June 6, 1997

MEMORAND'JM TO: PD IV-1 File

FROM: Tom Alexion ORIGINAL SIGNED BY:
Project Directorate IV-1
Division of Reactor Projects III/IV
Office of Nuclear Reactor Regulation

SUBJECT: LICENSEE'S DRAFT CHANGES TO THEIR GRADED QUALITY ASSURANCE OPERATIONS QUALITY ASSURANCE PLAN (OQAP) APPLICATION, SOUTH TEXAS PROJECT, UNITS 1 AND 2 (TAC NOS. M92450 AND M92451)

I received the attached fax on the above subject (including supporting information) from the licensee. The purpose of this memo is to place this information in the public document room.

Docket Nos. 50-498 and 50-499

Attachment: As stated

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D.C. 20555-0001

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Attached are the following items:

- Discussion of Risk Achievement Worth and Fussel-Vesely Importance

  Revised Comprehensive Risk Management Procedure, Addendum 3 and figure titled, Probabilistic Risk Importance Thresholds for Input for Graded QA Component Classifications

  Graded QA Working Group Procedure changes

- Discussions of Basis for Risk Importance Thresholds

- Discussion of South Texas Project's Philosophy for Risk Significance Determination

- OQAP changes

ATTACHMENT

JUN-04-1997 09:37 NUCLEAR LICENSING 512 972 8298 P.02/04

Risk Achievement Worth and Fussel-Vesely Importance

The following changes are being made to reflect changes in how items with RAW between 10 and 100 and FV greater than .01 will be treated.

OQAP

See revision to Chapter 2, Sections 5.3.9 and 5.3.11.

Comprehensive Risk Management Procedure, 0PGP02-ZA-0003, Addendum 3

See attached revised flow chart titled GQA Process and figure titled, Probabilistic Risk Importance Thresholds for Input for Graded QA Component Classifications.

Graded QA Working Group Procedure changes

This procedure is currently under development. It will include the following:

- Components with a risk achievement worth greater than 100 OR a Fussel-Vesely importance greater than 0.01 are to be placed in the Full QA program.
- Components with a risk achievement worth greater than 10 but less than 100 are to have full QA controls specifically placed on those critical attributes which cause the component to have a high risk achievement worth.

