C	SP 2.4 R-0, Sec. 4.0 & 5.1.2
	3. Calibration and Control		
	3.1 Calibration		
	Measuring and test equipment shall be calibrated, adjusted, and maintained at prescribed intervals or, prior to use, against certified equipment having known valid relationships to nationally recognized standards. If no nationally recognized standards exist, the bases for calibration shall be documented.	12.2	SP 2.4 R-0, Sec. 4.0 (Not addressed; to be addressed in revision to SP 2.4, Para. 5.1.2)
	3.2 Control		
	The method and interval of calibration for each item shall be defined based on the type of equipment stability characteristics, required accuracy, intended use, and other conditions affecting measurement control. When measuring and test equipment is found to be out of calibration, an evaluation shall be made and documented of the validity of previous inspection or test results and of the acceptability of items previously inspected or tested. Out-of-calibration devices shall be tagged or segregated and not used until they have been recalibrated. If any measuring or test equipment is consistently found to be out	12.0 12.2.E, 12.2.F, & 12.2.G	SP 2.4 R-0, Sec. 4.0 SP 2.4 R-0, Sec. 5.3.6 & "NOTE", SP 2.4 R-0, Sec. 5.1.6, 5.2.5, 5.3.6 SP 1.23 R-0, Sec. 5.1.4

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 12S-1	of calibration, it shall be repaired or replaced. A calibration shall be performed when the accuracy of the equipment is suspect.		SP 2.4 R-0, Sec. 5.3.5, 5.2.8
1	3.3 Commercial Devices	*	
	Calibration and control measures may not be required for rulers, tape measures, levels, and other such devices, if normal commercial equipment provides adequate accuracy.	12.0	SP 2.4 R-0, Sec. 4.0
	4. Handling and Storage	*	
	Measuring and test equipment shall be properly handled and stored to maintain accuracy.		SP 2.4 R-0, Sec. 5.2.4
	5. Records		
	Records shall be maintained and equipment shall be suitably marked to indicate calibration status.	12.2D	SP 2.4 R-0, Sec. 7.0 & 5.1.7

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XIII. HANDLING, STORAGE, AND SHIPPING		
NQA-1, 1989 Basic	Handling, storage, cleaning, packaging, shipping, and preservation of items shall be controlled to prevent damage or loss and to minimize deterioration.	13.0	SP 1.28 R-2, Sec. 5.1.1, 5th Bullet and Exhibit 2
NQA-1, 1989 Supplement 13S-1	2. Instructions		
	Handling, storage, and shipping of items shall be conducted in accordance with established work and inspection instructions, drawings, specifications, shipment instructions, or other pertinent documents or procedures specified for use in conducting the activity.	13.0	
	3. Requirements		
	3.1 General		
	When required for particular items, special equipment (such as containers, shock absorbers, and accelerometers) and special protective environments (such as inert gas atmosphere, specific moisture content levels, and temperature levels) shall be specified, provided, and their existence verified.	13.3	
	3.2 Procedures		
	When required for critical, sensitive, perishable, or high-value articles, specific procedures for handling, storage, packaging, shipping, and preservation shall be used.	13.3	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 13S-1	3.3 Tools and Equipment		
	Special handling tools and equipment shall be utilized and controlled as necessary to ensure safe and adequate handling. Special handling tools and equipment shall be inspected and tested in accordance with procedures and at specified time intervals to verify that the tools and equipment are adequately maintained.	13.2	
	3.4 Operators		
	Operators of special handling and lifting equipment shall be experienced or trained in use of the equipment.	13.1	
	4. Marking		*
	Instructions for marking and labeling for packaging, shipment, handling, and storage of items shall be established as necessary to adequately identify, maintain and preserve the item, including indication of the presence of special environments or the need for special controls.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XIV. INSPECTION, TEST, AND OPERATING STATUS		
NQA-1, 1989 Basic	The status of inspection and test activities shall be identified either on the items or in documents traceable to the items where it is necessary to assure that required inspections and tests are performed and to assure that items which have not passed the required inspections and tests are not inadvertently installed, used, or operated. Status shall be maintained through indicators, such as physical location and tags, markings, shop travelers, stamps, inspection records, or other suitable 197.	14, 14.1, 14.2, *	,SP 1.22 R-0, SP 1.23 R-0, SP 1.37 R-1, SP 2.4 R-0 WI-AQ-001 R-1, thru 005 WI-MET-001 R-1, thru WI-MET-0012; WI-AQ-006 R-1 thru 013. WI-RM-113 R-0 114, 139, 190,
	means. The authority for application and removal of tags, markings, labels, and stamps shall be specified. Status indicators shall also provide for indicating the operating status of systems and components of the nuclear facility, such as by tagging valves and switches, to prevent inadvertent operation.	N/A	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XV. CONTROL OF NONCONFORMING ITEMS		
NQA-1, 1989 Basic	Items that do not conform to specified requirements shall be controlled to prevent inadvertent installation or use. Controls shall provide for identification, documentation, evaluation, segregation when practical, and disposition of nonconforming items, and for notification to affected organizations.	15, 15.1, *	SP 1.23 R-0, Sec. 1.0, 5.1.3, 5.1.4
NQA-1, 1989 Supplement 15S-1	2. Identification		
	a. Identification of nonconforming items shall be by marking, tagging, or other methods which shall not adversely affect the end use of the item. The identification shall be legible and easily recognizable.	15.1, *	SP 1.23 R-0, Sec. 5.1
	b. If identification of each nonconforming item is not practical, 5.1.4 the container, package, or segregated storage area, as appropriate, shall be identified.		SP 1.23 R-0, Sec. 5.1.3,
	3. Segregation	15.1, *	
	a. Nonconforming items shall be segregated, when practical, by placing them in a clearly identified and designated hold area until properly dispositioned.		SP 1.23 R-0, Sec. 5.1.4
	b. When segregation is impractical or impossible due to physical conditions such as size, weight, or access limitations, other precautions shall be employed to preclude inadvertent use of a nonconforming item.		SP 1.23 R-0, Sec. 5.1.5

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 15S-1	4. Disposition		
	4.1 Control		
	Nonconforming characteristics shall be reviewed and recommended dispositions of nonconforming items shall be proposed and approved in accordance with documented procedures. Further processing, delivery, installation, or use of a nonconforming item shall be controlled pending an evaluation and an approved disposition by authorized personnel.	15.1, 15.4	SP 1.23 R-0, Sec. 5.3
	4.2 Responsibility and Authority		
	The responsibility and authority for the evaluation and disposition of nonconforming items shall be defined.	15.4	SP 1.23 R-0, Sec. 5.3.1
	4.3 Personnel		
	Personnel performing evaluations to determine a disposition shall have demonstrated competence in the specific area they are evaluating, have an adequate understanding of the requirements, and have access to pertinent background information.	15.4,	SP 1.23 R-0, Sec. 5.3.1
	4.4 Disposition		
	The disposition, such as use-as-is, reject, repair, or rework of nonconforming items shall be identified and documented.	15.4,	SP 1.23, Sect. 5.3.3
	Technical justification for the acceptability of a nonconforming item, dispositioned repair, or use-as-is shall be documented. Nonconformances to design requirements dispositioned use-as-is or repair shall be subject to design control measures commensurate with those applied to the original design. The as-built records, if such records are required, shall reflect the accepted deviation.		

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REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 15S-1	4.5	Repaired or Reworked Items Repaired or reworked items shall be reexamined in accordance with applicable procedures and with the original acceptance criteria unless the nonconforming item disposition has established alternate acceptance criteria.	15.5	* SP 1.23 R-0, Sec. 5.3.3(c)

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XVI. CORRECTIVE ACTION		
NQA-1, 1989 Basic	Conditions adverse to quality shall be identified promptly and corrected as soon as practical. In the case of a significant condition adverse to quality, the cause of the condition shall be determined and corrective action taken to preclude recurrence. The identification, cause, and corrective action for significant conditions adverse to quality shall be documented and reported to appropriate levels of management; follow-up action shall be taken to verify implementation of this corrective action.	16, 16.1, 16.2, 16.3,	SP 1.37 R-1, Sec. 5.1.1, 1.0, 5.1.4, 5.1.10, 5.1.11 & 5.2

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XVII. QUALITY ASSURANCE RECORDS		
NQA-1, 1989 Basic	Records that furnish documentary evidence of quality shall be specified, prepared, and maintained. Records shall be legible, identifiable, and retrievable. Records shall be protected against damage, deterioration, or loss. Requirements and responsibilities for record transmittal, distribution, retention, maintenance, and disposition shall be established and documented.	17.0, 17.1	SP 1.36 R-1, in its entirety
NQA-1, 1989 Supplement 17S-1	1. Records Administration		
	2.1 Records System		
	A records system(s) shall be established by the organization responsible at the earliest practicable time consistent with the schedule for accomplishing work activities and in compliance with the general requirements of this Supplement. The records system(s) shall be defined, implemented, and enforced in accordance with written procedures, instructions, or other documentation.	17.1	SP 1.36 R-1, Sec. 1.0 WI-REC-001, R-0
	2.2 Generation of Records		
	The applicable design specifications, procurement documents, test procedures, operational procedures, or other documents shall specify the records to be generated, supplied, or maintained by or for the owner. Documents that are designated to become records shall be legible, accurate, and completed appropriate to the work accomplished.	17.1	Sec/ 7.0 of all T&MSS participant procedures

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REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 17S-1	2.3	Documents shall be considered valid records only if stamped, initialed, or signed and dated by authorized personnel or otherwise authenticated. This authentication may take the form of a statement by the responsible individual or organization. Handwritten signatures are not required if the document is clearly identified as a statement by the reporting individual or organization. These records may be originals or reproduced copies.	Record Validation 17.2 *	SP 1.36 R-1, Sec. 5.1.3
	2.4	Index		
		The records shall be indexed. The indexing system(s) shall include, as a minimum, record retention times and the location of the record within the record system.	17.3	To be addressed in WI-REC-004, when developed.
	2.5	Distribution		
		The records shall be distributed, handled, and controlled in accordance with written procedures.	17.3 *	SP 1.36 R-1
	2.6	Identification		
		Records and/or indexing system(s) shall provide sufficient information to permit identification between the record and the item(s) or activity(ies) to which it applies.	17.3 *	SP 1.36 R-1, Sec. 3.2.2
	2.7	Classification		
		Records shall be classified as Lifetime or Nonpermanent by the owner, or his agent when authorized in accordance with the criteria given in 2.7.1 or 2.7.2 below.	N/A - All Quality Records are Lifetime	N/A

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 17S-1	2.7.1 Lifetime records are those that meet one or more of the following criteria: 1. Those which would be of significant value in demonstrating capability for safe operation. 2. Those which would be of significant value in maintaining, reworking, repairing, replacing, or modifying an item. 3. Those which would be of significant value in determining the cause of an accident or malfunction of an 4. Those which provide required baseline data for inservice operations. Lifetime records are required to be maintained by or for the plant owner for the life of the particular item while it is installed in the plant or stored for future use.		N/A
	2.7.2 Nonpermanent Records Nonpermanent records are those required to show evidence that an activity was performed in accordance with the applicable requirements but need not be retained for the life of the item because they do not meet the criteria for lifetime records.	N/A	
	2.8 Retention of Records Records shall be retained in accordance with the above classifications. The retention period of nonpermanent records shall be established in writing.	*	

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 17S-1	2.9 Corrected Information in Records		SP 1.36, Rev 1, Sec. 4.2
	Records may be corrected in accordance with procedures which provide for appropriate review or approval by the originating organization. The correction shall include the date and the identification of the person authorized to issue such correction.	17.4	
	3. Receipt		
	3.1 Responsibility		
	The individual or organization responsible for receiving records shall provide protection from damage or loss during the time that the records are in their possession.	17.5.1, 17.5.2	SP 1.36 R-1, Sec. 4.10, 4.11
	3.2 Receipt Control	17.5.2	
	Each organization responsible for the receipt of records shall designate a person or organization responsible for receiving the records. The designee shall be responsible for organizing and implementing a system of receipt control of records for permanent and temporary storage. As a minimum, a receipt control system shall include the following:		SP 1.36 R-1, Sec. 4.8, 4.9, 4.10
	1. A method for designating the required records.		
	2. A method for identifying records received.		
	3. Procedures for receipt and inspection of incoming records.		
	4. A method for submittal of completed records to the storage facility without unnecessary delay.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplementy 17S-1	3.3 Status		
	Each receipt control system shall be structured to permit a current and accurate assessment of the status of records during the receiving process.	17.5.2	SP 1.36 R-1, Sec. 4.8.7.d, 4.12
	4. Storage, Preservation, and Safekeeping		
	4.1 Storage		
	The records shall be stored in predetermined locations(s) that meet the requirements of applicable standards, codes, and regulatory agencies.	17.5.1, *	WI-REC-001, R-0
	Prior to storage of records, a written storage procedure shall be prepared and responsibility assigned for enforcing the requirements of that procedure. This procedure shall include, as a minimum, (a) through (g) below:		
	a. A description of the storage facility.		WI-REC-001 R-0, Para. 5.10
	b. The filing system to be used.		WI-REC-001 R-0, Paras. 5.8.1.7, 5.10.2, 5.12.1.4, 5.14
	c. A method for verifying that the records received are in agreement with the transmittal document and that the are legible.		WI-REC-001, Para. 5.12.1.1, 5.5.1.10
	d. A method of verifying that the records are those designated (see Paragraph 3.2 above).		WI-REC-001 R-0, Para. 5.5.1.9
	e. The rules governing access to and control of the files.		WI-REC-001 R-0, Para. 5.13.1 and Para. 5.13.2

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 17S-1	f. A method for maintaining control of and accountability for records removed from the storage facility.	17.5,	WI-REC-001 R-0, Para. 5.14, 5.8.1.4, 5.1.2.1, 5.4, 5.4.8 Will be addressed in a WI for the CRF when developed.
	g. A method for filing supplemental information (see Paragraph 2.9 above) and disposing of superseded records.		
	4.2 Preservation	*	
	Records shall be stored in a manner approved by the organization or organizations responsible for storage. In order to preclude deterioration of the records, the requirements of (a) through (c) below shall apply:		WI-REC-001 R-0, Para. 5.11 SP 1.36, Para. 4.10
	a. Provisions shall be made in the storage arrangement to prevent damage from moisture, temperature, and pressure.		WI-REC-001, Para. 5.11.1 SP 1.36 R-0, Para. 4.10
	b. Records shall be firmly attached in binders or placed in folders or envelopes for storage in steel file cabinets or on shelving in containers.		WI-REC-001 R-0, Para. SP 1.36 R-0, Para. 4.10
	c. Provisions shall be made for special processed records (such as radiographs, photographs, negatives, microfilm, and magnetic media) to prevent damage from excessive light, stacking, electromagnetic fields, temperature, and humidity.		WI-REC-001 R-0, Para. 5.11.1, 5.11.3
	4.3 Safekeeping	*	
	Measures shall be established to preclude the entry of unauthorized personnel into the storage area. These measures shall guard against larceny and vandalism. Measures shall be taken to provide for replacement, restoration, or substitution of lost or damaged records.		WI-REC-001 R-0, Para. 5.13, 5.7

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NQA-1, 1989 Supplement 17S-1	4.4	Facility Records shall be stored in facilities constructed and maintained in a manner which minimizes the risk of damage or destruction from the following: a. Natural disasters such as winds, floods, or fires. b. Environmental conditions such as high and low temperatures and humidity. c. Infestation of insects, mold, or rodents. There are two satisfactory methods of providing storage facilities, single or dual.	17.5.1	N/A
	4.4.1	Single Facility		
		a. Design and construction of a single record storage facility shall meet the criteria of (1) through (9) below: 1. Reinforced concrete, concrete block, masonry, or equal construction. 2. Floor and roof with drainage control. If a floor drain is provided, a check valve (or equal) shall be included. 3. Doors, structure and frames, and hardware shall be designed to comply with the requirements of a minimum 2 hr fire rating.		N/A

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NQA-1, 1989 Supplement 17S-1	4. Sealant applied over walls as a moisture or condensation barrier. 5. Surface sealant on floor providing a hard wear surface to minimize concrete dusting. 6. Foundation sealant and provisions for drainage. 7. Forced air circulation with filter system. 8. Fire protection system. 9. Only those penetrations used exclusively for fire protection, communication, lighting, or temperature/humidity control are allowed; all such penetrations shall be sealed or dampered to comply with the minimum 2 hr fire protection rating. The construction details shall be reviewed for adequacy of protection of contents by a person who is competent in the technical field of fire protection and fire extinguishing. If the facility is located within a building or structure, the environment and construction of that building can provide a portion or all of these criteria. 4.4.2 Alternate Single Facilities The following are acceptable alternatives to the criteria of 4.4.1 above for a single facility:	N/A	N/A

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 17S-1	a. 2 hr fire rated vault meeting NFPA 232-1986 or NFPA 232AM-1986 or both.	N/A	N/A
	b. 2 hr fire rated Class B file containers meeting the requirements of NFPA 232-1986 or NFPA 232AM-1986 or both.		
	c. 2 hr fire rated file room meeting the requirements of NFPA 232-1986 or NFPA 232AM-1986 or both 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 hr fire rated dampers or doors in all boundary penetrations.		N/A

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 17S-1	4.4.3 Temporary Storage		
	When temporary storage of records (such as for processing, review, or use) is required by an organization's procedures, the records shall be stored in a 1 hr fire rated container. The procedures shall specify the maximum allowable time limit for temporary storage. The container shall bear a UL label (or equivalent) certifying 1 hr fire protection or be certified by a person competent in the technical field of fire protection.	17.5.1	** Needs to address UL certification on the fire rating in a revision to SP 1.36 R-1 , Sec. 5.4
	4.4.4 Dual Facilities		
	If storage at dual facilities for each record is provided, the facilities shall be at locations sufficiently remote from each other to eliminated the chance of exposure to a simultaneous hazard. Each facility is not required to satisfy the requirements of either Paragraph 4.4.1 or Paragraph 4.4.2 above, but shall meet the other requirements of this Standard.	17.5.1	WI-REC-001 R-0, Para. 5.10.1, 5.1.1.3, 5.1.2.3, 5.4.5, 5.4.13, 5.19
	5. Retrieval	*	
	Storage systems shall provide for retrieval of information in accordance with planned retrieval times based upon the record type.	17.5.1	WI-REC-001 R-0, Para. 5.14
	A list shall be maintained designating those personnel who shall have access to the files.		
	Records maintained by a supplier at his facility or other location shall be accessible to the purchaser or his designated alternate, e.g., the owner.		

