Duke Power
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October 16, 2003

U. S. Nuclear Regulatory Commission
Washington, DC 20555-0001
ATTENTION: Document Control Desk

Subject: Duke Energy Corporation
Oconee Nuclear Station, Units 1, 2, and 3
Docket Nos. 50-269, 50-270, 50-287
McGuire Nuclear Station, Units 1 and 2
Docket Nos. 50-369, 50-370
Catawba Nuclear Station, Units 1 and 2
Docket Nos. 50-413, 50-414
Duke Energy Topical Report, Duke -1-A, Amendment 32
Response to Request for Additional Information Letter Dated July 10, 2003

By letter dated December 18, 2002 Duke Energy Corporation (Duke) submitted amendment number 32 to its Duke Energy Topical Report, Duke -1-A, on the Quality Assurance (QA) Program for the Oconee, McGuire, and Catawba Nuclear Stations. On July 10, 2003, the NRC requested additional information concerning the subject amendment.

Duke's response to the Request for Additional Information is provided as an enclosure to this letter. The second enclosure is the re-write of Amendment 32 to Duke Energy Topical Report, which incorporates the responses to your questions. This Amendment 32 supersedes the submittal transmitted on December 18, 2002. As requested by your staff, a meeting between your staff and Duke personnel will be scheduled at the earliest connivance to discuss this response and the successful resolution this amendment.

If you have any questions, please contact M. T. Cash at 704 382-5826 or
J. M. Frye at 704 382-5116 (E mail: jmfrye@duke-energy.com)

Very truly yours,

W. R. McCollum
Senior Vice President
Nuclear Support

Enclosure: (1) Duke's Response to NRC's RAI
(2) QATR Amendment 32 Rewrite

Q004

A001

xc:

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W. R. McCollum, affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.

W. R. McCollum, Senior Vice President

Subscribed and sworn to me: 10-20-2003
Date

Mary P. Nelms
Notary Public

My Commission Expires: JAN 22, 2006
Date

SEAL

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NRIA File/ELL
ONS Master File – ON03DM (File OS 801.01)
MNS Master File – MG01DM (File 801.01)
CNS Master File – CN01DM (File 801.01)

U. S. Nuclear Regulatory Commission
Document Control Desk
October 16, 2003

Enclosure 1

Duke Nuclear Assurance Program Amendment 32, submitted by letter dated December 18, 2002

Request for Additional Information (RAI) Dated July 10, 2003

A. Topical Report Definitions of Maintenance:

Define the following terms for inclusion in the topical report: (1) maintenance, (2) routine maintenance, and (3) non-routine maintenance; these will be used to determine the activities that will require hold point inspections or activities requiring process monitoring. Include a more complete list of clarifying examples for routine and non-routine maintenance (e.g., routine maintenance might include torquing, restoration, oil change; non-routine maintenance might include work on valve actuators or diesel generator overhaul).

Consider the following working definitions provided by the NRC staff in developing your response:

Maintenance consists of those activities necessary to maintain or restore systems to within specified design limits.

Routine maintenance consists of repair, rework, replacement, adjustment, cleaning or other actions necessary to maintain an item to acceptable conditions and is performed by trained and qualified personnel in accordance with documented procedures and/or instructions.

Non-routine maintenance activities are intended to change specified design limits, such as modifications. Non-routine maintenance includes maintenance that may be routine, but is performed by personnel who may not have the requisite training and qualification to perform the activity without supervisory oversight, or first time evolution performed in an operating environment. Non-routine maintenance includes (ASME) Section XI Code activities, special processes, civil activities, and modifications.

RESPONSE

The suggested definitions have been incorporated in section 17.3.2.12 Inspection, in attachment 2 of the re-submittal of Duke Quality Assurance Program Topical Report as follows:

"With regard to the inspection function, maintenance consists of those activities necessary to maintain or restore systems to within specified design limits. Routine maintenance consists of repair, rework, replacement, adjustment, cleaning or other actions necessary to maintain an item to acceptable conditions and is performed by trained and qualified personnel in accordance with documented procedures and/or

instructions. Non-routine maintenance activities are intended to change specified design limits, such as modifications. Non-routine maintenance includes maintenance that may be routine, but is performed by personnel who may not have the requisite training and qualification to perform the activity without supervisory oversight, or first time evolution performed in an operating environment. Non-routine maintenance includes ASME Section XI Code activities, special processes, Civil activities, and modifications."