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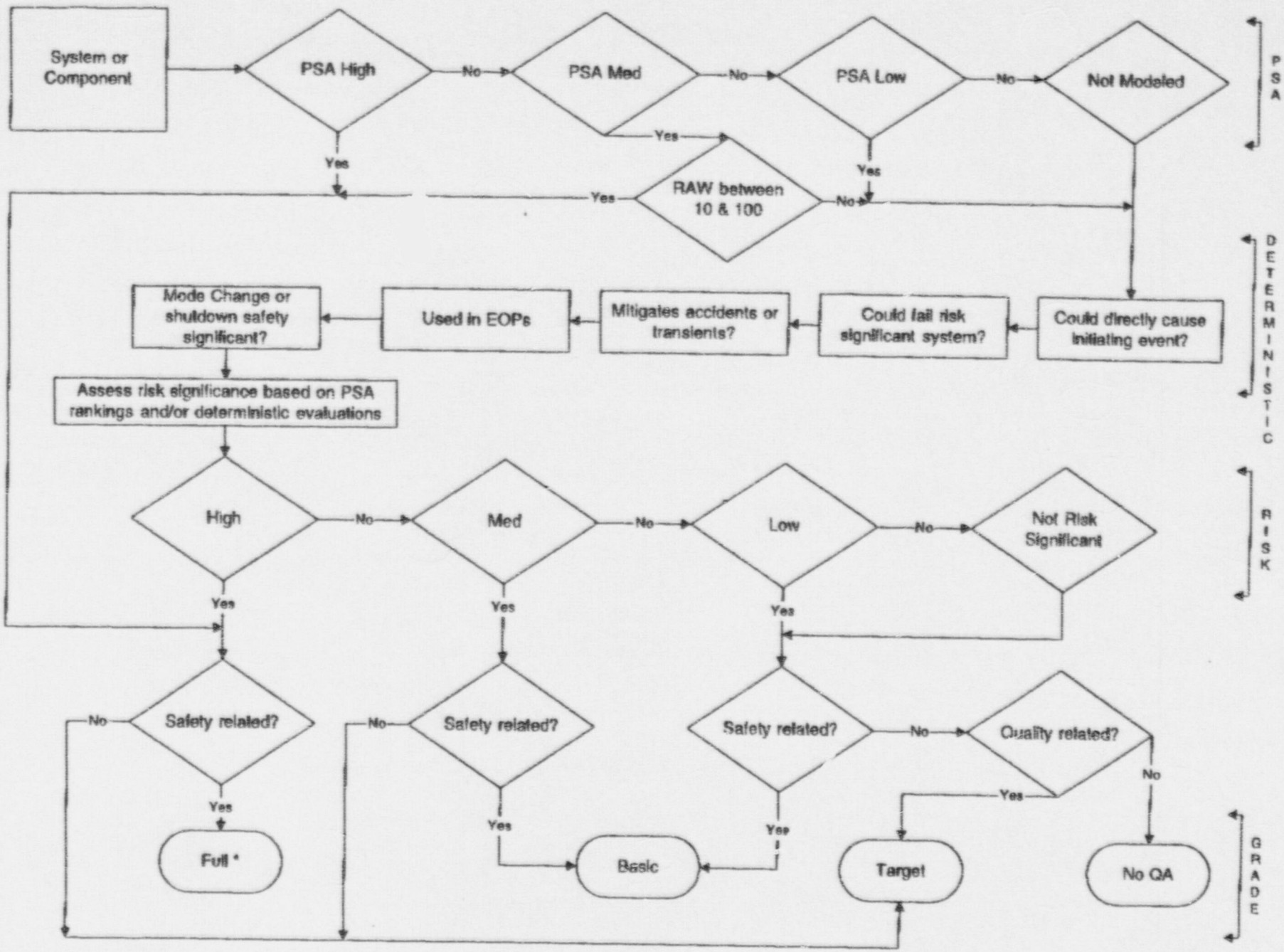
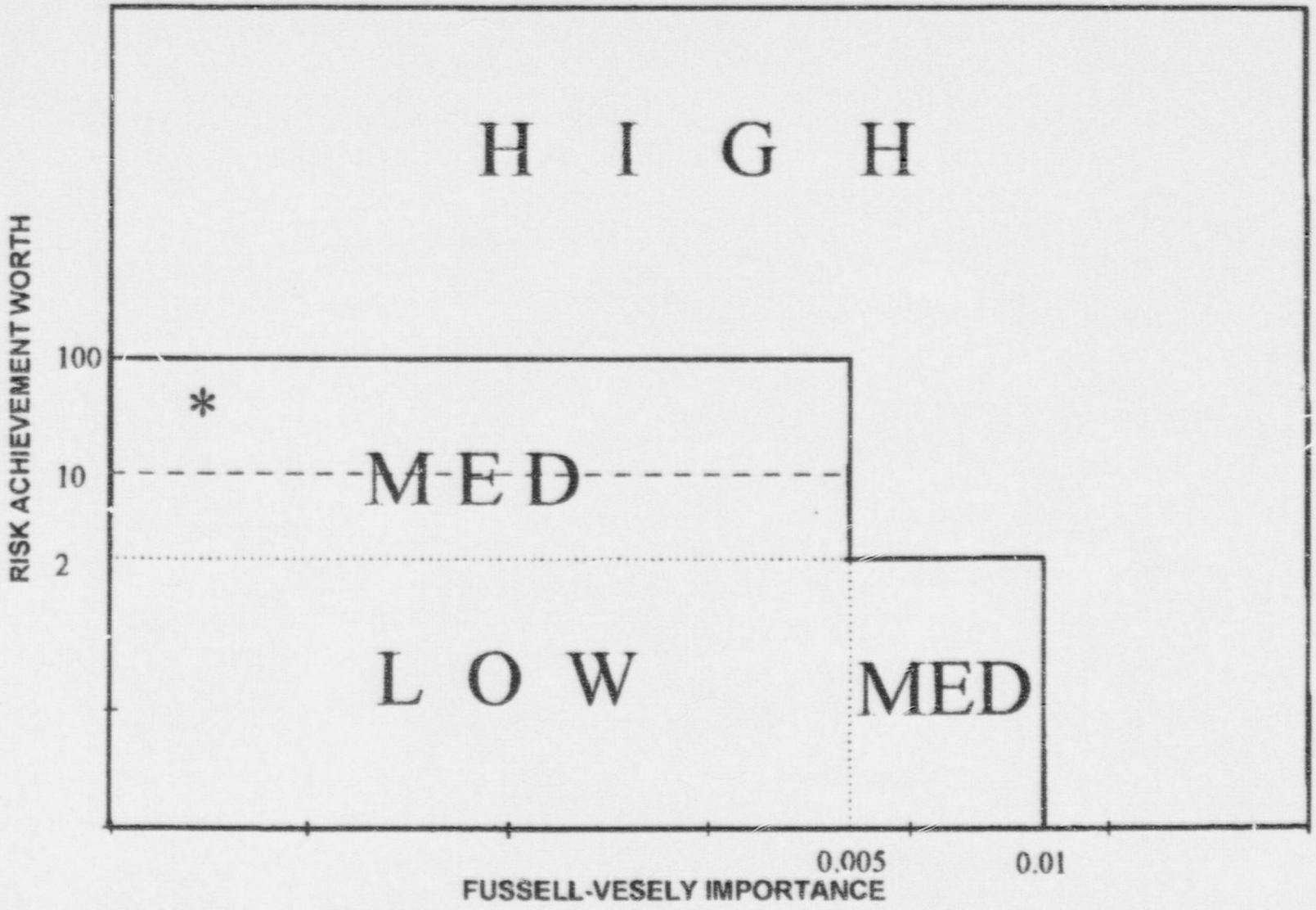
GQA PROCESS