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NQA-1, 1989 Supplement 17S-1	6. Disposition	17.5.1	WI-REC-001 R-0, Sec. 5.14
	Records accumulated at various locations, prior to transfer, shall be made accessible to the owner directly or through the procuring organization. The custodian shall inventory the submittals, acknowledge receipt, and process these records in accordance with this Standard.		
	Various regulatory agencies have requirements concerning records that are within the scope of this Standard. The most stringent requirements shall be used in determining the final disposition.		
	The supplier's nonpermanent records shall not be disposed of until the applicable conditions listed in (a) through (e) below are satisfied:	N/A - All quality affecting records are lifetime	N/A - All quality affecting records are lifetime
	a. Items are released for shipment, a Code Data Report is signed, or a Code Symbol Stamp is affixed.		
	b. Regulatory requirements are satisfied.		
	c. Operational status permits.		
	d. Warranty consideration is satisfied.		
	e. Purchaser's requirements are satisfied.		

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XVIII. AUDITS		
NQA-1 Basic	Planned and scheduled audits shall be performed to verify compliance with all aspects of the quality assurance program and to determine its effectiveness. These audits shall be performed in accordance with written procedures or checklists by personnel who do not have direct responsibility for performing the activities being audited. Audit results shall be documented and reported to and reviewed by responsible management. Follow-up action shall be taken where indicated.	18	OP 1.1 R-0, in its entirety
NQA-1, 1989 Supplement 18S-1	2. Scheduling Internal or external quality assurance audits, or both, shall be scheduled in a manner to provide coverage and coordination with ongoing quality assurance program activities. Audits shall be scheduled at a frequency commensurate with the status and importance of the activity. The audit schedule shall be reviewed periodically and revised as necessary to assure that coverage is maintained current. Regularly scheduled audits shall be supplemented by additional audits of specific subjects when necessary to provide adequate coverage.	18.1.1	OP 1.1, R-0, Sec. 4.1.1, 4.1.2, 4.1.3, 5.1.1 & 5.1.4
	3. Preparation 3.1 Audit Plan The auditing organization shall develop and document an audit plan for each audit. This plan shall identify the audit scope, requirements, audit personnel, activities to be audited, organizations to be notified, applicable documents, schedule, and written procedures or checklists.	18.1.3	OP 1.1 R-0, Sec. 5.2

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 18S-1	3.2 Personnel		
	The auditing organization shall select and assign auditors who are independent of any direct responsibility for performance of the activities which they will audit. In the case of internal audits, personnel having direct responsibility for performing the activities being audited shall not be involved in the selection of the audit team. Audit personnel shall have sufficient authority and organizational freedom to make the audit process meaningful and effective.	18.1.2	OP 1.1 R-0, Sec. 4.1.4, 4.1.5 OP 1.1, Para. 4.1.4 (Rev. 1 when issued)
	3.3 Selection of the Audit Team		
	An audit team shall be identified prior to the beginning of each audit. This team shall contain one or more auditors and shall have an individual appointed to lead the team who organizes and directs the audit, coordinates the preparation and issuance of the audit report, and evaluates responses. The audit team leader shall ensure that the audit team is prepared prior to initiation of the audit.	18.1.2	OP 1.1 R-0, Sec. 4.1.4, 4.1.5, 5.2, 5.2.4, 5.3, 5.4.7, 5.5, 5.6 & 5.7, 5.2.4
	4. Performance		
	Audits shall be performed in accordance with written procedures or checklists. Auditing shall begin as early in the life of the activity as practical and shall be continued at intervals consistent with the schedule for accomplishing the activity. Elements that have been selected for audit shall be evaluated against specified requirements. Objective evidence shall be examined to the depth necessary to determine if these elements are being implemented effectively. Audit results shall be documented by auditing personnel and shall be reviewed by management having responsibility for the area audited. Conditions requiring prompt corrective action shall be reported immediately to management of the audited organization.	18.1.3, 18.1.4	OP 1.1 R-0, Sec. 5.4.1, 5.1.1, 5.2.2, 5.4.2, 5.4.3, 5.4.5, 5.4.4

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 18S-1	5. Reporting		
	1. The audit report shall be signed by the audit team leader and issued, and shall include the following information, as appropriate:	18.1.4	OP 1.1 R-0, Sec. 5.6.5, 5.6.6, Form T-QA-091
	a. Description of the audit scope.		
	b. Identification of the auditors.		
	c. Identification of persons contacted during audit activities.		
	d. Summary of audit results, including a statement on the effectiveness of the quality assurance program elements which were audited.		
	e. Description of each reported adverse audit finding in sufficient detail to enable corrective action to be taken by the audited organization.		
	6. Response		
	Management of the audited organization or activity shall investigate adverse audit findings, schedule corrective action, including measures to prevent recurrence, and notify the appropriate organization in writing of action taken or planned. The adequacy of audit responses shall be evaluated by or for the auditing organization.	18.1.4	SP 1.37 R-1 OP 1.1 R-0
	7. Follow-up Action		
	Follow-up action shall be taken to verify that corrective action is accomplished as scheduled.	18.1.4	OP 1.1 R-0, Sec. 5.7 SP 1.37 R-1

NOTE: * used on this matrix indicates that requirement is to be addressed in Standard Practice or Organization Procedure.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NQA-1, 1989 Supplement 18S-1	8. Records Audit records shall include audit plans, audit reports, written replies, and the record of completion of corrective action.	17.0	OP 1.1 R-0, Sec. 7.0 SP 1.37 R-1, Sec. 7.0

NOTE: * used on this matrix indicates that requirement is to be addressed in Standard Practice or Organization Procedure.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs

Prepared: [signature] 12/5/90
Approved: [signature] for T&MSS 12/5/90 M Manager

SECTION I

ORGANIZATION

OCRWM QARD REV. 4 - September, 1990	1.0 GENERAL The provisions of NQA-1 Basic Requirement 1 and Supplement 1S-1 shall apply with the following amplifications.		Refer to NQA, Matrix
	1.1 QUALITY ASSURANCE PROGRAM MANAGEMENT The extent of QA controls applied to items and activities is determined by the line organization staff in combination with the QA organization staff. The quality assurance organization is responsible for	1.3.5,	
	o Describing, integrating, and monitoring agreed-upon quality assurance activities within the scope of the quality assurance program,		SP 1.2, Rev 0, Para. 5.1.1
	o ensuring the quality assurance program is described in a quality assurance program description document,		SP 1.2, Rev 2, (all)
	o ensuring the correct application of appropriate quality assurance requirements by line management through review and concurrence of the quality assurance program detailed technical and quality assurance administrative procedures,		SP 1.1, Rev 2, Paras 5.1.1.9, & 5.1.2.9.
	o integrating quality assurance requirements with line management through review and concurrence of the quality assurance program detailed technical and quality assurance administrative procedures,		SP 1.1, Rev 2, Paras 5.1.1.9 & 5.1.2.9
	o monitoring the quality assurance program through overview activities that, as a minimum, include surveillances, audits, and reviews.		OPs 1.1, 1.2, Rev 0, SP 1.32, Rev 0 (all)

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	Each PROGRAM participant shall identify the quality assurance management position within their organization responsible for the establishment and implementation of their respective quality assurance programs. This quality assurance management position shall have the following characteristics:	1.0, 1.1, 1.2, 1.3, 1.3.1, 1.3.2, 1.33, 1.3.5, 1.6 and Exhibits 1-5.	Adequately addressed in QAPD; procedure not necessary
	(a) An organizational position at the same or higher organizational level as the highest equivalent manager responsible for performing activities affecting quality		
	(b) Knowledge and experience in the areas of quality assurance and management		
	(c) The authority and responsibility to verify the adequacy and implementation effectiveness of organizations' and subtier organizations' quality assurance programs		
	(d) No other duties or responsibilities unrelated to quality assurance that could prevent full attention to quality assurance program matters		
	(e) Sufficient freedom from cost and schedule considerations when opposed to quality considerations		
	(f) Access to senior management and management at the next higher PROGRAM organizational level to identify, and obtain resolution to, unresolved quality concerns		SP 1.22, Rev 0 Para 5.1.10
	(g) Review and approval recommendation authority for quality assurance programs, revisions to, and interpretations thereof.		
	1.2 DELEGATION OF WORK	1.6	
	When OCRWM or another PROGRAM participant delegates work to other		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4	PROGRAM participants, a qualified individual or organization from within the delegating office shall be designated as responsible for the quality of the delegated work. PROGRAM participants shall describe the major delegations of work involved in establishing the quality assurance program or any part thereof to any other organizations.	1.6	OP 1.3, Rev 1 & SP 1.28, Rev 1 in its entirety; T&MSS only delegates work through procurement documents to to vendors.
	1.3 DISPUTE RESOLUTION	1.4.1,	
	Provisions shall be made for the resolution of disputes involving quality arising from a difference of opinion at any given organizational level. These provisions shall include progressively elevating the dispute to the appropriate level of management, and the PROGRAM Director, if necessary.		SP 1.61 in preparation
	1.4 RESOLUTION OF ALLEGATIONS	1.4.2,	Will implement the Project Office APQ, when developed.
	OCRWM shall develop a system under which organizations, including OCRWM, may report allegations of inadequate quality.		
	1.5 STOP WORK PROVISIONS	1.3.1, 1.3.5, 1.7	
	Provisions for issuing and lifting stop work orders/requests shall be developed and implemented. Provisions shall include the following factors:		SP 1.22, Rev 0 (all)
	(a) Criteria and methodology for stopping work and for lifting stop work orders/requests		SP 1.22 Rev 0, Para 3.2 and 5.0
	(b) Exact definition of work being stopped		SP 1.22 Rev 0, Para 3.2
	(c) Authorities and responsibilities		SP 1.22 Rev 0, Para 5.0

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs

SECTION 2

QUALITY ASSURANCE PROGRAM

OCRWM QARD REV. 4 September 1990	2.0 GENERAL The provisions of NQA-1 Basic Requirement 2; Supplements 2S-1, 2S-2, 2S-3, and 2S-4; and Appendices 2A-1 and 2A-3 shall apply with the following clarifications and amplifications.		Refer to NQA-1 Matrix
	2.1 QUALITY ASSURANCE PROGRAM	2.0, 2.1, 2.2,	
	Affected organizations shall develop quality assurance program documents that address quality assurance program requirements applicable to their respective PROGRAM scope of work. Quality assurance program documents shall consist of a Quality Assurance Program Description and detailed technical and quality assurance administrative procedures. The quality assurance program shall meet the requirements established by this document. The quality assurance program descriptions shall be reviewed and accepted in a timely manner by the Line Organization management of the next higher organizational level. Affected organizations quality assurance organizations shall review and make recommendations to line management concerning the acceptance of lower-tier quality assurance program descriptions.		SP 1.1, Rev 2, Para 5.1.1.5 SP 1.2, Rev 2, (all) SP 1.2, Rev 2, (all) YMPO Responsibility SP 1.1, Rev 2, Para. 5.0
	Each participant has the responsibility to define the specific applicability of these quality assurance program requirements to their subtier program participants.	4.3,	OP 1.3, Rev 1 (all) Forms T&MSS 61-12 and 61-13

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	2.2 REPORTING INDEPENDENCE OF PERSONNEL	1.3.5	
	Verification personnel including those who are not part of the formal quality assurance organization, shall have sufficient authority, access to work areas, and organizational freedom to (1) identify quality problems; (2) initiate, recommend, or provide solutions to quality problems through designated channels; (3) verify implementation of solutions; and (4) assure that further processing, delivery, installation, or use is controlled until proper disposition has occurred to resolve a nonconformance, deficiency, or unsatisfactory condition. When verification personnel are not part of the formal quality assurance organization (that is, part of the line organization), then the quality assurance organization shall overview the verification activities by surveillance, audit, and review.		1) SP 1.37, Rev 1, Para. 5.1.1 2) SP 1.37, Rev 1, Para. 5.2 3) SP 1.37, Rev 1, Para. 5.3 4) SP 1.37, Rev 1, Para. 5.0 WI-MET-001, Rev 0, Para. 3.2. SP 1.23, Rev 0, Paras. 5.4.3, 5.4.4, 5.5.1 Form T&MSS 61-19
	2.3 PLANNING	2.2,	
	Affected organizations' Participants' QA Programs shall include provisions for quality assurance program planning to be integrated and coordinated among participating organizations, including the quality assurance organization to provide consistency and completeness and to avoid duplication of effort.		Adequately addressed in QAPD; no procedure necessary.
	Quality Assurance program planning shall consider, as a minimum, the following elements:		
	(a) Definition of activities		
	(b) Selective application of appropriate quality assurance program requirements and procedural controls (that is, a graded approach) to items and activities		AP 5.28Q, Rev 0, (all)

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(c) Assignment of responsibilities for quality assurance program control and verification activities	2.2	Adequately addressed in QAPD; no procedure necessary.
	(d) Identification of the specific scientific or technical information to be collected, analyzed, or used		
	(e) Identification of applicable technical and quality assurance program management control and verification activities		
	(f) Provisions for the identification of required quality assurance records.		
	2.4 READINESS REVIEWS Readiness reviews shall be planned, performed, and documented and shall apply to major scheduled or planned quality affective activities that are critical or complex in nature. Readiness reviews shall provide visible evidence of the following characteristics:	2.2.8,	SP 1.60 (in preparation)
	(a) Work activity prerequisites have been satisfied		
	(b) Detailed technical and quality assurance program administrative procedures have been reviewed for adequacy and appropriateness		
	(c) Personnel have been suitably trained and qualified.		
	2.5 GRADED QUALITY ASSURANCE PROGRAM	2.2.9,	
	2.5.1 Method A methodology shall be developed to identify those items and activities to which the quality assurance program applies.		AP 5.28Q, Rev 0, Para. 1.1

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QAPD REV. 4 September 1990	2.5.2 Application of Requirements and Controls	2.2.7	
	Quality assurance program requirements and procedural controls shall be selectively applied. The selective application and the degree of application of the quality assurance program		SP 1.1, Rev 2 (all), SP 1.30, Rev 1 (all), OP 1.1, Rev 0 (all), OP 1.2, Rev 0 (all)
	requirements assigned to each item and activity shall be commensurate with the following factors:		
	(a) Consequence of failure		AP 5.28Q, Rev 0, Exhibit 3, #2.1
	(b) Importance of data		*
	(c) Complexity of function		Exhibit 4, #2
	(d) Reliability of process		Exhibit 3, #2.4
	(e) Reproducibility of results		Exhibit 4, #1
	(f) Uniqueness of product		AP 5.28Q needs to be revised; Project Office responsibility
	(g) Degree of functional product demonstration		Exhibit 3, #2.0
	(h) Degree of standardization		Exhibit 4, #4
	(i) History of quality		Exhibit 4, #3
	(j) Impact on schedule or cost to replace in the event of failure		Exhibit 3, #2.3
	(k) Necessity of special controls or processes		Exhibit 4, #6
	(l) Significance to licensing process.		Exhibit 3

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QAPD REV. 4 September 1990	A policy statement signed by a senior management official shall render the implementation of the QA program mandatory.	Policy Statement	SP 1.2, Rev, 2 Para. 4.3
	2.7 QA REQUIREMENTS MATRIX		
	Provisions shall be established that demonstrate through a matrix system that each of the applicable requirement of this document is properly documented and covered by the QAPD, implementing procedures and instructions.	2.2.4	SP 1.2, Rev 2, Para. 5.1.8
	2.8 PERSONNEL SELECTION, INDOCTRINATION, TRAINING, AND QUALIFICATION		
	A systematic approach to the determination of applicable indoctrination and training for personnel performing activities affecting quality shall be established.	2.2.11	Refer to NQA-1 Matrix
	Supplements 2S-1, 2S-2 and Appendix 2A-1 shall only apply to personnel who conduct inspections and test activities to verity conformance of items to specified requirements for the purpose of acceptance and to demonstrate that items will perform satisfactorily in service.		
	Management of each affected organization shall evaluate each job position to determine the quality-affecting task responsibilities of the position. Organizations shall establish position descriptions (in accordance with applicable laws and regulations) which set forth job duties that include the quality-affecting responsibilities of the job. Minimum education and experience requirements for each position shall be established as a recognized standard for the position.		SP 1.31, Rev 1, Para. 5.1.1

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	Personnel selected to perform or verify activities affectomg quality shall have education,experience, and training commensurate with the minimum requirements specified. Relevant education and experience shall be verified. Documentation for formal training and qualification programs shall include the objective, content of the program, attendees, and date of attendance. The suitable proficiency of personnel performing activities that affect quality is maintained through indoctrination and training. Indoctrination and training is verified through the audit, surveillance, and trend program. Supervisors shall evaluate and assess the need for additional indoctrination and training, as applicable, as assignments, positions and procedures change.	2.2.11	SP 1.31, Rev 1, Paras. 4.0, 5.1, SP 1.21, Rev 0, (all), SP 1.31, Rev 1, Para 5.1.13, Form TMSS/049/1
	2.9 SURVEILLANCE	18.2	
	Surveillances shall be conducted to assess the quality of items or activities.		OP 1.2, Rev 0, Para. 2.0
	(a) Surveillance of activities affecting quality shall be planned, performed, documented, and reported to appropriate management.		OP 1.2, Rev 0, Para. 5.0
	(b) Surveillance shall be conducted to accomplish the following objectives:		
	(1) Verify quality of work in progress		OP 1.2, Rev 0, Para. 5.1.1
	(2) Identify and document actual and potential deficiencies and deviations and promote prompt corrective action by cognizant management responsible for performing the work.		OP 1.2, Rev 0, Para. 5.3.7, 5.3.8

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(3) Verify timely implementation of corrective action.		OP 1.2, Rev 0, Para. 5.3.7
	(c) Surveillance shall be performed by personnel who are knowledgeable in, and not directly responsible for, the activities under surveillance.	18.2	OP 1.2, Rev 0, Para. 5.2.1
	(d) Surveillance results shall be documented in a report that contains the following elements as a minimum:		Form T&MSS 61-9
	(1) Date of surveillance		Form T&MSS-61-9 dtd.4/90
	(2) Description of the activity or item under surveillance		Form T&MSS 61-9
	(3) Persons conducting the surveillance		Form T&MSS 61-9
	(4) Persons contacted during the surveillance		Form T&MSS 61-9
	(5) The requirements governing the activity or item		Form T&MSS 61-9
	(6) Deficiencies identified during the surveillance		Form T&MSS 61-9
	(7) Measuring and test equipment used during the surveillance		OP 1.2 to be revised
	(8) Summary of any immediate corrective actions taken.		Form T&MSS 61-9
	2.10 MANAGEMENT ASSESSMENT	2.2.12	
	Independent management assessments by persons above or outside the quality assurance organization shall be planned, conducted and		SP 1.32, Rev 0, Paras 4.0, 5.1, 5.2