The terms routine and non-routine maintenance are used only as a means of determining the level of QC involvement with maintenance activities. Essentially, the activities considered routine maintenance will be controlled in the same way as non-routine maintenance activities. The one exception is that independent QC inspectors will not be required to witness predetermined maintenance procedure steps that include QC Hold/Inspection points when the procedure is applied to a routine maintenance activity. Independent oversight of routine maintenance activities will be maintained by selecting activities for monitoring from the maintenance schedule. If there is evidence that process monitoring is not maintaining an adequate level of control for a certain maintenance activity then the activity may be re-determined from routine (QC P) to non-routine maintenance (QC H).

Most of the examples provided in your request (torquing, restoration, work on valve actuators, and diesel generator overhaul) may be associated with maintenance that is either routine or non-routine. For mechanical maintenance, the work type and ASME Section XI Code requirements are used to determine whether the activity is routine maintenance or non-routine maintenance. For example, torquing associated with a flanged connection that is part of a design change (modification) or ASME Section XI requirements is a craft responsibility that requires a sign off by the procedure performer in the maintenance procedure. Since design changes or modifications are considered non-routine maintenance, torquing is witnessed and documented by QC through the use of existing QC Hold Points.

On the other hand, the same maintenance procedure may be used to torque a flanged connection that is not associated with a design change or ASME Section XI requirements. The craft responsibility for torquing the connection is the same as the non-routine maintenance activity. Since this activity is considered routine maintenance, under the proposed inspection program, torquing is not witnessed and documented by QC. The QC Hold Point is not applicable. The same holds true for maintenance activities associated with valve actuators or diesel generator overhaul.

It should be noted that the current inspection program was written to support design and construction activities. It does not reduce the level of QC involvement based on the type of work that the maintenance procedure is applied to. This requires QC to witness numerous maintenance procedure steps that are routine in nature. The new inspection program will provide the flexibility to determine the level of inspection involvement based on the work activity. The limited number of QC resources will be more involved with field observations as well as tracking and trending performance issues.

The following table is provided to clarify the work types and descriptions that are used at Duke in the Work Management System:

Work Order/Work Order Task Definitions

WORK TYPE	CODE	DEFINITION
Calibration	CL	Includes all calibrations not covered by PM's. Work order or task type.
Corrective	CO	Corrective maintenance is restoration of equipment or components affecting nuclear or personnel safety or plant reliability that have failed, are degraded, or do not conform to their original design, configuration, or performance criteria. Corrective maintenance includes work performed using the minor maintenance process (work request), as well as more significant activities that may require planning to correct. As a rule, if the specific component requiring maintenance has degraded (for example, packing or bearing degradation) or failed, the action required to repair it is classified as corrective maintenance. A component should be considered failed or degraded if the deficiency is similar to any of the following examples: • is removed from service because of actual or incipient failure • does not meet design specifications for configuration or performance • creates a personnel or nuclear safety hazard or reliability concern • adversely affects the seismic, environmental, or fire qualification of the component • adversely affects the performance of nearby equipment (for example, missing piping insulation that increases the operating temperature of nearby electrical equipment) • creates the potential for rapidly increasing component degradation (for example, leaks of borated water) • releases of fluids that create contamination concerns (or has the potential to under postulated accident conditions) • adversely affects controls or process indications that directly or indirectly impair operator ability to operate the plant or reduce redundancy of important equipment
Farms	FA	Work Order Tasks to be performed by the FARMS crew.
Functional Task	FT	Work Order task for performing a functional test if the functional was not performed as part of the original work. Task type only.
Material Condition	MA	Work to restore equipment or areas to a clean, orderly, and complete appearance. Work order or task type.
Modification	MD	Nuclear Site Modifications (NSM's). Work order or task type.
Maintenance Minor Mod	MM	Maintenance Minor Modifications. These are modifications that are budgeted, planned and completed by maintenance. Work order or task type.

Corrective Minor Mod	CM	Corrective Minor Mod. Work order or task type.
Elective Minor Mod	EM	Elective Minor Mod. Work order or task type.
Temporary Mod	TM	Any physical change or addition of a temporary nature to the station's structure, systems, or components that does not conform to approved design documents. Work order or task type.
Miscellaneous	MI	Work that does not affect plant operability/reliability/megawatt production and is not Corrective Maintenance. Includes rebuild and return to stock, 7300 process cabinet cards, labeling, temporary power and lights, fabricate, move, transport, assemble. Work order or task type.
Model	MO	Model work orders can be corrective or preventive, used to generate predefined work orders or background for corrective planning. Work order type.
Predefined	PM	Predefined maintenance program. A work order that performs a predefined activity. Work order or task type.
Preventive	PV	Preventative Maintenance is for special activities that are neither Corrective nor Predefined. These may be in response to Operating Experience Reports, observed trends, and other reasons. Usually a one-time event. Work order or task type.
Retest	RT	Work Order task for performing a retest or pretest. This is a task type only.