* SR Components with a RAW between 10 and 100 are to have Full QA applied to the critical attributes associated with that RAW

PROBABILISTIC RISK IMPORTANCE THRESHOLDS FOR INPUT TO GRADED QA COMPONENT CLASSIFICATIONS



* Full Program is applied to critical attributes associated with the high Risk Achievement Worth

Ref: STP-1996
Date: 6/3/97
File: Ranking6.ppt

Basis for Risk Importance Thresholds:

The following table provides a discussion of the Bases for establishing the risk thresholds applied in the Graded QA process.

RAW Threshold Value	Threshold Basis
>2.0	Components whose degradation and subsequent failure could lead to a doubling of the CDF should receive increased emphasis and are to be considered "more" important.
≥10.0	Components whose degradation and subsequent failure could lead to a CDF increase by an order of magnitude should receive increased emphasis and specific evaluations. Degradation and subsequent failure of these components could result in unacceptable system performance, and therefore, the evaluations are to be performed to ensure that degradation of critical attributes is identified and controlled.
≥100.0	Components whose degradation and subsequent failure could lead to an increase of two orders of magnitude should receive increased emphasis and are to be considered of high importance. Degradation of these components will result in unacceptable system performance, and possibly plant performance, therefore, full programmatic controls are maintained and monitored to ensure degradation does not occur.

Basis for Fussell-Vesely Risk Importance Thresholds

Fussell-Vesely Importance Threshold	Threshold Basis
0.005 (0.5%)	Components with greater than one half percent in the Fussell-Vesely risk importance measure should receive increased emphasis and are to be considered important since degradation in their failure rates could impact system level performance.
0.01 (1.0%)	Components with greater than one percent in the Fussell-Vesely risk importance measure should receive full programmatic controls and are to be considered highly important since degradation in their failure rates would impact system level performance and possibly plant level performance.

South Texas Project's Philosophy for Risk Significance Determination

The purpose of this table is to compare the difference in approaches for establishing risk significance as determined by Maintenance Rule criteria versus Graded QA criteria. In general, Maintenance Rule established system level risk significance only for systems scoped in the Maintenance Rule, while Graded QA established component level risk significance for systems evaluated under the Graded QA program.