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	documented at least annually by, or at the direction of, the highest line management position identified in each affected organization. These management assessments shall evaluate, as a minimum, the following program aspects:		
	(a) Adequacy of organizational structure and staffing to implement the quality assurance program		SP 1.32, Rev 0, Para. 5.6
	(b) Effectiveness of quality assurance program implementation		
	(c) Adequacy of the indoctrination and training program		
	(d) Adequacy of planning and procedural controls		
	(e) Effectiveness of the nonconformance and corrective action system		
	(f) Adequacy of the quality assurance management information tracking, evaluation, and reporting system.		
	2.11 QUALITY ASSURANCE PROGRAM MANAGEMENT-INFORMATION REPORTING AND TRACKING	2.2.13,	
	(a) Affected organizations shall report, disseminate, and track the following types of quality-related management information as a minimum:		
	(1) Status of development of the quality assurance program		
	(2) Status of resolution of significant conditions adverse to quality, QA issues, and trends		OP 1.6, Rev 1, (all), SP 1.22, Rev 0, (all) SP 1.37, Rev 0, (all)

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV 4 September 1990	(3) Summary of required management and QA overview results.		SP 1.32, Rev 0, Para 7.0
	(b) Quality assurance program management information shall be reported at least quarterly to the appropriate level of management and the next higher PROGRAM participant organizational level.		SP 1.20, Rev 0, Para. 5.1.4

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
	SECTION 3 DESIGN CONTROL		
OCRWM QARD REV. 4 September 1990	3.0 GENERAL The provisions of NQA-1 Basic Requirement 3 and Supplement 3S-1 shall apply to design, from advanced conceptual design through final design. The Following clarifications and amplifications shall apply to design and design activities.	N/A	N/A
	3.1 DESIGN DEFICIENCY CONTROL Deficiencies in approved design and design information documents shall be documented, and corrective action shall be taken in accordance with Section 16.	N/A	N/A
	3.2 DESIGN CHANGES The impact of design changes on procedures and training shall be evaluated.	N/A	N/A
	3.3 DESIGN VERIFICATION Procedures for design verification shall delineate the identification of the reviewers, the area of features reviewed, and the resolution methods for resolving comments.	N/A	N/A

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	Design verification procedures assure the following:		
	(a) Criteria for determining the method of verification are established;	N/A	N/A
	(b) the responsibilities of the persons performing the verification or validation are defined;		
	(c) areas or features to be verified are specified;		
	(d) the extent of documentation is defined.		
	3.4 TECHNICAL REVIEWS	N/A	N/A
	(a) Technical reviews shall be performed when the information or document under review is within the state of the art and is based on accepted standards, criteria, principles, and practices.		
	(b) Technical reviews shall be used when documents, activities, material, or data require technical evaluation for applicability, correctness, adequacy, completeness, and assurance that established requirements are satisfied.		
	(c) Technical reviews shall be performed by individuals with sufficient technical knowledge of the area under review.		
	(d) The results shall be documented.		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 4 PROCUREMENT DOCUMENT CONTROL		
4.0	GENERAL The provisions of NQA-1 Basic Requirement 4 and Supplement 4S-1 shall apply with the following amplifications.		Refer to NQA-1 Matrix
4.1	REVIEW Procurement documents shall be reviewed by affected organizations and technical and quality assurance organization representatives to assure that applicable quality assurance program requirements are included.	4.10	SP 1.28, Rev 1, Para. 5.1.6, 5.5.4, OP 1.4, Rev 1, Para 5.0
4.2	APPLICABILITY OF PURCHASER'S QUALITY ASSURANCE PROGRAM When deemed appropriate, the purchaser may permit some or all supplier activities to be performed under the jurisdiction of the purchaser's quality assurance program provided that the scope of the activity is adequately addressed therein. This situation may exist when the scope of work or schedule requirements cannot justify the cost of developing and maintaining a quality assurance program at the supplier's facility. When these circumstances apply, the procurement documents shall specify which portions of the purchaser's quality assurance manual and procedures are applicable to the supplier's work efforts.	4.3,	OP 1.4, Rev 1, Form TMSS/008/3

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV 4 September 1990	SECTION 5 INSTRUCTIONS, PROCEDURES, PLANS, AND DRAWINGS		
	5.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 5 shall apply with the following amplifications.		Refer to NQA-1 Matrix
	5.1 REVIEWS	6.1.B	
	An independent review of instructions, procedures, plans, and drawings shall be performed by the originating organization to assure technical adequacy, including the correct translation of design requirements and inclusion of quality requirements.		SP 1.1, Rev 2, Para. 5.2.2.5
	5.2 QUALITY ASSURANCE RECORDS	17.1,	
	Controlled documents shall delineate those documents generated as a result of implementation which are to be designated as quality assurance records.		SP 1.1, Rev 2, Para 7.0

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 6 DOCUMENT CONTROL		
	6.0 GENERAL The provisions of NQA-1 Basic Requirement 5 and Supplement 6S-1 shall apply with the following amplifications.		Refer to NQA-1 Matrix
	6.1 CONTROL SYSTEM	6.1, 6.2, 6.2.1, 6.2.2	
	In addition to the elements identified in NQA-1 Supplement 6S-1, Section 2, the control system for document preparation, review, approval, and issuance shall include:	6.3	
	(a) Resolution of review comments for which the resolutions are considered mandatory by the reviewing organization prior to approval and issuance of the document	6.1.D	SP 1.1, Rev 2, Paras. 3.2.4, 5.1.2.4
	(b) Documentation and maintenance of review comments and resolutions	6.1.D,	SP 1.1, Rev 2, Paras. 5.1.2.1 5.1.2.7
	(c) Development of a controlled documents list	6.2.2B	SP 1.34, Rev 1, Paras. 3.2.3 & 5.6
	(d) The establishment of a receipt acknowledgment system.	6.2.2A	SP 1.34, Rev 1, Para. 5.3.1
	(e) The development of an obsolete- or suspended-document control system.	6.2.1C 6.2.2C	SP 1.34, Rev 1, Para. 3.2.4 SP 1.1, Rev 2, Para 5.4

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	6.2 CONTROLLED DOCUMENTS		
	When controlled documents which require verification or approval are released prior to verification, or approval, they shall be so identified, controlled, and authorized for release through signature approval, with the bases for release described and the unverified portions identified.	6.2.1A	SP 1.1, Rev 2, Para. 5.3.8
	6.3 QUALITY ASSURANCE ORGANIZATION REVIEW		
	The quality assurance organization shall review and, where applicable, concur with controlled documents that contain or implement quality assurance requirements.	5.0, 6.1F	SP 1.1, Rev 2, 5.2.2.5

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 7 CONTROL OF PURCHASED ITEMS AND SERVICES		
	7.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 7 and Supplement 7S-1 shall apply with the following amplifications. In addition, for receiving inspection (7S-1 Section 8.2.3), NQA-1 Supplement 10S-1 Sections 4, 6.1 through 6.4, and 8 shall apply with the provision that the term final inspection shall be interpreted to be receipt inspection.		Refer to NQA-1 Matrix
	7.1 SUPPLIER QUALITY ASSURANCE PROGRAMS		
	Supplier Quality Assurance programs shall be reviewed and accepted prior to initiation of activities affected quality. For procurements subject to the Federal Acquisition Regulations (FAR) and Department of energy Acquisition Regulations (DEAR), the contract documents are prepared and contracts placed by the congnizant government procurement organization. Supplier's quality assurance programs are evaluated either before or after contract placement and any quality deficiencies are corrected prior to initiating quality affecting work. Timing of the evaluation is in accordance with DOE procurement regulations and since it is required that supplier QA programs be reviewed and accepted prior to initiating activities, this serves as an acceptable alternative to the NQA-1 requirement that suppliers must be evaluated prior to contract award.	7.4.3	OP 1.3, Rev. 1, Para. 4.2 **
	7.2 RECEIPT INSPECTION PLANNING	7.6.1, 10.0, 10.1	
	Receipt inspection activities to verify that items and services conform to specified requirements shall be planned, executed, and documented via inspection procedures, instructions, or checklists.		SP 1.25, Rev. 1, Form T&MSS-61-16

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	7.3 RECEIPT INSPECTION RECORDS	10.2	
	As a minimum receipt, inspection records shall identify the following:		
	o Characteristics receipt inspected and the objective evidence of the results of the receipt inspection operation.		Form T&MSS-61-16, #15,
	o Receipt inspection criteria including identification of applicable drawings, specifications, procedures, etc. (and applicable revision).		SP 1.25, Rev. 1, Form T&MSS 61-16, Numbers 7, 8, & 9
	o Identification of material and test equipment used during the receipt.		SP 1.25, Rev. 1, Form T&MSS 61-16, Numbers 16, 17, & 18

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD 4 September 1990	SECTION 8 IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, AND COMPONENTS		
	8.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 8 and Supplement 8S-1 shall apply.	Refer to NQA-1 Matrix	Refer to NQA-1 Matrix

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 9 CONTROL OF PROCESSES		
	9.0 GENERAL		
	The provisions of NQA-1 Basic Requirements 9 and Supplement 9S-1 shall apply with the following amplifications.	Refer to Section 20.0	SPs 2.1 & 2.2 under development (various plans still in the development stage)
	9.1 LIST OF SPECIAL PROCESSES		
	Affected organizations' QA program documents shall provide a list of special processes that the PROGRAM participant will perform or be responsible for. Criteria shall be established and documented for determining which processes are to be controlled as special processes.	Special Processes not applicable to T&MSS scope of work.	Special Processes not applicable to T&MSS scope of work.
	9.2 QUALITY ASSURANCE ORGANIZATION INVOLVEMENT IN QUALIFICATION ACTIVITIES FOR SPECIAL PROCESSES		
	As a minimum, the quality assurance organization shall monitor the development and implementation of special process qualification activities through the conduct of audits and surveillances.		
	9.3 EVIDENCE OF ACCOMPLISHMENT OF SPECIAL PROCESSES		
	Provisions for recording evidence of acceptable accomplishment of special processes shall be established.		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 10 INSPECTION		
	10.0 GENERAL	10.1	
	The provisions of NQA-1 Basic Requirement 10 and Supplement 10S-1 shall apply with the following amplifications.		Refer to NQA-1 Matrix
	10.1 INSPECTION PLANNING		
	Inspection planning shall provide:	10.0, 7.6, 7.6.1, 10.2b, 10.2c, 10.2d	
	(a) Criteria for determining when inspections of each work operation are to be conducted		*
	(b) Identification of required procedures, drawings, and specifications including revisions		Form T&MSS-61-16, Numbers 7, 8, & 9
	(c) Specification of necessary measuring and test equipment, including accuracy requirements.		Form T&MSS-61-16, Numbers 16, 17, 18,
	10.2 RECORDS	10.2,	
	Inspection records shall include:		
	(a) Characteristics inspected and objective evidence of the results		Form T&MSS-61-16, Numbers 15, 20

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(b)	Identification of the inspection criteria or referenced documents used to determine acceptance	10.2	Form T&MSS-61-16, Numbers 7, 8, & 9
	(c)	Identification of the measuring and test equipment used during the inspection.		Form T&MSS-61-16, Number 17

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 11 TEST CONTROL		
	11.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 11 and Supplement 11S-1 shall apply with the following amplifications.	Refer to NQA-1 Matrix	Refer to NQA-1 Matrix
	11.1 UNCERTAINTY AND ERROR		
	Potential sources of uncertainty and error shall be identified in test plans and procedures. In addition, parameters affected by potential sources of uncertainty and error shall be identified and controlled.	11.2L	WI-RM-601, Rev. 0, Para V
	11.2 TEST PLANNING	11.2,	WI-RM-201, Rev. 0, Para V
	Test planning shall provide instructions for		
	o when a test is to be performed	11.2.B	WI-RM-201, Rev 0, Para VI NOTE
	o mandatory hold points as required	11.2.C	SP 1.25, Rev. 1, Para 5.5
	o delineate precision and accuracy considerations for measuring and test equipment.	11.2.H	WI-RM-310, Rev. 0, Para V

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 12 CONTROL OF MEASURING AND TEST EQUIPMENT		
	12.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 12 and Supplement 12S-1 shall apply with the following amplifications.	Refer to NQA-a Matrix	Refer to NQA-1 Matrix
	12.1 CALIBRATION STANDARDS	12.2.B	
	Calibration standards should have greater accuracy than equipment or standards being calibrated. Calibration standards with the same accuracy may be used if they can be shown to be adequate for the requirements and the basis for acceptance is documented and authorized by responsible management. The management authorized to perform this function shall be identified.		SP 2.4, Rev 0 Para. 5.0, Playscript format

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 13 HANDLING, STORAGE, AND SHIPPING		
	13.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 13 and Supplement 13S-1 shall apply with the following amplifications.	Refer to NQA-1 Matrix	Refer to NQA-1 Matrix

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 14 INSPECTION, TEST, AND OPERATING STATUS		
	14.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 14 shall apply with the following amplifications.		Refer to NQA-1 Matrix
	14.1 SEQUENCE OF OPERATIONS	14.2,	
	Procedures are established and described to control altering the sequence of required tests, inspections, and other operations important to safety. Such actions shall be subject to the same controls as the original review and approval.		SP 1.30, Rev. 1, Para. 5.8

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 15 CONTROL OF NONCONFORMING ITEMS		
	15.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 15 and Supplement 15S-1 shall apply with the following amplification.		See NQA 1 Matrix
	15.1 CLOSURE	15.5	
	The action taken to correct the nonconforming item shall be verified and the verification documented.		SP 1.23, Rev. 0, Para. 5.5
	15.2 NONCONFORMANCE DISPOSITION	15.1, 15.4,	
	The person or organization assigned the responsibility of dispositioning nonconformance shall ensure the following:		SP 1.23, Rev. 0, Para. 5.1
	o Nonconformance documentation adequately identifies and describes the nonconformance.		Form T&MSS-61-19,
	o If a change to reflect the as-built condition is appropriate, then the disposition addresses action to change the existing design documents, test plans or procedures, reports, etc. Any document change shall reference the NCR and also be cross-referenced on the nonconformance report.		SP 1.23, Rev. 0, Para 5.3.3b
	o The signature of personnel or organizations authorized to approve the disposition is documented.		Form T&MSS-61-19,

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 16 CORRECTIVE ACTION		
	16.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 16 shall apply with the following amplifications.		Refer to NQA-1 Matrix
	16.1 TREND ANALYSIS	15.6, 16.2, 16.3,	
	Quality information, such as audit reports, surveillance reports, nonconformance reports, corrective action reports, and other deficiency documents, shall be analyzed to identify adverse quality trends and help identify root causes. Trend analysis shall be performed in a manner and at a frequency that shall provide for prompt identification of adverse quality trends. Quality trends shall be evaluated and the significant results reported to the organization responsible for corrective action and upper-management for review and assessment. Trend analysis shall be performed by the quality assurance organization.	1.3.5	OP 1.6, Rev. 1, Para. 2.0 OP 1.6, Rev. 1, Para. 5.1.1 OP 1.6, Rev. 1, Paras. 5.1.5 & 5.1.8 OP 1.6, Rev. 1, Para. 5.0
	16.2 CORRECTIVE ACTION FOR SIGNIFICANT CONDITIONS ADVERSE TO QUALITY	16.2,	
	Criteria for determining the existence of significant conditions adverse to quality shall be developed. Quality assurance organizational concurrence with proposed corrective action and quality assurance organizational verification of corrective action implementation within prescribed time limits are required.		SP 1.22, Rev. 0, Paras. 3.1.3, 3.2 SP 1.37, Rev. 1, Para. 5.2.2

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	16.3 DEFICIENCIES A tracking system for all deficiencies shall be established to assure that they are appropriately addressed, prioritized, and trended.	Sect. 16.3, 15.2, 16.2 meet intent.	SP 1.22, Rev. 0, Paras. 5.1.11, & 5.4.8, SP 1.37, Rev. 1, Para. 5.1.9, OP 1.6, Rev 1, Paras. 2.0 & 4.0, SP 1.23, Rev 0, Paras. 5.2.7 & 5.2.8
	16.4 REMEDIAL ACTION Remedial action shall be documented and initiated after a deficiency has been identified. The QA organization shall concur with the remedial action to assure that QA requirements are satisfied. Follow-up action shall be taken by the QA organization to verify proper implementation of remedial action and to close out the remedial action in a timely manner.	16.2,	SP 1.37 Rev 1, Form TMSS/057/2 Number 16 SP 1.37 Rev 1, Form TMSS/057/2 Number 21 SP 1.37 Rev 1, Form TMSS/057/2 Number 23

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 17 QUALITY ASSURANCE RECORDS		
	17.0 GENERAL		
	The provisions of NQA-1 Basic Requirement 17 and Supplement 17S-1 shall apply with the following amplifications.		Refer to NQA-1 Matrix
	17.1 QA RECORDS	17.2, 17.3	
	Documents that are to become QA Records are considered QA Records upon completion and authentication by all required signatures. A complete QA record is a document that will receive no more entries and whose revision would be subject to the change control process. Prior to this final authentication, interim protection shall be afforded.		SP 1.36, Rev 1, Para. 5.1.3.6 WI-REC-001 Rev 0, Para. 3.2.3, WI-REC-001 Rev 0, Para. 5.4.9, WI-REC-001 Rev 0, Para. 5.1.1.3

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	SECTION 18 AUDITS		
	18.0 GENERAL The provisions of NQA-1 Basic Requirement 18 Supplement 18S-1 shall apply with the following amplifications.		Refer to NQA-1 Matrix
	18.1 TECHNICAL CONSIDERATIONS The audits shall include technical evaluations of the applicable procedures, instructions, techniques and items as well as programmatic compliance. The audit team shall consist of qualified QA organization and where applicable, technical organization personnel. Audit team members selected for technical consideration purposes to participate in audits shall have technical expertise or experience in the work being audited and shall be qualified in audit techniques as a minimum. Management at all levels within each PROGRAM-participant's organization shall be actively involved with the audit process.	18.1, 18.1.2,	OP 1.1, Rev 0, Paras. 1.0 & 4.3 OP 1.1, Rev 0, Paras. 4.4 & 4.5 OP 1.1, Rev 0, Para. 5.0
	18.2 ANALYSIS OF AUDITS Data obtained from audit results shall be analyzed by the audit team to determine overall quality assurance program adequacy and effectiveness and the results reported to responsible management for review, assessment, and appropriate action.	18.1.3, 18.1.4,	OP 1.1, Rev. 0, Para. 5.4
	18.3 INTERNAL AUDITS Internal audits of the adequacy and effectiveness of the quality assurance program shall be performed at least once each year or at least once during the life of the activity affecting quality, whichever is shorter. An audit schedule shall be developed annually and updated as changes occur.	18.0, 18.1.1,	OP 1.1, Rev. 0, Para. 4.1.1 OP 1.1, Rev. 0, Para. 5.1

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV 4 September 1990	The audit schedule and scope of each audit shall be based on an evaluation of the activities to be audited. The evaluation shall consider:	18.1.1,	OP 1-1, Rev. 0, Para. 5.1.1
	(a) Results of previous surveillances and internal and extrinsic audits	18.1.3A	OP 1-1, Rev. 0, Para. 5.1.4
	(b) Impact of significant changes in personnel, organization, or quality assurance program.	18.1.1	OP 1.1, Rev. 0, Para. 5.1.1e
	18.4 EXTERNAL AUDITS		
	(a) OCRWM shall annually audit implementation of quality assurance programs of the next lower-tier affected organizations for which they are responsible. An audit schedule shall be developed annualy and updated as changes occur.	N/A	N/A N/A
	(b) Supplier's quality assurance programs will be evaluated for audit on at least an annual basis. This evaluation shall be documented. Supplier audits shall be performed on a triennial basis when supplemented by annual evaluations. If those annual evaluations indicated the need for an audit, one shall be performed prior to the triennial period. The need for audits of a supplier will also be evaluated when major changes to contract scope or work methodology occurs. Preaward surveys may serve as the first audit if the scope and conduct of the survey is similar to the scope of other supplier audits where the scope of work is comparable.	18.1.5,	OP 1.1, Rev. 0, Para. 4.2.6 OP 1-1, Rev. 0, Para. 4.1.2 OP 1.1, Rev. 0, Para. 4,1,2 OP 1.1, Rev. 0, Para. 4.2a
	When audits are performed triennially each affected organization shall perform or arrange for annual evaluations of suppliers. This evaluation shall be documented and shall take into account, where applicable.	18.1.5,	OP 1.3, Rev. 1, Para.4.7 OP 1.3, Rev. 1, Para.5.0 Forms TMSS/018/8 & TMSS/019/10

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990		o review of supplier-furnished documents and records such as certificates of conformance, nonconformance notices, and corrective actions	18.1.5B	OP 1.3, Rev. 1, Para. 5.2(1)
		o results of previous source verifications, surveillances, audits, management assessments, and receiving inspections,		OP 1.3, Rev. 1, Para. 5.2(1)
		o operating experience of identical or similar products furnished by the same supplier		OP 1.3, Rev. 1, Para. 5.2(2)
		o results of audits from other sources.		N/A
	(c)	After award of the contract and based on the determination of the quality assurance program applicability of each item or service to be procured, the need for external audits shall be evaluated. A determination may be made that external audits are not necessary for procuring items that are:	18.1.5C	OP 1.3, Rev. 1, Para. 5.3
		(1) Relatively simple and standard in design, manufacture, and test;		OP 1.3, Rev. 1, Para. 4.5.2
	or			
		(2) Adaptable to standard or automated inspections or tests of the end product to verify quality characteristics after delivery. The rationale for not performing an external audit shall be documented and maintained as part of the QA records.		OP 1.3, Rev. 1, Para. 4.5.2 OP 1.3, Rev. 1, Para. 5.3.2
	(d)	Audits conducted on a supplier by an external organization for the affected organization, or for a group of purchasers that includes the affected organization, are an acceptable alternative to a affected organization conducted audit. However, the scope of the audit must meet the needs of the PROGRAM, and the audit report must be provided to the affected organization. The affected organization remains responsible for the adequacy of these audits.	18.1.5	N/A

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September	SECTION 19 COMPUTER SOFTWARE		
	19.0 APPLICATION OF REQUIREMENTS		
	(a) A computer software design and control program shall be developed to meet the minimum requirements of this subsection and shall be consistent with the documentation guidance specified in NUREG-0856, Final Technical Position on Documentation of Computer Codes for High-Level Waste Management, June 1983. Computer programs developed and/or modified shall be documented in accordance with the applicable element of NUREG-0856.	19.0, 19.1	Software QA Plan and SP 2.1 under development
	(b) Affected organizations implementing computer software development activities shall adhere to a computer software life cycle model. The relative emphasis placed on each phase of the computer software life cycle will depend on the nature and complexity of the computer software being developed.		
	(c) The documentation for each phase of the computer software life cycle shall be reviewed and approved as specified in each PROGRAM-participant's computer software QA Plan.		
	(d) An example of one computer software life cycle model is described below:		
	(1) Requirements		
	(2) Design		
	(3) Implementation		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, QPs, & WIs
OCRWM QARD REV. 4 September 1990	(4) Test		Software QA Plan and SP 2.1 under development
	(5) Installation and Checkout		
	(6) Operation and Maintenance.		
	19.1 COMPUTER SOFTWARE QUALITY ASSURANCE PLAN (SQAP)	19.0, 19.1	
	The application of the computer software life cycle to computer software development and use shall be as described in a computer software QA plan. Each affected organization shall prepare a description of their computer software design, test and configuration management system in their SQAP and/or procedures (subsequently called the SQAP), and submit it to the next higher program organizational level for review and approval. The description shall: o Provide criteria for application of the requirements of this Section based on the complexity and importance of the software used to perform analysis in support of the design of a geologic repository. o Indicate the methods to be used to develop computer program requirements, to translate those requirements into a detailed design, and to implement that design in executable code. o Identify the types of documentation to be prepared, reviewed, and maintained during computer software design, code implementation, test, and use. o Describe the methods for managing interfaces involving computer software documentation.		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	o Identify the methodology for establishing computer software baselines and baseline updates (changes) and for tracking changes throughout the life of the computer software. o Specify the process to be used for verification of the computer software and validation of models developed or applied. o Identify the procedure for reporting and documenting computer software discrepancies, including sources, evaluating impacts of discrepancies on previous calculations, and determining appropriate corrective action. 19.1.1 A computer SQAP shall be prepared for each computer software development or application effort at the start of the computer software life cycle. The plan may be prepared individually for each piece of computer software or may exist as a generic document to be applied to all computer software prepared within an organization. The computer SQAP shall identify: (1) Computer software products to which it applies (2) Organizations responsible for computer software quality and their tasks and responsibilities (3) Required documentation (4) Required computer software reviews If the SQAP references any standards, conventions, techniques, or methodologies used during computer software development, the SQAP shall: itentify those portions of the references to be followed: and describe methods to assure compliance to these documents.	19.0, 19.1	Software QA Plan and SP 2.1 under development

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	19.1.2	Within the computer SQAP, computer software life-cycle management shall be described. Each affected organization shall present the specific computer software life-cycle controls for their organization in their computer SQAP. The following life-cycle elements shall apply, as appropriate, for the specific life-cycle model defined, interpreted, and described in each affected organization's computer SQAP. (a) Requirements Phase Requirements that pertain to functionality, performance, design constraints, attributes, and external interfaces of the completed computer software shall be specified, documented, and reviewed. These requirements shall have the following characteristics: (1) Format and language understandable by the programming organization and the user (2) Sufficient detail to allow for objective verification (3) Adequate definition to provide for the response of the computer software to the identified input data (4) Information necessary to design the computer software without prescribing the computer software design. (b) Design Phase A computer software design based on the requirements shall be specified, documented, and systematically reviewed. The design shall specify the overall structure (control and data flow) and the reduction of the overall structure into physical solutions	19.0, 19.1	Software QA Plan and SP 2.1 under development

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(algorithms, equations, control logic, and data structures). The design may necessitate the modification of the requirements documentation. Design-phase verification activities shall consist of: (1) Generation of design-based test cases (2) Review and analysis of the computer software design (3) Verification of the computer software design. (c) Implementation Phase The design shall be translated into a programming language. Only minor, if any, design issues shall be resolved at this phase. Implementation-phase verification activities shall consist of: (1) Possible modification of test cases necessary due to design changes made during coding (2) Examination of source code listings to assure adherence to coding standards and conventions. (3) Test and inspection of the implemented computer software to remove errors in the coding i.e., debugging. (d) Testing Phase The design as implemented in code shall be exercised by executing the test cases. Failure to successfully execute the test cases may require the modification of the requirements, the design, the implementation, or the test plans and test cases. NOTE: * Implementing procedure to be developed.	19.0, 19.1	Software QA Plan and SP 2.1 under development.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	Testing-phase verification activities shall consist of: (1) Evaluation of the completed computer software to assure adherence to the requirements (2) Preparation of a report on the results of computer software verification. Testing of computer software, including new or modified computer software, shall be performed for those inputs and conditions necessary to exercise the software, identify boundary conditions and to provide a suitable benchmark or sample problem for installation. (e) Installation and Checkout Phase Computer software becomes part of a system incorporating other computer software components, the hardware, and production data. The process of integrating the computer software with other components may consist of installing hardware, installing the program, reformatting or creating databases, and verifying that all components have been included. Testing activities during the installation and checkout phase shall consist of executing test cases for installation and integration. Test cases from earlier phases shall be enhances and used for installation testing. (f) Operation and Maintenance Phase The computer software shall be approved for operational use. Further activity shall consist of computer software maintenance to	19.0, 19.1	Software QA Plan and SP 2.1 under development.

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	remove latent errors (corrective maintenance), to respond to new or revised requirements (preventative maintenance), or to adapt the computer software to changes in the computer software environment (adaptive maintenance). Computer software modifications shall be approved, documented, tested (including regression testing, as appropriate), and controlled in accordance with Subsection 19.2.	19.0, 19.1, 19.2	Software QA Plan and SP 2.1 under development. *

19.2 COMPUTER SOFTWARE VERIFICATION AND VALIDATION

(a) Verification of computer software and model validation shall be performed prior to the use of such computer software to perform technical calculations. In those cases where this requirement cannot be met, the portion or portions of computer software which have not been verified and those models which have not been validated shall be identified and controlled and written justification of the reason shall be generated. A schedule indicating the date that such computer software will be verified and models validated, to the extent that the computer software will be used, shall be generated and maintained. This schedule shall be either included as part of the NUREG-0856 section III, D, Code Assessment and Support document or as a separate document. In all cases, the verification shall be completed prior to submittal of the license application to the extent that the software has been used to support the license application. Model validation shall be performed and documented to such a degree that the results obtained are justified for the specific process or system that the model is intended to represent.

(b) The responsible affected organization shall develop verification and validation plans that shall employ methods such as inspection, analysis, demonstration, and test to assure that the computer software adequately and correctly performs all intended functions and that the computer software does not

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	perform any function that, either by itself or in combination with other functions, can degrade the entire system.		
	(c) Verification and validation activities shall be planned and performed relative to specific hardware configurations. The degree of verification and validation activity shall be determined by the type and complexity of the computer software. Prior to use for a licensing activity, verification and validation of the final version of the software product, with respect to it's intended application, shall be accomplished by an independent individual or organization, one who did not work on the original software. The results of verification and validation activities shall be documented. Note: Verification of computer software and/or validation of the model, performed by the developer, should involve activities (that is, iterations of tests and runs) to arrive at a final product. It is not required to document all of the activities performed to satisfy the computer software developer.	19.0, 19.1, 19.2	Software QA Plan and SP 2.1 under development
	19.3 VERIFICATION Verification activities shall be integrated into applicable phases of the computer software life cycle and shall be performed to an extent commensurate with the critical importance of the computer software. Computer software verification shall be performed to assure that the computer software requirements are implemented in the computer software design and that the computer software design is correctly implemented in code.		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	19.4	VALIDATION	19.0, 19.1, 19.2	Software QA Plan and SP 2.1 under development
		(a) Model validation activities of computer software shall be documented. Validation activities are performed to demonstrate that the model as embodied in the computer software is a correct representation of the process or system for which it is intended. This is accomplished by comparing computer software results against verified and traceable data obtained from laboratory experiments, field experiments, or observations or in situ testing. Where such comparison for model validation has been performed, specific sets of data used in the validation process shall be identified, and their use shall be justified.		
		(b) When data are not available from the sources mentioned above, alternative approaches shall be documented and used to validate models. Alternative approaches may include peer review and comparisons with the results of similar analyses performed with verified computer software.		
	19.5	COMPUTER SOFTWARE CONFIGURATION MANAGEMENT	19.3	
		A computer software configuration management system shall be established to assure positive identification of computer software and control of computer software baseline changes.		
		(a) Configuration Identification		
		Computer software shall be placed under configuration management control as each baseline element is approved. A configuration baseline shall be identified at the completion of each major phase of the computer software life cycle. Approved changes to a baseline shall be added periodically to the baseline as updates. A baseline plus updates shall specify the most recent computer software configuration. Updates shall be incorporated		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	into subsequent baselines. Both baselines and updates shall be defined by their composition of computer software configuration items. A labeling system for configuration items shall be implemented that: (1) Uniquely identifies each configuration item or version number, including identification of software version numbers in the output, when feasible. (2) Identifies changes to configuration items by revision (3) Places the configuration item in a relationship with other configuration items. (4) Directly relates each code version with its associated documentation.	19.3	Software QA Plan and SP 2.1 under development.
	(b) Configuration Change Control Changes to baselined computer software configuration items shall be formally documented. This documentation shall contain a description of change(s), the identification of the originating organization, the rationale for the change(s), and the identification of affected baselines and computer software configuration items. The change should be formally evaluated by a qualified individual or organization with the ability to approve or disapprove proposed changes. Assurance shall be provided that only authorized changes are made to computer software baselines and computer software configuration items.	19.3	

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990		Changes to computer software shall be systematically evaluated, coordinated, and approved to assure that the impact of a change is carefully assessed prior to updating the baseline, required action is documented, and the information concerning approved changes is transmitted to all affected organizations. Changes to computer software shall be subject to the same level of approval, verification, and validation as the original computer software.	19.3	Software QA Plan and SP 2.1 under development
	(c)	Configuration Status Accounting The information that is needed to manage computer software configuration items shall be recorded and reported. This information shall include: o a listing of the approved configuration identification o the status of proposed changes to the configuration o the implementation status of approved changes o a brief chronology of the computer software versions, including descriptions of the changes made between versions o information to support the functions of configuration identification and configuration control	19.3	
	19.6	QUALIFICATION OF EXISTING SOFTWARE Existing computer software shall be qualified for use. This qualification shall be based on the ability of the computer software to provide acceptable results for specific applications and compliance with the requirements of this Section. Computer software that has not	19.6	

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990		been developed in accordance with this Section may be qualified for use provided the computer software is verified and validated, a computer software baseline established, and applicable documentation prepared to support the software in accordance with the provisions of this Section. Where commercial auxiliary computer software is used, all available documentation from the supplier shall be obtained. It is recognized that source code is generally not available and controls are limited to unique version identification and use-related manuals. (Commercial auxiliary computer software is also considered to be a subset of acquired computer software.)	19.6	Software QA Plan and SP 2.1 under development *
	19.7	Documentation Minimum acceptable life-cycle documentation of computer software that has been developed or modified shall be specified in each affected organization's computer SQAP. The documentation provided shall meet the requirements of Subsections 19.7.a through 19.7.e, as applicable. Lifecycle documentation for scientific and engineering computer software shall include the following, as a minimum, as described in following text: o Computer software requirements specification o Computer software design and change documentation o Computer software verification and model validation documentation o User documentation and the following, as a minimum, as described in NUREG-0856: o Description of mathematical models and numerical methods o Code assessment and support o Continuing documentation and code listings o Software summary	19.7	

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	Additional documentation may also be identified in the computer SQAP for each affected organization's computer software project. (a) Computer Software Requirements Specification Computer software requirements documentation shall outline the requirements that the proposed computer software must fulfill. The requirements shall address the following: (1) Functionality - functions that computer software are to perform (2) Performance - time-related issues of computer software operation such as speed, recovery time, response time, etc. (3) Design constraints imposed on implementation - any elements that will restrict design options (4) Attributes - non-time-related issues of computer software operations such as portability, correctness, security maintainability, etc. (5) External Interfaces - interactions with other participants, hardware, and other computer software. (b) Computer Software Design Documentation Computer software design documents or series of documents shall contain: (1) A description of the major components of their computer software design as they relate to the requirements in the computer software requirements specification (2) A technical description of the computer software with respect to control flow, data flow, control logic, and data structure	19.7 V	Software QA Plan and SP 2.1 under development.

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, QPs, & WIs
OCRWM QARD REV. 4 September 1990	(3) A description of the allowable and tolerable ranges for inputs and outputs	19.7	Software QA Plan and SP 2.1 under development.
	(4) The design described in a manner that is easily traceable to the computer software requirements		
	(5) Code assessment and support documentation and descriptions of mathematical models and numerical methods as required by NUREG-0856		
	(c) Computer Software Implementation Documentation Design changes made to the requirements and design phase documents shall be assessed as to the impact on the design. The revised requirements and design phase documents shall be reviewed to the same level of review as the original documents. The results should be the basis for the computer software verification and validation plans, at least in part.	19.7, 19.8 *	
	(d) Computer Software Verification and Model Validation Documentation (TEST) Computer software verification and model validation documentation shall include a plan that describes tasks and criteria accomplishing the verification of the computer software in each phase and any plans for model validation. The documentation shall also specify the hardware and system computer software configuration pertinent to the computer software. The documentation shall be organized in a manner that allows traceability to both the computer software requirements and the	19.2	

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	computer software design. This documentation shall also include a report on the results of the execution of the verification and validation activities. This report shall include the results of reviews, audits, tests, and a summary of the status of the computer software.	19.2	Software QA Plan and SP 2.1 under development.
	(e) User Documentation	19.7	
	User documentation shall be prepared in accordance with NUREG-0856 and shall include a description of: (1) Program considerations, options, and initialization procedures (2) Anticipated error situations and how the user can correct them (3) Internal and external data files, their input sequence, structures, units, and ranges (4) Input and output options, defaults, and formats (5) System interface features and limitations (6) Information for obtaining user and maintenance support (7) Sample problems.		
19.8	Reviews	19.8	
	Reviews of computer software development activity shall be performed as each life cycle phase is completed to assure the completeness and integrity of each development phase. The procedures used for reviews shall identify the participants and their specific responsibilities		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	during the reviews and in the preparation and distribution of the review reports. The documentation for reviews shall contain a record of review comments, a plan, timetable for resolution of the review comments, and the persons responsible for this resolution. After review comments are resolved, the approved documents shall be updated and placed under configuration management. (a) Computer Software Requirements Review The review of computer software requirements shall be performed at the completion of the computer software requirements documentation. This review shall assure that the requirements are complete, verifiable, and consistent. The review shall also assure that there is sufficient detail available to complete the computer software design. (b) Computer Software Design Review The computer software design review shall be held at the completion of the computer software design documentation. This review shall evaluate the technical adequacy of the design approach and assure that the design complies with the criteria in the computer software requirements specification. The complexity of the computer software design may require the performance of two design reviews, one at the completion of the overall computer software architecture and the second at the completion of the total design. (c) Computer Software Implementation Review The computer software implementation review is an evaluation of the completed requirements, design, and implementation process	19.8 V	Software QA Plan and SP 2.1 under development.