The Maintenance Rule risk significance determination was based on deterministic and probabilistic system level screening criteria such that once a system was identified as Maintenance Rule risk significant, any Maintenance Rule scoped function within that system was also categorized as risk significant. Since there was no requirement to perform a risk significance determination at the component level, this had the effect of adding increased numbers of components to the Maintenance Rule risk significance category based on the fact that a component was associated with a Maintenance Rule scoped function within a risk significant system. A more detailed component level analyses could show that some of the Maintenance Rule system functions do not have any true risk significance associated with them. In the case of Graded QA, degrees of risk significance (i.e., high, medium, low) were established at the component level based on probabilistic importance thresholds and deterministic screening criteria for all components within an evaluated system. The result is that fewer components were evaluated as risk significant in Graded QA than were identified in the Maintenance Rule.

GRADED QUALITY ASSURANCE	MAINTENANCE RULE
Scoping of System Functions	
For each system reviewed under the Graded Quality assurance program, all system functions are scoped and evaluated. Graded QA levels for systems not yet reviewed remain conservatively under the "Full" QA program.	System functions are scoped into the Maintenance Rule based on the following deterministic issues: • All Safety-Related SSCs. • Nonsafety-Related SSCs that Mitigate Accidents or Transients. • Nonsafety-Related SSCs that are used in the EOPs. • Nonsafety-Related SSCs whose failure directly prevents safety-related SSCs from fulfilling their safety-related functions. • Nonsafety-Related SSCs whose failure cause scrams or actuates safety systems.
Probabilistic Safety Assessment Risk Significance Determination	
Graded Quality Assurance determines risk significance at a component level. The following PSA criteria was used: • **High** - Risk Achievement Worth ≥ 100 or Fussell-Vesely ≥ 0.01 or Fussell-Vesely ≥ 0.005 and Risk Achievement Worth ≥ 2.0. • **Medium** - Risk Achievement Worth ≥ 2.0 and < 100 and Fussell-Vesely < 0.005 or Risk Achievement Worth < 2.0 and Fussell-Vesely ≥ 0.005 and <0.01. • **Low** - Risk Achievement Worth < 2.0 and Fussell-Vesely < 0.005. • **Additional Action Required** - Risk Achievement	Maintenance Rule determines risk significance at a system level. The following system level PSA criteria was used: • Risk Achievement Worth ≥ 2.0, or • Risk Reduction Worth ≤ 0.995

GRADED QUALITY ASSURANCE	MAINTENANCE RULE
Worth ≥ 10 and < 100.	
Deterministic Risk Significance Determination	
Graded Quality Assurance determines risk significance at the component level through the following process: • Determine risk significance of each system function using the following criteria: ⇒ Could directly cause or has caused an initiating event? ⇒ Could fail a risk significant system? ⇒ Mitigates Accidents or Transients? ⇒ Used in EOPs or ERs? ⇒ Mode Change or Shutdown safety significant? • Identify the system function(s) supported by each component. • Determine risk significance of each component using the same criteria above and including the degree to which each component supports a risk significant system function. • For each risk significant component, identify the critical attributes associated with that risk.	Maintenance Rule determines risk significance at a system level. The following deterministic criteria were used: Accident Response Functions • Required to shutdown the reactor and maintain it in a safe shutdown condition, • Required to maintain the reactor coolant pressure boundary, • Required to remove atmospheric heat and radioactivity from containment and maintain containment integrity, • Required to remove decay heat from the reactor. Normal Operation Functions • Required to provide primary side heat removal, • Required for power conversion, • Required to provide primary, secondary, or containment pressure control, • Required to provide cooling water, component or room cooling, • Required to provide electric power (AC, DC power) • Required to provide other motive or control power (e.g., instrument air)

OQAP CHANGE QA-032
SUMMARY OF CHANGES
Page 1 of 3

ALL CHANGES ARE IN BOLD TYPE

CHAPTER	LOCATION	ACTION	TEXT
TOC	DEFIN.	INSERT	**QA-032**
TOC	CH. 1.0	INSERT	**QA-032**
TOC	CH. 2.0	INSERT	**QA-032**
TOC	CH. 13.0	INSERT	**QA-032**
DEFIN.	Critical Characteristics	DELETE	**Identifiable and measurable variables of a commercial grade item, which once selected to be verified, provide reasonable assurance that the item received is the item specified.**
DEFIN.	Critical Characteristics	INSERT	**Important design, material, and performance characteristics of a commercial grade item that, once verified, will provide reasonable assurance that the item will perform its intended safety function.**
CH. 1.0	5.1.4.5	INSERT	**The Manager, Risk Management & Industry Relations is responsible for activities related to the Comprehensive Risk Management Program, including oversight of Probabilistic Safety Assessment activities. The Manager, Risk Management & Industry Relations serves as the Graded Quality Assurance Expert Panel chairperson.**