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990		prior to independent verification and validation.	19.2, Para 2	Software QA Plan and SP 2.1 under development.
	(d)	Computer Software Verification and Model Validation Review The computer software verification and validation review is an evaluation of the adequacy of verification and validation plans or procedures and completed verification and validation activities. The review results in an approval of verification and validation documentation.	19.2	
19.9		Discrepancy Reporting and Corrective Action A formal computer software discrepancy reporting and corrective action system shall be established. This discrepancy reporting system shall be integrated with the configuration management system to assure formal processing of discrepancy resolutions. Computer software discrepancy reporting and corrective action systems shall assure that, as a minimum:	19.9	
	(1)	Defects are documented and corrected		
	(2)	Defects are assessed for criticality and impact on previous applications		
	(3)	Corrections are reviewed and approved before changes to the computer software configuration are made		
	(4)	Preventive and corrective actions provide for appropriate notification of affected organizations.	V	

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990		If a deficiency is identified in use of the software that impacts previous work, such that analyses must be rerun to assure accurate and correct results, the deficiency shall be documented and controlled in accordance with the requirements of Section 16 for Corrective Action.	19.9, *	Software QA Plan and SP 2.1 under development
	19.10	Media Control and Security Physical media containing the images of computer software shall be physically protected to prevent their inadvertent damage or degradation.	19.10, *	

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV 4 September 1990	19.11	Acquired Computer Software	19.11, *	Software QA Plan and SP 2.1 under development
		(a) Procedures shall be established for controlling the transfer of computer software from an outside source to a user organization and from a user organization to an outside requesting organization. Computer software transfer requests of the organization (or purchases) from an outside source shall include appropriate criteria to enable the computer software received to comply, as much as possible, with the requirements of this Section and the needs of the affected organizations computer system. Those requirements not met by the computer software received shall be completed by the organization in the relative phase of the computer software life cycle that is incomplete or, if that is not possible, the reason shall be documented and maintained with the computer software and distributed to the users.		
		(b) Configuration management change controls shall be established for documenting the conversion of computer software to be used on a computer system, or peripheral hardware, other than that for which it was designed. Conversion includes all modifications and tests made to the input, output, source code, or additional computer software written to run the original computer software on the new system.		
		(c) Computer software conversion shall be documented and maintained for the specific versions of the computer software and the computer system on which it is installed. Computer software conversion changes shall be evaluated and activities performed in accordance with the appropriate configuration management system elements.	V	

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	19.12	Computer Software Application (a) Technical calculations using computer software shall be performed with computer codes and with computer software operating procedures defined sufficiently to allow independent repetition of the entire computation. If any technical calculations fall outside the range of tests performed to validate the model, model validation shall be performed for these specific technical calculations. If model validation has not been performed previously, the model shall be validated and documented to the degree discussed in 19.2. (b) Affected organizations shall establish procedures for controlling application of verified computer software and/or validated models to technical calculations generating primary data. (c) Affected organizations shall establish procedures for controlling and reviewing computer software application and analyses and for assuring that results are accurate and reproducible. Requirements shall be established for identifying or otherwise marking record copies of analyses and supporting documentation. Supporting documentation includes computer output (results), code input data including databases and original sources or references of and assumptions used to obtain such data, code design, user's or operation manuals, verification or validation test results, and hand calculations. (d) Controls shall be established for generating and documenting computer software used to perform technical calculations. Auxiliary computer software used should be included in documentation of technical calculations performed and should be included in independent review as part of the calculations. Auxiliary computer software used to support primary analysis computer software shall be controlled at a level commensurate with the complexity of that computer software.	19.12, * V	Software QA Plan and SP 2.1 under development

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990		(e) Applications of computer software shall be independently reviewed and approved to assure that the computer software selected is applicable to the problem being solved and that input and assumptions are valid and traceable.	19.12, *	Software QA Plan and SP2.1 under development.
	19.13	EXCEPTIONS TO ASME NQA-1, 1989 EDITION Supplement 11S-2, Section 2.2, In-Use Tests; Section 3, Test Procedures, item (e); Section 5, Test Records, Part A, items (3), (4), (5) and (6) and Part B in its entirety.	V	See NQA-1 Matrix

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	APPENDIX A AMPLIFICATIONS OF QUALITY ASSURANCE PROGRAM REQUIREMENTS FOR THE MINED GEOLOGIC DISPOSAL SYSTEM (MGDS)		
	GENERAL		
	The purpose of this appendix is to amplify the basic OCRWM quality assurance program requirements by specifying requirements unique to the MGDS. Program participants who perform activities related to MGDS shall comply with the quality assurance program requirements contained in QARD Sections 1 through 19. Specific amplifications of the requirements are given below as they relate to a major, numbered QARD section (criteria). Where a major QARD section requires no amplification or clarification, the section reference is omitted from this Appendix.	N/A	SP 1.2, Rev. 2, Para. 5.1.8
	2.0 AMPLIFICATION OF QARD SECTION 2 - QUALITY ASSURANCE PROGRAM		
	2.1 QUALITY ASSURANCE PROGRAM A methodology shall be developed to identify those items and activities to which the quality assurance program applies. This methodology shall be consistent with the guidance provided in NUREG-1318, Technical Position on Items and Activities in the High-Level Waste Geologic Repository Program Subject to Quality Assurance Requirements, April 1988.	2.2.9	AP 5.28Q, Rev. 0
	3.0 AMPLIFICATION OF QARD SECTION 3 - DESIGN CONTROL		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	3.1	PEER REVIEWS	20.2, 20.10,	AP5.9Q, Rev. 1, Para 3.5
		Peer reviews shall be performed in accordance with the guidance provided in NUREG-1297, Peer Review for the High-Level Waste Repositories Generic Technical Position, February 1988.		
	5.0	AMPLIFICATION OF QARD SECTION 5 - INSTRUCTIONS, PLANS, PROCEDURES, AND DRAWINGS		
	5.1	SCIENTIFIC NOTEBOOKS	20.4	
		When Scientific Notebooks are used to document scientific investigations. The requirements of Section 20 of this Appendix shall prevail over the requirements of this section.		
	6.0	AMPLIFICATION OF QARD, SECTION 6 - DOCUMENT CONTROL		
	6.1	DOCUMENT PREPARATION		
		The document control system for document preparation, review, revised approval, issuance, and changes thereto shall include the evaluation of changes for potential impact on the waste isolation capability of the site or interference with other site characterization activities.	6.3	SP 1.34 to be revised.
	8.0	AMPLIFICATION OF QARD SECTION 8 - IDENTIFICATION AND CONTROL OF MATERIALS, PARTS, COMPONENTS, AND SAMPLES		
	8.1	SAMPLES	8.1, 17.0	
		Samples shall be identified and controlled in a manner consistent with the samples' intended uses. Such controls shall define the responsibilities, including interfaces between technical specialties and organizations for:		WI-RM-702, Rev. 0, (all) WI-RM-702, Rev. 0, (all)
		(a) Collection, identification, and traceability of samples (including archival samples).		WI-AQ-003, Rev. 1, Paras 4.1 & 4.2.5

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV 4 September 1990	(b) Test allocation. (c) Disposition of samples (d) Generation of associated records.		AP 6.3Q, Rev. 0, Para. 5.4 WI-AQ-003, Rev. 1, Para 4.2.2.5 WI-AQ-001, Rev. 1, Para. 5.0 WI-AQ-003, Rev. 1, Para. 4.2.5
	8.2 SAMPLE IDENTIFICATION Samples shall be identified by placing identification directly on the samples when possible, on the samples' containers, or on labels or tags attached to the samples or the samples' containers. Sample identification shall be verified and documented prior to release for testing or analysis.	8.1	WI-AQ-003, Rev. 1, Para 4.1.1.4 WI-AQ-003, Rev. 0, Para 4.2.5
	8.3 SAMPLE TRACEABILITY Identification systems shall assure traceability of samples to the appropriate documentation such as drawings, specifications, purchase orders, technical reports, drilling locations and logs, (including well bore and depth), test records, installation and use records, inspection documents, and nonconformance reports. Controls are established to preclude the inadvertent use of incorrect or defective samples. Traceability of samples from initial acquisition through final disposition is required. Measures shall be taken to preclude the use of samples that cannot be identified.	8.1	WI-AQ-003, Rev. 1, Para 4.1.1.4 AP 6.3Q, Rev. 0, Para 3.10 AP 6.3Q, Rev. 0, (all)
	8.4 ARCHIVAL SAMPLES Applicable technical specifications, procurement documents, test procedures, or other similar documents shall specify representative archival samples to be maintained from difficult-to-repeat and geologic sample collection activities.	N/A to T&MSS participant scope of work	

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	9.0	AMPLIFICATION OF QARD SECTION 9 - CONTROL OF PROCESSES		
	9.1	APPLICABILITY	9.0	See page 22
		The requirements for control of processes apply to both engineered items and scientific investigations. The requirements for special processes apply to engineered items and do not apply to scientific investigation activities.		
	10.0	AMPLIFICATION OF QARD SECTION 10 - INSPECTION		
	10.1	APPLICABILITY	10.0	SP 1.25, Rev. 1 (all)
		The requirements of this section apply to engineered items only and not to scientific investigation activities.		
	11.0	AMPLIFICATION OF QARD SECTION 11 - TEST CONTROL		
	11.1	APPLICABILITY	11.0	N/A
		The requirements of this Section apply to engineered items and do not apply to scientific investigation activities.		
	13.0	AMPLIFICATION OF QARD SECTION 13 - HANDLING, STORAGE, AND SHIPPING		
	13.1	GEOTECHNICAL SAMPLES	13.3,	AP 6.3Q, Rev. 0 (all)
		Handling, storing, and shipping requirements are applicable to samples collected for site characterization.		
	13.2	GEOTECHNICAL SAMPLE HANDLING AND SHIPPING	13.3,	AP 6.3Q, Rev. 0 (all)
		Samples shall be controlled during handling, storage, and shipment to preclude damage or loss and minimize deterioration. Controls shall be		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990		established for appropriate packaging, handling, and modes of transportation, with consideration being given to type of containers, time constraints on perishable materials (that is, shelf life), and any other environmental or safety considerations applicable to the samples. Measures shall be taken to avoid sample contamination during handling and shipment. Where multiple organizations are involved, appropriate procedures shall describe interface and custody responsibilities. Sample identification shall be verified and maintained when samples are handled, transported, or transferred from one organization's responsibility to another.		
	13.3	GEOTECHNICAL SAMPLE STORAGE	8.1, 13.3	AP 6-3Q, Rev. 0 (all)
		(a) Provisions shall be made to maintain sample characteristics, integrity, and identification while in storage. These provisions shall be consistent with the planned duration and conditions of storage and shall describe actions to be taken where samples have a maximum life expectancy while in storage. Storage methodology shall be developed and implemented to assure that samples are maintained in predetermined environmental conditions commensurate with the samples' intended purposes.		
		(b) Samples shall be controlled to preclude mixing of like samples or contamination. Provisions shall be made for identification and storage of tested samples in area physically separated from untested sample materials.		
	14.0	AMPLIFICATION OF QARD SECTION 14 - INSPECTION, TEST, AND OPERATING STATUS		
	14.1	APPLICABILITY	14.0	*
		The requirements of this Section apply to engineered items only and do not apply to scientific investigation activities.		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	19.0	AMPLIFICATION OF QARD SECTION 19 - COMPUTER SOFTWARE		
	19.1	APPLICABILITY		
		The purpose of this section is to establish requirements for the development, management control, and documentation of software used to support the MGDS. The attainment of software quality is dependent upon the control of the entire software development process, and is not assured solely by inspection and test of the end product. The detailed requirements set forth in this section apply to computer software used to produce or manipulate data which is used directly in site characterization, and the design, analysis, performance assessment, and operation of repository structures, systems and components. The extent to which these requirements apply is related to the nature, complexity, and importance of the software and its use.	19.0, 19.1, 19.13	Software QA Plan and SP 2.1 under development.
	20.0	SCIENTIFIC INVESTIGATIONS		AP 1.10Q, Rev. 2 (all)
	20.1	PLANNING	20.1,	SP 2.2 under development
		(a) Prior to the start of any scientific investigation, a scientific investigation planning document (for example, study plan) shall be developed. Planning documents shall contain:		
		(1) Description of work to be performed.		AP 1.10Q, Rev. 2, Attachment 3, Para. 1
		(2) Rationale and justification for the information to be obtained.		AP 1.10Q, Rev. 2, Attachment 3, Para. 2
		(3) Proposed methodology.		AP 1.10Q, Rev. 2, Attachment 3, Para. 3
		(4) Rationale and justification for the proposed methodology.		AP 1.10Q, Rev. 2, Attachment 3, Paras. 1 and 2
		(5) References to applicable documents.		AP 1.10Q, Rev. 2, Attachment 3, Para. 3

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(6) Identification, explanation, and justification for areas where scientific notebooks are to be used.	20.1	*
	(7) Description of constraints.		AP 1.10Q, Rev. 2, Attachment 3, Para. 2.2
	(8) Description of the application of the scientific investigation's results.		AP 1.10Q, Rev. 2, Attachment 3, Para. 4
	(9) Description of schedules and milestones.		AP 1.10Q, Rev. 2, Attachment 3, Para. 5
	(b) These planning measures shall include or reference provisions for assuring that:		
	(1) Prerequisites for the given scientific investigation have been met		AP 1.10Q, Rev. 2, Attachment 3,
	(2) Adequate instrumentation is available and used		AP 1.10Q, Rev. 2, Attachment 3, Para. 3
	(3) Necessary monitoring including witness or hold points have been performed		*
	(4) Suitable laboratory conditions are maintained.	20.1	AP 1.10Q, Rev. 2, Attachment 3,
	(5) Scientific investigations at each step are compatible with applicable conceptual or mathematical models used at each applicable stage.	20.1	AP 1.10Q, Rev. 2, Attachment 3, Para. 4.1
	(6) The evaluation of data quality to assure that generated data is valid, comparable, complete representative, precise, and accurate.	20.1	AP 1.10Q, Rev. 2, Attachment 3, Para. 3
	(7) Sources of error and uncertainty and input data that is suspect or whose quality is beyond the control of the performing organizations is identified.	20.3	AP 1.10Q, Rev. 2, Attachment 3, Para. 3

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(c) Prerequisites	20.1, 20.3	Radiological Monitoring Rev 2
	The following prerequisites shall be considered:		
	(1) Calibrated instrumentation		P 2-3, 2f
	(2) Appropriate equipment		P 2-3, 3f
	(3) Trained personnel		P 2-3, 2c
	(4) Readiness of facilities, equipment, supplies, and items or samples		P2-3, 1h
	(5) Suitable environmental conditions		*
	(6) Provisions for acquisition and recording of data		P 2-3, 2d
	(7) Disposition of facilities after completion of scientific investigation activities	20.2	
	(8) Environmental compliance and land access approval.	20.2	P 2-4, 2.1.3, *
	The responsible Project affected organization shall conduct a technical review or peer review of the scientific investigation planning document prior to data collection or analysis activities. Technical Reviews shall be performed in accordance with Section 3.4 in the main body of this document. In exceptional cases, the originator's immediate supervisor can perform the review if the supervisor is the only technically qualified individual, and if the need is individually documented and approved in advance with the concurrence of the QA manager of the originating organization. The results of this technical or peer review, and the resolution of any comments by the reviewer or reviewers shall be documented, and shall become a part of the QA records.	20.2	AP 1.10Q, Rev. 2 (all)

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	All changes in scientific investigation planning documents shall go through the same review and approval process as the original planning documents.	20.2	AP 1.10Q, Rev. 2, Para 5.38-41 Rev. 2
	The intended use of data shall be documented as part of the planning for scientific investigations. Any alternate use of the data shall be evaluated for appropriateness and the justification documented.		AP 1.10Q, Rev. 2, Attachment 3, Para 3
	The range, accuracy, and precision of equipment used for scientific investigations shall be specified in order to be commensurate with requirements. In developing quality assurance program requirements for equipment, consideration shall be given to whether proper performance of a scientific investigation can be determined during or after the scientific investigation (that is, whether failure or malfunction of equipment can be detected). Where special quality assurance program requirements are found to be necessary, specific performance verification requirements shall be established and described to govern the use of the equipment.		AP 1.10Q, Rev. 2, Attachment 3, Para 3 AP 1.10Q, Rev. 2, Attachment 3, Para 2.2 AP 1.10Q, Rev. 2, Attachment 3, Para 3 AP 1.10Q, Rev. 2, Attachment 3, Para 3
	20.2 CONTROL OF SCIENTIFIC INVESTIGATIONS		
	(a) Scientific investigations shall be defined, controlled, and verified. Process variables affecting scientific investigations shall be measured and controlled. Variables that affect inter-related scientific investigations shall be identified, documented, and controlled in each investigation.	20.0	AP 1.10Q, Rev. 2, Attachment 3, AP 5.19Q, Rev. 1 *
	(b) Either the scientific notebook system or the technical procedures system are the two approaches that will be used to control scientific investigation activities.	20.3, 20.4	AP 1.10Q, Rev. 2, Attachment 3, Para 2
	(c) The technical procedures system shall be used by qualified personnel to perform repetitive work that does not include the use of a high degree of professional judgment nor trial-and-error methods.	20.3	WI-AQ-003, Rev 1, Para 4.0