OQAP CHANGE QA-032
SUMMARY OF CHANGES

ALL CHANGES ARE IN BOLD TYPE

CHAPTER	LOCATION	ACTION	TEXT
CH. 2.0	3.1	DELETE	**, and station economics**
	5.3.3	INSERT	**Initial evaluations are performed by the Working Group.**
	5.3.5	INSERT	between "are" and "ultimately" in the first sentence..**developed by the Working Group and**
	5.3.9	INSERT	**Components that are highly reliable, yet whose failure would result in a significant increase in risk, will receive Full program coverage, or will be evaluated based on their risk importance to ensure that Full program controls are applied to their critical attributes.**
	5.3.9	CHANGE	**renumber to 5.3.10**
	5.3.10	CHANGE	**renumber to 5.3.11**
	5.3.11	INSERT	at the end of the second sentence insert...**that could result in recategorization of an SSC**
			between "are" and "to" in the third sentence...**also used**

OQAP CHANGE QA-032
SUMMARY OF CHANGES
Page 3 of 3

ALL CHANGES ARE IN BOLD TYPE

CHAPTER	LOCATION	ACTION	TEXT
CH. 2.0 (cont)	5.3.11	INSERT	add the last sentence... **Those components for which an increase in failure rates results in a significant increase in risk will have Full program controls established.**
	Table I	INSERT	under the Basic Program column for ANSI N45.2.13, 1976, Section 12 - **for audits of suppliers**
CH. 13.0	5.8	INSERT	**For medium and low safety significant SSCs treated by the Basic program controls, measures shall be established to conduct apparent cause determincation and to trend failures to assist in evaluating the need for more detailed root cause analysis (if excessive failures occur) and proper corrective action. Further, particular consideration will be given to assessing the potential implications of such failures generically to similar SSCs treated by the Full program.**

SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION OPERATIONS QUALITY ASSURANCE PLAN TABLE OF CONTENTS	NUMBER Table of Contents	REV. NO. 13
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	EFFECTIVE DATE	

Corrective Maintenance - Repair and restoration of equipment or components that have failed or are malfunctioning and are not performing their intended function.

Critical Attribute - An attribute or capability of a component to support its associated system's critical function.

Critical Characteristics - Important design, material, and performance characteristics of a commercial grade item that, once verified, will provide reasonable assurance that the item will perform its intended safety function. QA-032

Dedication - An acceptance process undertaken to provide reasonable assurance that a commercial grade item to be used as a basic component will perform its intended safety function and, in this respect, is deemed equivalent to an item designed and manufactured under a 10CFR50, Appendix B, quality assurance program. This assurance is achieved by identifying the critical characteristics of the item and verifying their acceptability by inspections, tests, or analyses performed by the purchaser or third-party dedicating entity after delivery, supplemented as necessary by one or more of the following: commercial grade surveys; product inspections or witness at holdpoints at the manufacturer's facility, and analysis of historical records for acceptable performance. In all cases, the dedication process must be conducted in accordance with the applicable provisions of 10CFR50, Appendix B. The process is considered complete when the item is designated for use as a basic component.

Deficiency - The characteristic of an item or document that makes it nonconforming with the original criteria and is reported as audit findings, supplier deficiencies, event reports, significant defects, nonconformance reports, corrective action reports, or other procedurally controlled mechanisms.

Design - Technical and management processes which commence with identification of design input and which lead to and include the issuance of design output documents.

Design Control - Design control is the process used to verify that the design drawings, design calculations and specifications, including fabrication and inspection procedures for both shop and field, meet the project requirements.

5.1.4.3 The Director, Quality is responsible for Independent Safety Engineering Group activities, audits, independent assessments, surveillances, performance monitoring, inspections and NDE examinations.

5.1.4.4 During the overview of activities performed by the NA&L organization, the Director, Quality, at his discretion, reports directly to the Executive Vice President and General Manager, Nuclear.

5.1.4.5 The Manager, Risk Management & Industry Relations is responsible for activities related to the Comprehensive Risk Management Program, including oversight of Probablistic Safety Assessment activities. The Manager, Risk Management & Industry Relations serves as the Graded Quality Assurance Expert Panel chairperson.

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5.1.5 The General Manager, Plant Services is responsible for implementing quality program requirements applicable to nuclear training, information systems, emergency response, records management and administration, and procurement and material control for STP.

5.1.5.1 The Manager, Nuclear Training; Manager, Nuclear Information Systems; Manager, Emergency Response; Director, Records Management and Administration; and Director, Nuclear Purchasing and Materials Management report to the General Manager, Plant Services.

5.1.6 The General Manager, Human Resources Nuclear is responsible for implementing quality program requirements applicable to employee relations (i.e., access authorization), employee development and organizational effectiveness, salary/compensation, and legal and personnel services.

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SOUTH TEXAS PROJECT ELECTRIC GENERATING STATION	NUMBER Chapter 2.0	REV. NO. 11
OPERATIONS QUALITY ASSURANCE PLAN PROGRAM DESCRIPTION	PAGE 1 OF 15	
	EFFECTIVE DATE	

1.0 PURPOSE

1.1 The purpose of this chapter is to define criteria and establish administrative controls for implementation of the Quality Assurance (QA) Program for the South Texas Project Electric Generating Station (STP).

2.0 SCOPE

2.1 The QA Program is implemented and controlled in accordance with the Operations Quality Assurance Plan (OQAP) and is applicable to structures, systems, and components to an extent consistent with their importance to safety, and complies with the requirements of 10CFR50, Appendix B and other program commitments as appropriate.

2.2 The QA Program will also extend, as applicable and/or determined by STP management, to programs including 10CFR71, Subpart H (except design and fabrication of NRC certified radioactive waste shipping casks), ASME Boiler and Pressure Vessel Code, Sections III and XI; and to quality-related areas as defined herein including the Fire Protection Program, Emergency Plan, Radiological Environmental Monitoring Program, Radwaste Management Program, Computer Program Verification and Control, Seismic and Environmental Equipment Qualification Programs, Radiation Protection Program, and Station Blackout (SBO) systems and equipment.

3.0 DEFINITIONS

3.1 Comprehensive Risk Management - A process by which the change in risk to station personnel, the public's health and safety are evaluated as a result of changes in commitments, processes, activities, and human and equipment performance.

3.2 Graded Quality Assurance - The process by which risk-based methodology [i.e., Probabilistic Safety Assessment (PSA)] and deterministic and performance-based information analyses are combined to establish appropriate levels of programmatic controls for SSCs and appropriate levels of first line and independent oversight needed to provide the necessary assurance that SSCs will operate safely.

3.3 Full program controls - The highest levels of controls and oversight, as prescribed in Table I to this chapter and throughout individual OQAP chapters.

5.3.2 GQA is a process by which risk-based methodology [i.e., Probabilistic Safety Assessment (PSA)], deterministic insights, and performance-based information are combined and analyzed to determine what levels of programmatic controls are needed for structures, systems, and components (SSCs) and what levels of first line and independent oversight are needed to provide assurance that items will operate safely and activities are accomplished as prescribed.

5.3.3 Selected systems are evaluated, at the component level, by a cross-discipline Expert Panel comprised of high level station management. Initial evaluations are performed by the Working Group. QA-032

5.3.4 These recommendations are developed in consideration of systems' missions, components' contribution to core damage frequency and risk achievement, components' critical attributes (needed to support system mission), performance, regulatory/QA requirements, and other deterministic considerations as prescribed in the Comprehensive Risk Management procedures.

5.3.5 Program control recommendations are developed by the Working Group and ultimately approved by the Expert Panel and forwarded to the site for implementation. Controls are implemented in three graded applications (i.e., "Full", "Basic", and "Targeted"). QA-032

5.3.6 "Full" program controls are applied to safety-related SSCs categorized as being "high" safety significant/risk important. These "Full" levels of controls and oversight are designed to provide a high degree of confidence that SSCs perform safely and activities are performed as expected. Table I to the OQAP chapter prescribes the program commitments applicable to "Full" program activities.