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(d)	Activities used to develop new methods or procedures for conducting scientific investigations or critical processes shall be documented. Results of scientific investigations or critical processes shall be reviewed and documented for adequacy and approved by qualified persons prior to use.	20.3	AP 1.10Q, Rev. 2 (all) * WI-AQ-005, Rev 1, Para. 4.0
	20.2.1	Technical Procedures		
		Technical procedures are required when it is not possible to deviate from a prescribed sequence of actions without endangering the validity of the results.	20.3	SP 2.4, Rev. 0 (all)
		Technical procedures shall be reviewed for technical adequacy and approved by qualified persons other than those who prepared the procedures. Changes to technical procedures for conducting scientific investigations shall be reviewed and approved by the same organiza- that performed the original review and approval unless the affected organization designates the responsibility in writing to another organization.		SP 1.1, Rev. 2, Para 5.1.1.8 SP 1.1, Rev, 2, Para 5.3
		The technical aspects of procedures may be modified by the individual utilizing the procedure. The approval of an appropriately qualified reviewer is required if the change is not within the scope of the scientific investigation planning document, the activity can not be repeated, or the change could potentially impact the waste isolation capability of the site or interfere with other site characterization activities. Such changes shall be communicated to all affected groups.		SP 1.30, Rev. 1, Para 5.3
		Technical procedures utilized for scientific investigations shall provide for the following as appropriate:		
		o Requirements, objectives, methods, and characteristics to be tested or observed.		WI-AQ-001, Rev. 1, Para 1.0

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	o	Acceptance limits, if applicable, contained in applicable documents, including precision and accuracy.	20.3	Form TMSS/105/2
	o	Prerequisites such as calibrated instrumentation; adequate and appropriate equipment and instrumentation; readiness of facilities, equipment, supplies, items, and samples; suitable and controlled environmental conditions; provisions for data collection and storage; and disposition of facilities at completion of the scientific investigations. For activities of long duration, specific provisions shall be established and documented for instrumentation whose calibration interval is shorter than the expected duration of the activity. Such provisions are to be designed to ensure validity of data throughout the scientific investigation.		WI-AQ-001, Rev. 1, (all) WI-AQ-005, Rev. 1, (all) WI-AQ-004, Rev. 1, Para. 4.0
	o	Mandatory verification points, as applicable.		All WIs address hold points.
	o	Acceptance criteria, including required levels of precision and accuracy (NOTE: "Accept criteria: means those features or characteristics of a procedure that make it possible to determine whether the work has been, or is being, performed in such a way that it produces the intended results. A data acquisition task produces output that, in itself, cannot be characterized as acceptable or unacceptable. However, the task of acquiring the data is acceptable if all specified prerequisites were met and the work was accomplished in the specified manner. In that instance, the "accept criteria" are simply the conditions and methods stated in the procedure.)		WI-AQ-003, Rev. 1, Para 4.1.3.8
	o	Methods of documenting or recording data and results, including precision and accuracy.		WI-AQ-003, Rev 1, Paras 4.1.3.8 5.0

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	o Methods of data reduction or reference to procedures containing this information.	20.3	WI-AQ-001, Rev. 1, Para. 4.0 WI-AQ-005, Rev. 1, Para. 4.1
	o Provision for ensuring that prerequisites have been met.		WI-AQ-001, Rev. 1, Para. 4.3.1
	o Special training or qualification requirements for personnel performing the scientific investigation.		SP 1.31, Rev. 1, Para. 5.3.1
	o Personnel responsibilities.		WI-AQ-001, Rev. 1, Para 4 Playscript
	Procedures shall be complete to the extent that another qualified individual may, at a later date, repeat the scientific investigation. The potential sources of uncertainty and error in technical implementation procedures which must be controlled and measured to assure that scientific investigations are well controlled as well as input data that is suspect or whose quality is beyond the control of the performing organization shall be identified. Parameters that need to be measured and/or controlled to minimize uncertainties or error, and to ensure adequate control, shall be addressed explicitly in procedures.		AP 1.10Q, Rev. 2, Attachment 3, Para. 3.0

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	20.2.2	SCIENTIFIC NOTEBOOKS The scientific notebook system will be used by qualified individuals who are using a high degree of professional judgment, trial and error methods, or developing the methodology by which an activity will be accomplished. When the scientific notebook system is used, the study plan or scientific investigation planning document shall be the controlling document used to perform the activity. The contents of the notebook shall be sufficient such that another qualified scientist can use the notebook to retrace the investigation and confirm the results if feasible, or repeat the investigation and achieve the same results without recourse to the PI. Documentation of scientific investigation work (i.e., experiments and research) shall be performed using logbooks or notebooks to provide written record of the experiment or research. Prior to initiation of the experiment or research, the following entries, as a minimum, shall be made in the scientific notebook: o Title of the experiment of research. o Name of the qualified individual or individuals performing the experiment or research. o Description of the experiment's objective or objectives and the proposed approach or procedure for achieving these objectives. (This may be accomplished by reference to the appropriate study plan or other scientific investigation planning document that controls the work.) o Equipment and materials to be employed during the experiment or research, including any necessary fabrication of experimental equipment and any needed characterization of starting material. o Calibration requirements.	20.4,	SP 2.2 under development

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	o Special training or qualification requirements.	20.4	SP 2.2 under development
	o Documentation of suitable and controlled environmental conditions, if applicable.		
	o Required levels of precision and accuracy.		
	o Input data that is suspect of whose quality is beyond the control of the performing organization.		
	o Dated signature of the individual or individuals making the initial entries. The initial entries described above are considered to be "general" procedure and shall be entered into the scientific notebook prior to beginning an investigation. Modifications may be made to the initial entries by the individual performing the investigation. If the change or modification is not within the scope of the study plan or scientific investigation plan, and the investigation is not repeatable, or the change could potentially impact the waste isolation capability of the site, or interfere with other site characterization activities, approval shall be obtained from an appropriately qualified reviewer. Subsequent entries made in a scientific notebook during the experiment or research shall be sufficiently detailed so that another competent experimenter/researcher could repeat the experiment or research, and shall include:		
	o Date and name of individual making the entry.		
	o Provisions for assuring prerequisites have been met.		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990		o Description of the experiment or research attempted, including detailed step-by-step process followed; either by reference to implementing procedure or by actual entry into the notebook. o Description of any conditions which may adversely affect the results of the experiment or research. o Identification of samples used and any additional equipment and materials not included as part of the initial entries previously prescribed. o All data taken and a brief description of the results, to include notation of any unaccepted results. o Any deviations from the planned experiment or research. o Any interim conclusions reached, as appropriate. o Final disposition of facilities. The final entries in the record shall have, as a minimum, the signature of the experimenter and the signature of a competent technical reviewer.	20.4	SP 2.2 under development
	20.3	STANDARDS Scientific investigations shall be performed in accordance with nationally recognized standards (for example, ASTM) where available. Standards used without modification require documentation by reference only. If deviation from standards or establishment of specially prepared procedures is deemed appropriate, the modifications or new methods shall be documented in sufficient detail to be repeatable and shall be evaluated, justified, and approved.	20.1	AP 1.10Q, Rev. 2, Attachment 3

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	20.4	DATA COLLECTION AND ANALYSIS		
	(a)	Equipment to be used to obtain and analyze data shall be evaluated to assure adequacy and proper selection. Data collection and analysis shall be controlled by measures that provide sufficient detail to allow the processes to be repeated by an individual with qualifications comparable to the person originally conducting the task. Where appropriate, verifications shall be performed using recognized methods.	20.7	SP 2.2 under development WI-AQ-001, Rev. 1 (all) WI-AQ-001, Rev. 1, Para 4.0
		Documentation of interpretation/analysis shall include the following:		
		o Definition of the objective of the interpretation/analysis o Definition of input and their sources. o A listing of applicable references. o Results of literature searches or other background data. o Identification of assumptions. o Identification of any computer calculations, including computer type, program name, revision, input, output, evidence of program verification, and the bases of application to the specific problem. o Signatures and dates of review and approval by appropriate personnel.		SP 2.2 under development
	(b)	Data Transfer and reduction controls shall be established to assure data transfer is error-free or within a prescribed, permissible error rate to assure that information is not lost in transfer and that the input is completely recoverable from the output. All processes that change either the form of expression or quantity of data, values, or number of data items (data reduction) shall be controlled by prescribed methods that allow verification of the conversion process.		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	20.5	DATA COLLECTION AND ANALYSIS REVIEW		
		Methods used to obtain data shall be reviewed for technical adequacy. Data analysis shall be technically reviewed. These reviews shall be performed by qualified individuals other than those who performed the scientific investigation. Questions shall be resolved before the results are entered into the Reference Information Base (RIB).	20.7	SP 2.2 under development WI-AQ-005, Rev 1, Para. 4.0
		Unreviewed data and data with unresolved questions shall be clearly identified when used or reported. Uncertainty limits shall be assigned to the data prior to use. Collected data shall be reported so as to relate it to information needs and issue resolution.		SP 2.2 under development WI-AQ-001, Rev. 1, (all)
	20.6	DATA IDENTIFICATION AND TRACEABILITY		
		(a) All data shall be recorded so as to be clearly identifiable and traceable to the source from which it was generated. Identification and traceability shall be maintained throughout the needed lifetime of the data.		TMSS/112/7 WI-AQ-003, Rev. 1, Para. 4.2.5
		(b) Data found to be erroneous or superseded for the intended use shall be controlled and dispositioned. Controls shall include the identification and segregation of unsuitable data to avoid inadvertent use. The disposition of unsuitable data shall be justified and documented.		SP 2.2 under development
	20.7	SCIENTIFIC INVESTIGATION RESULTS		
		Final results and a summary of the outcome of the experiment or research shall be documented (e.g., in a technical report). This shall include a discussion of whether the experiment's objectives as outlined in the initial entries were achieved. This documentation shall become part of the QA records of the activity.	20.8	SP 2.2 under development

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	The affected organization shall have implementing procedures for the technical and/or peer review and approval of the results of scientific investigations. Data collection and analysis shall be technically reviewed by qualified individuals other than those who performed the scientific investigation. Questions shall be resolved before the results are used as a baseline. Unreviewed data and data with unresolved questions shall be clearly identified when used or reported. Uncertainty limits shall be assigned to the data prior to use. Data collected shall be reported so as to relate it to information needs and issue resolution.	20.8	AP 1.10Q, Rev. 1, Attachment 3
	20.8 INTERFACE CONTROL		
	Ongoing field or laboratory scientific investigations shall be identified to preclude inadvertent interruption and to ensure operational compatibility. Such identification shall be clearly evident at the location at which the scientific investigation is being performed. Field investigations shall identify the location of the investigation to the extent necessary to preclude interference.	20.5	AP 5.19Q, Rev. 1 (all)
	20.9 DATA RECORDING, STORAGE, AND RETRIEVABILITY		
	Original recorded data shall be considered a QA Record and shall be handled in accordance with QARD Section 17.	20.4, 20.9	WI-AQ-005, Rev. 1, Para. 5.0 Para. 5.0
	Records shall, as appropriate, identify the following elements:		
	(a) Scientific investigation requirements, plans, procedures (including applicable revisions), scientific notebooks, logs, and logbooks		WI-AQ-005, Rev. 1, Paras. 5 & 6
	(b) Item or sample investigated		Form TMSS/114/2

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(c)	Date of scientific investigation	20.4, 20.9	Form TMSS/114/2
	(d)	Identification of the persons performing the scientific investigation and the performers' organizations		Form TMSS/114/2
	(e)	Results and acceptability for intended use		Form TMSS/110/3
	(f)	Action taken in connection with any deviations noted		WI-AQ-001, Rev. 1,
	(g)	Persons evaluating scientific investigation results and evaluators' organization		Form TMSS/114/2 WI-AQ-005, Rev. 1, Para. 4.0
	(h)	Identification of equipment used.		TMSS/114/2
	20.10	QUALIFICATION OF DATA OF INDETERMINATE QUALITY		
		Data that will be needed to be qualified to support a license application and that were not collected under the control of a quality assurance program meeting the quality assurance program requirements of 10 CFR 60 Subpart G or this document shall be qualified in accordance with NUREG-1298, Qualification of Existing Data for High-Level Nuclear Waste Repositories Generic Technical Position, February 27, 1988, prior to use in support of license application activities.	2.2.10 & 20.0	AP 5.9Q, Rev. 1 (all)
	(a)	Data may include information collected from such sources as professional journals, technical reports, and symposia proceedings; such data does not include design reference codes and standards, for example, ASME Boiler and Pressure Vessel Code, ASTM standards, and CRC Handbooks.		AP 5.9Q, Rev. 1
	(b)	The organization using the data shall define the data qualification process that describes how data will be assessed for quality characteristics, such as accuracy, precision, completeness, representativeness, and comparability.		AP 5.9Q, Rev. 1, Para 5.1

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE		REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(c)	Acceptable qualification methods include any one, or a combination of, peer review, corroborating data, or confirmatory testing.	20.0	AP 5.9Q, Rev. 1
	(d)	Consideration shall be given to the following factors when available and measurable:		
		(1) Qualifications of personnel or organizations generating the data		AP 5.9Q, Rev. 1, Paras. 5.1.2.1 5.1.2.2
		(2) Technical adequacy of the equipment and procedures used in the scientific investigation		
		(3) Laboratory conditions		5.1.2.4
		(4) Confidence level associated with the corroborating data based upon the quality and reliability of the measurement control program under which the data was generated		
		(5) Amount of corroborating data or confirmatory testing		5.1.2.9
		(6) Extent to which data demonstrates properties of interest (for example; physical, chemical, geologic, mechanical)		5.1.2.3
		(7) Extent to which conditions generating the data may partially meet requirements of this document		5.1.2.11
		(8) Prior uses of the data and associated verification process		5.1.2.6
		(9) Prior professional reviews of the data		5.1.2.7
		(10) Extent and reliability of the documentation associated with the data		5.1.2.8

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN T&MSS SPs, OPs, & WIs
OCRWM QARD REV. 4 September 1990	(11) Degree to which data-generating processes were independently audited		5.1.2.10
	(12) Importance of the data to show that performance objectives were met.	20.0	
	(e) The results of data qualification activities shall be documented. The information to be found in peer review reports is addressed in paragraph 3.1 of this Appendix.		AP 5.9Q, Rev. 1, Para. 8.1
	20.10.1 Qualification of Data by Use of Corroborating Data Reports of data qualification by use of corroborating Data shall include the following elements:		
	(a) Identification of the corroborating data source		AP 5.9Q, Rev. 1, Para. 5.3.2.3
	(b) Tabulation of the corroborating data		
	(c) Description of the corroborating data relationship to the data being qualified		
	(d) Technical justification for use of the corroborating data		
	(e) Identification of the corroborating data reviewers		
	(f) Test results		

NOTE: * Implementing procedure to be developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 2	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	I. ORGANIZATION		
NRC Review Plan Rev. 2	The Organization elements responsible for the QA program are acceptable to the NRC staff if:		
	1. The responsibility for the establishment and execution of the overall program is retained and exercised by that organization or individual responsible for submitting the license application.	N/A	N/A
	2. The authorities and duties of persons and organizations performing activities important to safety or waste isolation, hereafter referred to as "safety functions," are clearly established and delineated in writing.	1.0	Adequately addressed in the QAPD and ExhibitS 1-5; procedure not necessary.
	3. The QA program assures that activities affecting safety functions include both the performing functions of attaining quality objectives and the QA functions.	1.0, 1.3, Policy Statement	
	4. The QA functions are those of: (a) assuring that an appropriate QA program is established and effectively executed; and (b) verifying, such as by checking, auditing, and inspection, that activities affecting the safety functions have been correctly performed.	1.3.1, 1.3.5	
	5. DOE and prime contractors describe major delegation of work involved in establishing and executing the QA program, or any part thereof, to other organizations.	1.0, 1st Para., 1.6	
	6. DOE and prime contractors describe how responsibility is exercised for the overall QA program. The extent of management responsibility and authority from DOE headquarters and from the field office should be addressed.	1.0	
	7. DOE and prime contractors evaluate the performance of work delegated to other organizations. This shall include audits of the prime contractors' QA programs and audits of subcontractors, consultants, vendors, and laboratories furnishing equipment or services to the prime contractor or DOE. The frequency and method of evaluation should be specified.	18.1.1, 18.1.5	OP 1.1 Rev 0, OP 1.3 Rev 0 OP 1.7 Rev 2

Prepared: [signature] 12/5/90
Approved: Kent E. Johnson 12/3/90 for T&MSS QA Manager

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REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	8. Qualified individual(s) or organization element(s) are identified within DOE's organization as responsible for the quality of the delegated work before initiation of activities.	N/A	N/A
	9. Clear management controls and effective lines of communication exist for QA activities between DOE and its contractors, to assure direction of the QA program.	N/A	N/A
	10. Organization charts clearly identify all the "onsite" and "offsite" organizational elements which function under the cognizance of the QA program.	N/A	N/A
	11. The QA organization is involved in portions of the high level waste repository program that affect safety and waste isolation. The extent of QA controls is determined by the QA staff in combination with the line staff and depends upon the specific activity, its complexity, and its importance to safety or waste isolation, as defined in 10 CFR Part 60, Section 60.2.	1.3.5, 2.2.6	QAPD adequately addresses; no procedure necessary
	12. DOE and its prime contractors describe the QA responsibilities of each of the organization elements noted on the organization charts.	1.3.1 - 1.3.5 Exhibit 1	
	13. DOE and its prime contractors identify a management position within each respective organization that retains overall authority and responsibility for the QA program. This position, occupied by an individual with appropriate management and QA knowledge and experience, has the following characteristics:	1.3.1, 1.3.5, 2.2.5	
	a. Is at the same or higher organization level as the highest line management directly responsible for performing activities affecting quality (such as design, engineering, site investigations, procurement, manufacturing, etc.) and is sufficiently independent from cost and schedule.		
	b. Has effective communication channels with other senior management positions.		
	c. Has responsibility for approval of QA manuals, changes thereto, and interpretations thereof.		SP 1.2, Rev 2, Paras. 5.2.22 5.5.33