5.3.7 "Basic" program controls are applied to safety-related SSCs categorized as "medium" or "low" safety significant/risk important. These are lower levels of control and oversight, designed to maintain/preserve those identified critical 15

attributes of SSCs needed to support systems' critical functions. These controls are intended to reflect economical and efficient business practices. Table I to the OQAP chapter prescribes the program commitments applicable to "Basic" program activities.

5.3.8 "Targeted" program controls are applied to non-safety related SSCs categorized as "high" or "medium" safety significant/risk importance. Specific program controls are applied to those items in a selected manner, "targeted" at those characteristics or critical attributes that render the SSC significant or important.

5.3.9 Components that are highly reliable, yet whose failure would result in a significant increase in risk, will receive Full program coverage, or will be evaluated based on their risk importance to ensure that Full program controls are applied to their critical attributes. 04-032

5.3.10 SSCs governed by the OQAP shall retain "Full" program coverage until such time as prescribed risk-informed, performance-based analyses are completed and approved, and they are placed into other program categories (i.e., "Targeted" or "Basic") as appropriate.

5.3.11 A vital element of the GQA program is the "feedback" loop. On a periodic basis, and as prescribed in the Comprehensive Risk Management procedure, the GQA Working Group and Expert Panel shall review any changes to the PSA information and performance/operating experience that could result in recategorization of an SSC. These reviews are also used to assess the effectiveness and appropriateness of in-place quality program controls. Adjustments shall be made as determined necessary. Those components for which an increase in failure rates results in a significant increase in risk will have Full program controls established. 04-032 04-032

TABLE I

PROGRAM COMMITMENTS

R.G./ANSI STANDARD	FULL PROGRAM	BASIC PROGRAM
ANSI N45.2.13, 1976 (cont'd)	5.3 and 5.4 - Provisions are established for, in special cases and with management approval, completion of these activities after award of contract.	Same as full.
		7.2.1, 7.3.1 - These activities will only be implemented as deemed necessary.
	9.0 - This section will be implemented based on the scope, complexity and safety significance of the items being procured.	Same as full.
		10.3.1 - This section will only be implemented as deemed necessary.
		12 - This section will only be implemented as deemed necessary for audits of suppliers.
R.G. 1.144, rev. 1 (9/80)	C.1 - refer to table coverage of R.G. 1.28 and ANSI N45.2. refer to table coverage of R.G. 1.74 and ANSI N45.2.10	Same as full.
	C.3.a(1) - refer to table coverage of R.G. 1.33 regarding audit frequency.	Same as full.
		c.3.b STP will audit vendors only as deemed necessary.
		STP will perform biennial evaluations.
ANSI N45.2.12, 1977	No exceptions taken.	STP will audit vendors only as deemed necessary. These audits will be conducted as unplanned/unscheduled audits.
R.G. 1.146, rev. 0 (8/80)	C.1 - refer to table coverage of R.G. 1.28 and ANSI N45.2. refer to table coverage of R.G. 1.74 and ANSI N45.2.10	Same as full.

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5.3.3 Actions to be taken to assure timely corrective action on conditions adverse to quality.

5.4 Procedures which identify and track conditions adverse to quality shall require management review of each report to determine if the condition is significant. For significant conditions adverse to quality, the cause of the condition and the corrective action taken to preclude repetition shall be documented and reported to appropriate levels of management.

5.5 Measures shall be established for review and evaluation of conditions adverse to quality for reportability to the NRC as required by References 4.2, 4.3, and 4.4, as appropriate.

5.6 The authority to stop work has been assigned to the General Manager, Nuclear Assurance and Licensing for any activity being performed by company personnel or contractors which do not conform to established requirements.

5.7 Measures shall be established for the evaluation and trending of conditions adverse to quality. The results of these reviews and analyses are reported to the affected organization and executive management, and are audited by the Quality organization. Adverse trends shall be evaluated and processed in accordance with controlling procedures.

5.8 For medium and low safety significant SSCs treated by the Basic program controls, measures shall be established to conduct apparent cause determination and to trend failures to assist in evaluating the need for more detailed root cause analysis (if excessive failures occur) and proper corrective action. Further, particular consideration will be given to assessing the potential implications of such failures generically to similar SSCs treated by the Full program.

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