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	d. Has no other duties or responsibility related to QA that would prevent full attention to QA matters.		QAPD adequately addresses.
	14. Persons and organizations performing QA functions have sufficient authority and organizational freedom to: a. Identify quality problems. b. Initiate, recommend, or provide solutions through designated channels. c. Verify implement of solutions. d. Assure that further processing, delivery, installation or operation is controlled until proper disposition of a nonconformance, deficiency, or unsatisfactory condition has occurred. The persons and organizations with the above authority are identified and a description of how those actions are carried out is provided.	1.3.5	
	15. Provisions are established for the resolution of disputes involving quality arising from a difference of opinion between QA personnel and other department personnel.	1.4.1	SP 1.22 Rev 0, Para. 5.1.10, Note SP 1.37, Rev 1, Para. 5.2.6
	16. Policies regarding the implementation of the QA program are documented and made mandatory.	Policy Statement	N/A
	17. Provisions are established for resolving allegations of inadequate quality. These allegations may originate within the responsible organization(s) or from outside the responsible organizations(s).	1.4.2	Procedure needs to be written.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	II. QUALITY ASSURANCE PROGRAM		
NRC Review Plan Rev. 2	Activities related to the QA Program are acceptable to the NRC staff if:		
	1. A QA program is established and documented which complies with the QA controls of 10 CFR Part 60, Subpart G; with 10 CFR Part 50, Appendix B; and with this Review Plan.	Introduction, Attachment A	N/A
	2. The QA program provides a commitment to comply with NQA-1, "Quality Assurance Program Requirements for Nuclear Facilities" (see Ref. 2) and the following position, relative to the NQA-1 standard: Appendix 2A-1, "Nomandatory Guidance on the Qualifications of Inspection and Test Personnel," provides guidance on the qualification of inspection and test personnel. The provisions of Appendix 2A-1 (or acceptable alternatives) should be met as a part of Supplement 2S-1, "Supplementary Requirements for the Qualification of Inspection and Test Personnel."	Introduction Attachment A	OP 1.8, Rev. 0
	3. The QA program is documented by written policies, procedures or instructions and carried out by qualified individual(s), in accordance with these program documents, before initiation of activities.	2.0, 1st Para. 2.2.4, 2.2.11	Readiness review procedure being developed
	4. Criteria are established and documented for determining and identifying structures, systems, components, software and activities Which are to be controlled by the QA program. Guidance for determining these items and activities is provided in NUREG-1318, "Technical Position on Items and Activities in the High Level Waste Geologic Repository Program, Subject to Quality Assurance Requirements." (See Ref. 4)	2.2.8	AP 5.28Q Rev 0, AP 6.17Q Rev 0
	5. Activities affecting quality are to be accomplished under suitably controlled conditions. Controlled conditions include the use of appropriate equipment; suitable environmental conditions for accomplishing the activity, such as adequate cleanness; and assurance that all prerequisites for the given activity have been satisfied.	2.2.6	AP 5.28Q Rev 0

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	6. The program takes into account the need for special controls, processes, test equipment, tools, and skills to attain the required quality, and the need for verification of quality by inspection and tests.	9.0, 10.0, 11.0 and Para. 2.2.1	SP 2.1 is currently being developed
	7. Provisions are established which demonstrate through a matrix system or other means that each criterion of Appendix B is properly documented and covered by implementing procedures and/or instructions.	Introduction, Para. 4	
	8. A policy statement signed by a senior management official renders the implementation of the QA program mandatory.	Policy Statement	NA
	9. The QA program includes a commitment that all development, control and/or use of computer programs will be conducted in accordance with the QA program. Guidance for the content of documentation of computer codes is provided by NUREG-0856, "Final Technical Position on Documentation of Computer Codes for High-Level Waste Management." (See Reference 5.) NUREG/CR-4640, "Handbook of Software Quality Assurance Techniques Applicable to the Nuclear Industry," (see Reference 6) may be used as a reference for development software QA programs.	19, See Project Office SQAP	SP 2.1 is currently being developed
	10. Provisions are established to assure that technical and QA procedures required to implement the QA program are consistent with regulatory, licensing and QA program requirements and are properly documented and controlled.	2.2.4, 5.0 and 6.0	SP 1.1 Rev 2, Para. 5.1.1.4 and SP 1.30 Rev 1, Para. 5.1.1.4
	11. The QA organization or other designated organizations knowledgeable in QA controls reviews and documents concurrence with procedures pertaining to safety functions.	1.3.5, 5.0, 6.1	Forms require QA manager approval for SPs, OPs, WIs
	12. A description is provided of how management (above or outside the QA organization) regularly assesses the scope, status, adequacy, and compliance of the QA program to 10 CFR 50, Appendix B. These measures should include: a. Frequent contact with program status through reports, meetings, and/or audits.	2.2.12	SP 1.32 Rev 0, Paras 1.0, 2.0

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	b. Performance of an annual assessment which is preplanned and documented with corrective action identified and tracked.		SP 1.32 Rev 0, Para. 4.0
	13. Management of other organizations participating in the quality assurance program shall regularly review the status and adequacy of that part of the Quality Assurance program which they are executing.	2.2.6, 2.2.7, 2.2.12	SP 1.32 Rev 0 in its entirety
	14. Indoctrination, training, and qualification programs are established for personnel performing activities affecting quality to assure that suitable proficiency is achieved and maintained and that:	2.2.11	SP 1.31 Rev 1, Para 2.0
	a. Personnel responsible for performing quality-related activities are instructed as to the purpose, scope, and implementation of the quality-related manuals, instructions, and procedures.	2.2.11 2nd & 3rd sentence	SP 1.31 Rev 1, Para 4.0
	b. Personnel verifying activities affecting quality are qualified in the principles, techniques, and requirements of the activity being performed.	2.2.11.1	SP 1.31 Rev 1, Para 4.0
	c. For formal training and qualification programs, documentation includes the objective, content of the program, attendees, and date of attendance.	2.2.11.2, 2.2.11.3	SP 1.31 Rev 1, Para 5.6
	d. Appropriate management monitors the performance of individuals involved in activities affecting quality and determines the need for retraining and/or replacement. A system of annual appraisal and evaluation can satisfy this criterion.	2.2.11.3	SP 1.31 Rev 1, Para 5.7
	e. Qualified personnel are certified in accordance with applicable codes and standards.	2.2.11.1, 7.6. 1, 10.0, 18.1.2B	OP 1.8 Rev 0, Exhibit 1 OP 1.5 Rev 1, Para. 5.2
	15. Measures are provided describing the extent a readiness review program will be established and executed at appropriate major milestones to complement the inspection program.	2.2.7	A Readiness Review procedure is being developed.

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	III. DESIGN CONTROL		
NRC Review Plan Rev. 2	Activities related to Design Control are acceptable to the NRC staff if:	Section 3.0 States N/A	N/A
	1. The definitions of design, design information, and design activities used in the design control program are defined as provided in section. The term design refers to specifications, drawings, criteria, and components performance requirements for the natural and engineered components of the repository system. It includes design inputs and outputs at each stage of design development (i.e., from conceptual design to final design). Design information and design activities refer to data collection and analyses activities and computer codes that are used in supporting design development and verification. This includes general plans and detailed procedures for data collection and analyses and related information such as test results and analyses. Data analyses includes the initial step of data reduction, as well as broad level systems analyses (such as performance assessments) which integrate many other data and analyses of individual parameters. The above is consistent with the definition and usage of these terms in 10 CFR Part 60 and the Atomic Energy Act of 1954.	19.0, 20.0	SP 2.1, 2.2 & Software QA Plan under development
	2. The design control program includes design and design activities as described in III.1. It provides for the correct translation of applicable regulatory requirements and design bases into design, procurement, and procedural documents.	N/A	N/A
	3. Measures are established to assure that those applicable regulatory requirements, design bases and design features developed through the site characterization phase activities for those structures, systems, components, and software to which this appendix applies are correctly translated into specifications, drawings, plans, procedures, and instructions.	N/A	N/A
	4. Design control measures are established and applied to:	N/A	N/A
	a. The design of engineered items important to safety or waste isolation.		

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	b. The description of the geologic setting and plans for data collection and analysis activities that will generate information pertinent to the repository design and that will be relied on in licensing.	N/A	N/A
	c. Computer codes.		
	These design control measures apply to the design inputs, outputs and implementation of the Site Characterization Plan into scientific investigation plans and study plans.	N/A	N/A
	5. Design control measures are established and applied to conceptual designs, or parts thereof, which may at a later time become part of the final design.		
	6. Organizational responsibilities are described for preparing, reviewing, approving, verifying, and validating design and design information documents.		
	7. Errors and deficiencies in approved design and design information documents are documented, and action is taken to assure that all errors and deficiencies are corrected.		
	8. Design interfaces and interface controls among organizations or groups involved in design development and other design activities such as the review, approval, release, distribution and revisions of documents involving design interface are described and procedurally controlled.		
	9. Procedures require that design drawings, specifications, criteria, analyses be reviewed by the QA and/or technical organization to assure that the documents are prepared, reviewed, and approved in accordance with documented procedures and QA requirements and that the appropriate quality standards are specified and included in design documents.		
	10. Procedural controls provide for verifying or checking the adequacy of design, such as by the performance of design reviews, by the use of alternate or simplified calculation methods, or by the performance of a suitable testing program.		

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	11. Procedures are established to assure that plans for data collection and analyses are completed before performing the data collection and analysis activities.	20.0	SP 2.2 under development
	12. Procedures for a design or technical review require, where applicable, the identification of the reviewers, the area or features reviewed, and the resolution methods for resolving comments.	N/A	N/A
	13. Design verification procedures assure the following: a. Criteria for determining the method of verification are established. b. The persons performing verification and validation are qualified and not directly responsible for the design. c. The verification and validation are completed before release for procurement, manufacturing, construction, or use. d. The responsibilities of the persons performing the verification or validation are defined. e. The areas and features to be verified are specified. f. The extent of documentation is defined.		
	14. Procedures are established and described for verification of designs and design activities. Individuals verifying designs should be qualified and not directly responsible for the design (i.e., not the performer or his immediate supervisor). In exceptional cases, the designer's immediate supervisor can, however, perform the verification, provided: a. The supervisor is the only technically qualified individual. b. The need is individually documented and approved in advance, with concurrence of the QA manager.		

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	15. Where a test program is used to verify the adequacy of a specific engineering design feature in lieu of other verifying or checking processes, it shall include suitable qualifications testing of a prototype unit under the most adverse design conditions.	N/A	N/A
	16. Peer reviews which comply with the reference commitments in NUREG-1297, "General Technical Position on Peer Review for High-Level Nuclear Waste Repositories," (see Reference 7) are conducted.		
	17. Design changes, including field changes, are subject to the same design controls that were applicable to the original design. Such a configuration control system is in place at the earliest practicable time. These changes are analyzed to assure that change is required. Associated changes to procedures and training should be considered and communicated to all affected groups or individuals.		
	18. Procedures are established to assure that verified computer codes are certified for use and that their uses are specified.		
	19. Procedures are established describing methods of reviewing and data which was gathered without a fully implemented 10 CFR Part 60 QA Program. For guidance refer to NUREG-1298, "Generic Technical Position on Qualification of Existing Data for High-Level Nuclear Waste Repositories." (See Reference 8).		
	20. The design inputs are specified and approved on a timely basis and to the level of detail necessary to permit the design activity to be carried out in a correct manner and to provide a consistent basis for making design decisions, accomplishing design verification measures, and evaluating design changes.		

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	IV. PROCUREMENT DOCUMENT CONTROL		
NRC Review Plan Rev. 2	Activities related to Procurement Document Control are acceptable to the NRC staff if:		
	1. Procedures are established to assure that applicable regulatory requirements, design bases, and other requirements are referenced or stated in procurement documents; there are adequate acceptance and rejection criteria, where appropriate; and that procurement documents been prepared, reviewed, and approved to confirm that these requirements have been correctly carried out.	4.0, 4.2, 4.6, 4.9	SP 1.28 Rev 2, Para. 5.1.2, 5.1.4, 5.3.6
	2. Procurement documents specify that contractors, subcontractors and consultants to provide an acceptable QA program commensurate with the scope, complexity and safety of the activity.	4.1, 4.3	SP 1.28, Rev 2, Para. 5.1.2
	3. Organizational responsibilities are described for: (1) procurement planning; (2) the preparation, review, approval, and control of procurement documents; (3) supplier selection; (4) bid evaluations; and (5) review and concurrence of supplier QA programs before initiation of activities affected by the program. The involvement of the QA organization is described.	4.0, 4.3, 4.6, 4 10 7.1, 7.2, 7.3	SP 1.28, Rev 2, Sect. 5.2 Sect. 5.3, 5.4

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	V. INSTRUCTIONS, PROCEDURES, AND DRAWINGS		
NRC Review Plan Rev. 2	Activities related to Instructions, Procedures, and Drawings are acceptable to the NRC staff if:		
	1. Activities affecting quality are prescribed by documented instructions, procedures, or drawings and accomplished in accordance with these instructions, procedures, or drawings.	5.0, 5.2, 2.2.4	SP 1.1 Rev 2, Para. 4.0, SP 1.30 Rev 1, Para. 2.0
	2. Organizational responsibilities are described for assuring that quality-related activities are (1) specified in instructions, procedures, and drawings; and (2) accomplished through implementation of these documents.	5.0, 5.1.1, 5.4	SP 1.1 Rev 2, Para. 5.1.1
	3. Procedures are established to assure that instructions, procedures, and drawings include or reference quantitative or qualitative acceptance criteria for determining that quality-related activities have been satisfactorily accomplished.	5.0	SP 1.1 Rev 2, Para. 4.0 SP 1.30 Rev 1 - Exhibit 1 Per./Acc. criteria
	4. Provisions are described for controlling changes to field and laboratory procedures associated with exploratory investigations within the site characterization program to assure that such changes are subsequently documented and verified in a timely manner by authorized personnel.	5.3	SP 1.30 Rev 1, Para. 5.3

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	VI. DOCUMENT CONTROL		
NRC Review Plan Rev. 2	Activities related to Document Control are acceptable to the NRC staff if:		
	1. The scope of the document control program is described, and the types of controlled documents are identified (e.g., instructions, procedures, drawings, as-builts, design and technical supporting documents, QA documents, and nonconformance and corrective actions report including changes thereto).	6.0, 6.1, 6.2, 6.2.2	SP 1.34 Rev 1, Para. 4.0
	2. Procedures for the review, approval, issuance, and revision of documents are established. These procedures assure that the technical and quality requirements are correctly included, before release, through reviews by qualified authorized personnel who did not provide input to the document.	6.1	SP 1.1 Rev 2, Para. 5.1.2 SP 1.30 Rev 1, Para. 5.1.2
	3. Procedures are established to assure that correct and applicable documents are available at the location where the activity will be performed, before commencing the work.	6.2	SP 1.34 Rev 1, Para. 4.0
	4. Changes to documents shall be reviewed and approval by the same organizations that performed the original review and approval, unless the applicant designated another responsible organization.	6.3	SP 1.1 Rev 2, Para. 5.2 SP 1.30 Rev 1, Para. 5.2
	5. Procedures are established and described to assure that obsolete or superseded documents are removed and replaced by applicable revisions at work areas in a timely manner.	6.2, 6.2.1c	SP 1.34 Rev 1, 5.1.1
	6. A master list or equivalent document control system is established to identify the current revision of instructions, procedures, specifications, drawings, and procurement documents.	6.2.1D, 6.2.2B	SP 1.34 Rev 1, Para. 3.2.6
	7. When documents which require verification are released prior to verification, they are so identified, controlled and authorized for release through signature approval, with the described bases for release.	6.2.1	SP 1.30 Rev 1, Para. 5.3

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	VII. CONTROL OF PURCHASED ITEMS AND SERVICES		
NRC Review Plan Rev. 2	Activities related to Control of Purchased Materials, Equipment, Items and Services and Software are acceptable to the NRC staff if:		
	1. Measures are established and described to assure that purchased items and services, including software, whether purchased directly or through contractors and subcontractors, conform to procurement documents.	7.0, 7.9.4	SP 1.25 Rev 2, Paras. 1.0, 5.3, OP 1.4 Rev 1 (all)
	2. Organizational responsibilities are described for the control of purchased items, services and software.	7.0	SP 1.28 Rev 2, Para. 3.2.1
	3. Procedures governing procurement of items and services provide for (a) evaluation and selection of suppliers; (b) objective evidence of quality furnished by suppliers; (c) inspections and audits of supplier's activities, items, services and software; and (d) receiving inspections.	7.2, 7.4, 7.6, 7.9.4	SP 1.28 Rev 2, Paras. 5.3, 5.1.2, OP 1.3 Rev 1
	4. The organization providing items, materials, equipment, services, or software furnishes the following records to the purchaser: a. that identifies the procurement and the specific procurement requirements met (e.g., codes, standards, and specifications). b. Documentation identifying any procurement requirements that have not been met. c. A description of these nonconformances from the procurement requirements dispositioned "accept as is" or "repair." A procedure that assures that the review and acceptance of these documents, before installation or use of the procured item, should be described in the purchaser's QA program.	7.6, 7.8, 7.10	SP 1.28 Rev 2, Para. 5.5.2

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	5. Documents attesting to the acceptability of procured items shall be sufficient to identify the specific requirements, such as codes, standards or specifications, met by the purchased item, and retained in the records storage facilities for retreivability, as necessary.	7.6, 7.9.5, 7.10, 7.11	SP 1.25 Rev 1, Paras. 5.1, 5.3, 7.0
	6. Provisions are established by DOE or its designee to assess and ensure the control of quality by contractors and subcontractors. These assessments are performed at intervals consistent with the importance, complexity, and quantity of the product or services.	7.4.2	OP 1.1, Rev 0, Para. 4.1.2
	7. Suppliers' certificates of conformance for items, services and software are periodically evaluated by audits, independent inspections, or tests to assure they are valid and the results documented.	7.4.2, 7.4.1, 7.4.3	SP 1.25 Rev 1, Exhibit 1

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	VIII. IDENTIFICATION AND CONTROL OF ITEMS		
NRC Review Plan Rev. 2	Activities related to Identification and Control of Items (including samples), Services and Software are acceptable to the NRC staff if:		
	1. Controls are established and described to identify and control items (including samples) and consumables, services and software to assure that the identity is maintained and traceable to technical and quality-related documents.	8.0, 8.1, 8.2, 8.3, 19.1	SP 2.1 and 2.2 In preparation
	2. Procedures are established which assure that identification is maintained either on the item, software and samples or on records and containers traceable thereto.	8.1, 8.2, 8.3, 19.1	SP 1.25, Rev 1, Paras. 3.4, 5.5, and 5.6
	3. Identification can be traced to the appropriate documentation such as drawings, specifications, purchase orders, technical reports, drilling locations and logs (including well bore and depth), test records, installation and use records, inspections documents, and nonconformance reports.	8.0, 8.1, 8.2, 8.3, 17.1	SP 1.25 Rev 1 Paras. 5.3.1e 5.3.4, 5.4, 5.5, and 5.6
	4. Correct identification of samples is verified and documented before release for use or analysis.	8.1D	SP 2.2 under development
	5. Controls are established to preclude the inadvertent use of incorrect or defective items, software and samples.	8.1, 8.2, 8.3, 19, 15.1	SP 2.1 & 2.2 under development

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	IX. CONTROL OF SPECIAL PROCESSES		
NRC Review Plan Rev. 2	Activities related to Control of Special Processes are acceptable to the NRC staff if:		
	1. The criteria for determining those processes that are controlled as special processes are described. As complete a listing as possible of special processes is provided, which generally are those processes where direct inspection is impossible or disadvantageous, such as heat treatment, welding, nondestructive testing, data collection, and other site characterization activities.	9.0, 20.0	SP 2.2 Control of Scientifi Investigation in preparatio
	2. Organizational responsibilities including those for the QA organization are described for qualification of special processes, equipment, and personnel.	1.0, 9.0, 20.6	SP 2.3 Rev 0, Para 5.0
	3. Procedures, equipment, and personnel associated with special processes are qualified and are in conformance with applicable codes, standards, QA procedures, and specifications. Acceptable methods for qualifying those special processes associated with scientific investigations are:	9.0, 20.1, 20.2, 20.6	SP 2.2 In Preparation
	a. The conduct of a prototype test, if possible, that demonstrates the process maintains quality or produces a quality product; or	11.1, 20.6	
	b. A technical review; or	20.10	SP 2.3 Rev 0, Para 5.1.3
	c. A peer review.	20.10	SP 2.3 Rev 0, Para 5.1.3
	4. Procedures are established for recording evidence of acceptable accomplishment of special processes using qualified procedures, equipment, and personnel.	9.0, 20.0	
	5. Qualification records of procedures, equipment, and personnel associated with special processes are established and maintained.	9.0, 20.0, 17.0	SP 2.3 Rev 0, Form T&MSS-20

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	X. INSPECTION		
NRC Review Plan Rev. 2	Activities related to Inspection are acceptable to the NRC staff if:		
	1. The scope of the inspection program is described that indicates an effective inspection program has been established to verify that items and services conform to documented instructions, procedures, drawings and specifications. Program procedures provide criteria for determining when inspections are required or define how and when inspections of each work operation are to be performed.	10.0	Limited to Source/Receipt Post Installation Inspectio SP 1.25 Rev 1, Para. 5.3 SP 1.28 Rev 2, Para. 5.5.2
	2. Organizational responsibilities for inspection are described. Individuals performing inspections are part of the QA organization or are qualified individuals independent of the organizational unit directly responsible for the activity being inspected.	7.6.1	SP 1.25 Rev 1, Para. 4.1
	3. A qualification program for inspectors is established and documented, and the qualifications and certifications of inspectors are kept current.	2.2.11	OP 1.8 Rev 0, Para. 1.0, Para. 5.4.1
	4. Inspection procedures, instructions, or checklists provide for the following:	10.2	SP 1.25 Rev 1, Form T&MSS 61-16 instructions
	a. Identification of characteristics and activities to be inspected.		
	b. A description of the method of inspection.		
	c. Identification of the individuals or groups responsible for performing the inspection operation.		
	d. Acceptance and rejection criteria.		
	e. Identification and required procedures, drawings, and specifications and revisions.		
	f. Recording inspector or data recorder and the results of the inspection operation.		

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	g. Specifying necessary measuring and test equipment, including accuracy requirements.		SP 1.25 Rev 1, T&MSS 61-16
	5. Procedures include identification of mandatory inspection hold points beyond which work may not proceed until inspected by a designated inspector.	10.1	SP 1.28 Rev 2, Para. 5.7.2, 6th bullet.
	6. Provisions are established to assure that when inspection of processed material or products is impossible or disadvantageous, indirect control by monitoring processing methods, equipment, and personnel is provided.	10.1	SP 1.28 Rev 2, Para. 5.5.3
	7. Provisions are established to assure that both inspection and process monitoring is provided when control is inadequate without both.	10.1	SP 1.28 Rev 2, Para. 5.5.2, 5.5.3
	8. Inspection results are documented and evaluated, and their acceptability is determined by a responsible individual.	10.1	SP 1.25 Rev 1, Para. 5.3

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XI. TEST CONTROL		
NRC Review Plan Rev. 2	Activities related to Test Control are acceptable to the NRC staff if:		
	1. A test program is established to assure that all testing associated items, software, scientific investigations, and acquiring data from samples is identified and performed in accordance with written test procedures incorporating, as appropriate, the requirements and acceptance limits contained in applicable design documents.	11.0	SP 2.1 & 2.2 in preparation All Work Instructions (WIs)
	2. Procedural controls are established to assure the test program includes, as appropriate, proof tests before installation, preoperational tests, and operational tests during site characterization, construction and operation of the high level waste storage facilities.	N/A	
	3. Program procedures for test control provide for: (a) determining when a test is required and how testing activities are performed; and (b) assurance that the test program is conducted by trained or appropriately qualified personnel.	11.2	
	4. Test plans and procedures are reviewed in accordance with the verification requirements in Section III.15 and III.17.	N/A	
	5. The potential sources of uncertainty and error in test plans, procedures, and parameters, which must be controlled and measured to assure that tests are well-controlled, are identified.	20	
	6. Test procedures or instructions provide for the following:	11.0, 11.2	
	a. The requirements and acceptance limits, including required levels of precision and accuracy, as appropriate, are contained in applicable documents.		
	b. Instructions for performing the test.		

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan rev. 2	c. Test prerequisites such as: calibrated instrumentation; adequate test equipment and instruction; completeness of item to be tested; suitable and controlled environmental conditions; and provisions for data collection and storage.		SP 2.1 & 2.2 are in preparation; all Work Instructions (WIs).
	d. Mandatory inspection hold points (as required).		
	e. Acceptance and rejection criteria, including required levels of precision and accuracy.		
	f. Methods of documenting or recording test data and results.		
	g. Provisions for assuring test prerequisites have been met.		
	7. Test results are documented, evaluated, and their acceptability determined by a responsible individual or group as described in Section III.	11.2	
	8. Items tested should be identified, controlled, and ultimately dispositioned, and samples should be archived, as required by procedures.	8.1, 8.3, 13.0, 13.3	

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XII. CONTROL OF MEASURING AND TEST EQUIPMENT		
NRC Review Plan Rev. 2	Activities related to Control of Measuring and Test Equipment are acceptable to the NRC staff if:		
	1. The scope of the program for assuring that tools, gages, instrument and other measuring and testing devices, are properly controlled, calibrated, and adjusted, at specified periods, to maintain accuracy within necessary limits.	12.0	SP 2.4 Rev 0, Paras. 1.0, 2.0, 4.0
	2. QA and other organizations' responsibilities are described for establishing, implementing, and assuring effectiveness of the calibration program.	12.1	SP 2.4 Rev 0, Paras. 4.0 & 5.0
	3. Procedures are established and described for calibration (technique and frequency), maintenance, and control of the measuring and test equipment (instruments, tools, gages, fixtures, reference and transfer standards, and nondestructive test equipment) used for measurement, inspection, and monitoring. The review and documented concurrence of these functions is identified.	12.0, 12.2, 12.1	SP 2.4 Rev 0, Paras. 5.1, & 5.1.8
	4. Measuring and test equipment is labeled, tagged or otherwise documented to indicate due date of the next calibration and to provide traceability to calibration test data.	12.2	SP 2.4 Rev 0, Para. 5.1.7
	5. Measuring and test equipment is calibrated at specified intervals based on required accuracy, precision, purpose, degree of usage, stability, characteristics, and other conditions, which could affect measurement.	12.0	SP 2.4 Rev 0, Paras. 5.1.2, & 5.1.4
	6. Calibration standards are traceable to nationally recognized standards. Where national standards do not exist, provisions are established to document acceptability of the calibration standard used.	12.2	SP 2.4 Rev 0, Exhibit 1, Para. 5.1.2 in revision)

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	7. When measuring and test equipment is found to be out of calibration, evaluations are made and documented to determine the validity and acceptability of measurements performed since the last calibration. Inspections or tests are repeated on items determined to be suspect.	12.2	SP 2.4 Rev 0, Para. 5.2.5, & 5.3.6
	8. Calibration standards should have greater accuracy than equipment or standards being calibrated. Calibration standards with the same accuracy may be used if they can be shown to be adequate for the requirements and the basis for acceptance is documented and authorized by responsible management. The management authorized to perform this function should be identified.	12.2	SP 2.4 Rev 0, Para. 5.1.2

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 2	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XIII. HANDLING, STORAGE, AND SHIPPING		
NRC Review Plan Rev. 2	Activities related to Handling, Storage, and Shipping are acceptable to the NRC staff if:		
	1. Handling, preservation, storage, packaging, shipping, cleaning and preservation requirements and procedures are established to prevent damage or deterioration of items and samples and accomplished by trained individuals in accordance with predetermined work and inspection instructions.	13.0, 13.1	SP 1.28 Rev 2, Para 5.1.4 OP 2.1, Control of Radiological Samples & Data OP 2.2 Control of Meteorological Samples (both in preparation)
	2. Procedures are established and described to control cleaning, handling, storage, packaging, and shipping of items and samples in accordance with design and procurement requirements and manufacturer's recommendations to preclude damage, loss, or deterioration by environmental conditions such as temperature or humidity.	13.0	See above
	3. The methods of handling, storage and packaging of items and samples take into consideration controls, as appropriate, for limited life expectancy, and special cleanliness.	13.0, 13.3	See above

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XIV. INSPECTION, TEST, AND OPERATING STATUS		
NRC Review Plan Rev. 2	Activities related to Inspection, Test, and Operating Status are acceptable to the NRC staff if:		
	1. Procedures are established to indicate by the use of markings the status of inspections and tests and the operating status of individual items and software.	14.0, 14.1	SP 2.5 in preparation
	2. Procedures are established for the identification of items which have passed required inspections and tests, where necessary to preclude inadvertent bypassing of such inspections and tests.	14.0	SP 1.25 Rev 1, Paras 5.4.2, & 5.5.2
	3. Measures are established for indicating the test and/or operating status of items; for example, tagging, to prevent inadvertent operation or use.	14.0	SP 2.5 in preparation
	4. Procedures are established and described to control the application and removal of inspection and welding stamps and status indicators such as tags, markings, labels, and stamps.	14.1	SP 2.4 Rev 0, SP 1.22 Rev 0 SP 1.23 Rev 0, SP 1.25 Rev All Work Instructions (WIs)
	5. Procedures are established and described to control altering the sequence of required tests, inspections, and other operations important to safety. Such actions should be subject to the same controls as the original review and approval.	14.2	All Work Instructions (WIs)
	6. The status of nonconforming, inoperative, or malfunctioning structures, systems, and components is documented and identified to prevent inadvertent use. The organization responsible for this function is identified.	14.0, 15.0	SP 1.23, Rev 0, Paras. 5.1.3, 5.1.4, 5.1.5, & 5.1.6

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XV. NONCONFORMANCES		
NRC Review Plan Rev. 2	Activities related to Nonconformances are acceptable to the NRC staff if:		
	1. Measures are established to control materials, parts, or components which do not conform to requirements in order to prevent their inadvertent use.	15.0	SP 1.23 Rev 0, Paras. 5.1.3 5.1.4, 5.1.5
	2. Procedures are established for identifying, documenting, tracking, segregating, reviewing, dispositioning, and notifying affected organizations of nonconforming or defective items, software, procedures, records and activities. The procedures identify positions authorized to dispose of and close out nonconformances.	15.1, 15.2, 15.4	SP 1.23 Rev 0, Paras. 1.0, & 5.0
	3. QA responsibilities related to nonconformance control are described.	15.1, 15.3, 15.4	SP 1.23 Rev 0, throughout procedure
	4. Documentation identifies and describes the dispositions, nonconformances, and includes authorized signature approval of the disposition.	15.4	SP 1.23 Rev 0, Paras. 5.1.1, 5.2, 5.3
	5. Nonconformance reports are periodically analyzed by the QA organization to show quality trends and to help identify root causes of non-conformances, and the significant results are reported to upper management for review and assessment.	15.6	SP 1.23 Rev 0, Para. 5.2.7 OP 1.6 Rev 1, Paras. 5.1.1, 5.1.5, & 5.1.11

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XVI. CORRECTIVE ACTION		
NRC Review Plan Rev. 2	Activities related to Corrective Action are acceptable to the NRC staff if:		
	1. Procedures are established indicating an effective corrective action program has been established to assure that conditions adverse to quality, such as failures, malfunctions, deficiencies, nonconforming and defective items, samples, procedures, and records are promptly identified and corrected. The QA organization reviews and documents concurrence with the procedures.	16.0, 16.2, 5.0	SP 1.37 Rev 1, SP 1.23 Rev 0, SP 1.22 Rev 0
	2. Corrective action is documented and initiated following a non-conformance to preclude recurrence. The QA organization concurs with correction action to assure that QA requirements are satisfied.	16.2	SP 1.37 Rev 1, Para. 5.2
	3. Follow-up action is taken by the QA organization to verify proper implementation of corrective action and to close out the corrective action in a timely manner.	16.2	SP 1.37 Rev 1, Para. 5.3
	4. The cause of significant conditions adverse to quality is determined and the corrective action is taken to preclude repetition. These actions are documented and reported to immediate management and upper levels of management for review and assessment.	16.0, 16.2	SP 1.37 Rev 1, Paras. 5.1.4, & 5.1.5

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XVII. QUALITY ASSURANCE RECORDS		
NRC Review Plan Rev. 2	Activities related to QA Records are acceptable to the NRC staff if:		
	1. The scope of the records program is described which assures that sufficient records affecting quality are identifiable, retrievable, and maintained. QA records include scientific, engineering, and operational data and logs; geotechnical data; results of reviews; inspections; tests; audits and material analyses; monitoring of work performance; qualification of personnel, procedures, and equipment; and other documentation such as drawings, specifications, procurement documents, calibration procedures and reports, design review reports; peer review reports; nonconformance reports; and corrective action reports.	17.0, 17.1	Records are to be indexed a the Central Records Facilit T&MSS needs a procedure to address this.
	2. QA and other organizations are identified and their responsibilities are described for the definition and implementation of record activities, particularly in the retention, duration and safe storage of records.	17.0, 17.1, 17.5	WI-REC-001, Rev 0
	3. Inspection and test records contain the following, where applicable:	10.1, 10.2, 11.	SP 1.25 Rev 1, T&MSS Form 61-16
	a. Identification of procedure and item inspected or tested.		
	b. A description of the type of observation.		
	c. The date and results of the inspection of test.		
	d. Information related to conditions adverse to quality.		
	e. Inspector or data recorder identification.		
	f. Evidence as to the acceptability of the results with signature and organization.		
	g. Action taken to resolve any discrepancies noted.		

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	* WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	4. Criteria are established and described in procedures for determining when a document becomes a QA record, subject to the controls of this section and the retention periods for such records.	17.1, 17.2	SP 1.36 Rev 1, Para. 5.0
	5. Controls are established and described for controlling, protecting, maintaining those records before their being entered and stored in the quality record control storage area.	17.3, 17.5	SP 1.36 Rev 1, Para 5.1.2
	6. Procedures are established describing methods of documenting/ recording, reviewing, and confirming accuracy of records, which include laboratory and field notebooks and log books, data sheets, data reduction documents, and software.	17.2, 20.9	SP 1.36 Rev 1, SP 2.1, & 2.2 are under development
	7. Suitable facilities for the storage and security of records are described and used to preclude deterioration, damage, loss and misuse of records.	17.5	SP 1.36 Rev 1, Para. 5.1.2

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN IMPLEMENTING PROCEDURES
	XVIII. AUDITS		
NRC Review Plan Rev. 2	Activities related to Audits are acceptable to the NRC staff if:		
	1. Internal and external audits are carried out by DOE and its contractors to verify that procedures and activities comply with all aspects of the overall QA program and to determine the effectiveness of the program. DOE and its contractors should perform audits of the prime contractor and subcontractors, consultants, vendors, and laboratories.	18.0, 18.1	QP 1.1 Rev 0, Paras. 1.0, 4.1.1, & 4.1.2
	2. An audit plan is prepared identifying audits to be performed, their frequencies, and schedules, taking into consideration the complexity, safety, importance and degree of previous audits, inspections and surveillance. Audits are regularly scheduled, based on the status and safety importance of the activities being performed and are initiated early enough to assure effective QA during design, procurement, site characterization, manufacturing, construction, installation, inspection and testing.	18.1.1, 18.1.3 18.1.5	QP 1.1 Rev 0, Paras. 4.1.1, & 5.1
	3. Audits include technical evaluations of the applicable procedures, instructions, activities, and/or items. As applicable, they should include the review of documents and records, including software and test data from samples, to ensure they are acceptable.	18.1	QP 1.1 Rev 0, Paras. 5.2.2, & 5.2.3
	4. Audit results are documented and analyzed by the QA organization and technical staff organization and the results are reported to responsible management for review, assessment, and appropriate action.	18.1.4	QP 1.1 Rev 0, Para. 5.6
	5. Audits are performed in accordance with pre-established written approved procedures or checklists and conducted by trained, qualified, competent QA and technical personnel having expertise which encompasses the area being audited and having no direct responsibilities in the areas being audited.	18.1.2, 18.1.3	QP 1.1 Rev 0, Para. 4.1.4, & 5.2.4
	6. A tracking system for audit findings is established to help assure that all findings are appropriate addressed, prioritized and trended.	18.1.4	SP 1.37 Rev 1, Paras. 4.2 5.1.8, QP 1.6 Rev 1

REQUIREMENT SOURCE	REQUIREMENT	WHERE SATISFIED IN T&MSS QAPD - Rev. 1	WHERE SATISFIED IN IMPLEMENTING PROCEDURES
NRC Review Plan Rev. 2	7. The audited organization describes in a formal report the corrective action to be taken to address findings. This report is submitted to the auditing organization and/or responsible management.	18.1.4	SP 1.37 Rev 1, Paras. 5.2.1, 5.2.2
	8. Provisions are established and described to assure that the cause of finding is also identified and corrective action for it described and follow-up action is accomplished to assure proper closeout of deficiencies.	16.2, 18.1.4	SP 1.37 Rev 1, Block 15 of QF/NCAR, Form TMSS/057/2