The following are examples of maintenance activities on nuclear safety related components that would normally be considered routine:

Component Type	Type of Maintenance	Work Type	Inspections/ Oversight
Valve	Packing adjustment/replacement	CO, MO, PM, PV	Routine/ Process Monitoring
Valve	Gasket replacement	CO, MO, PM, PV	Routine/ Process Monitoring
Valve	Disassembly/Reassembly	CO, MO, PM, PV	Routine/ Process Monitoring
Valve	Stem bushing repair	CO, MO, PM, PV	Routine/ Process Monitoring
Valve operator	Adjust Tripper Fingers	CL, CO, MO, PM, PV	Routine/ Process Monitoring
Valve operator	Replace Motor	CO, MO, PM, PV	Routine/ Process Monitoring
Valve operator	Actuator Removal/Replacement	CL, CO, MO, PM, PV	Routine/ Process Monitoring
Valve operator	Torque Switch Replacement	CO, MO, PM, PV	Routine/ Process Monitoring
Valve operator	Spring Pack Replacement	CO, MO, PM, PV	Routine/ Process Monitoring
Valve operator	Replace O-ring/gasket/seals	CO, MO, PM, PV	Routine/ Process Monitoring
Pumps	Mechanical seal replacement	CO, MO, PM, PV	Routine/ Process Monitoring
Pumps	Replace /adjust packing	CO, MO, PM, PV	Routine/ Process Monitoring
Pumps	Disassemble pump	CO, MO, PM, PV	Routine/ Process Monitoring
Pumps	Coupling repair	CO, MO, PM, PV	Routine/ Process Monitoring
Pumps	Bearing repair/replacement	CO, MO, PM, PV	Routine/ Process Monitoring
Pumps	Preventive maintenance	CO, MO, PM, PV	Routine/ Process Monitoring
Pumps	Replace pump	CO, MO, PM, PV	Routine/ Process Monitoring
HVAC Equip	Damper/Duct repair	CO, MO, PM, PV	Routine/ Process Monitoring
HVAC Equip	Water/steam coil repair	CO, MO, PM, PV	Routine/ Process Monitoring
HVAC Equip	Electric compressor repair	CO, MO, PM, PV	Routine/ Process Monitoring
Main Turbine	Bearing Inspection	CO, MO, PM, PV	Routine/ Process Monitoring
Main Turbine	Coupling Repair	CO, MO, PM, PV	Routine/ Process Monitoring
Manways/ Handholes	Remove/Replace	CO, MO, PM, PV	Routine/ Process Monitoring
Heat Exchanger	Clean and Repair	CO, MO, PM, PV	Routine/ Process Monitoring
Support/Restraints	Take down/put back	CO, MO, PM, PV	Routine/ Process Monitoring
SSF Diesel	Replace Main Bearing	CO, MO, PM, PV	Routine/ Process Monitoring
SSF Diesel	Repair Turbocharger	CO, MO, PM, PV	Routine/ Process Monitoring
SSF Diesel	Replace Gaskets	CO, MO, PM, PV	Routine/ Process Monitoring
SSF Diesel	Repair/ Replace Cooling H2O Sys.	CO, MO, PM, PV	Routine/ Process Monitoring

The following are examples of maintenance activities on nuclear safety related components that would normally be considered non-routine:

Component Types	Type of Maintenance	Work Type	Inspections/ Type
Valves	Repair/Replace pressure boundary parts	FT, RT	Nonroutine / QC Hold Points
Valves	Maintenance on Class 1 valves >1 inch pipe size	CO, MO, MD, MM, CM, EM, TM	Nonroutine / QC Hold Points
Valves	Repair/Replace pressure boundary bolting >2 inch on Class 2 valves	FT, RT	Nonroutine / QC Hold Points
Valves	Maintenance that is performed to change, add, or modify a valve in accordance with the Nuclear Station Modification program.	MD, MM, CM, EM, TM	Nonroutine / QC Hold Points
Valve operators	Maintenance that is performed to change, add, or modify valve operators in accordance with the Nuclear Station Modification program or NRC commitments (e.g., 89-10, 88-14, 95-07).	MD, MM, CM, EM, TM	Nonroutine / QC Hold Points
Pumps	Repair/Replace pressure boundary parts	FT, RT	Nonroutine / QC Hold Points
Pumps	Maintenance on Class 1 pumps >1 inch pipe size	CO, MO, MD, MM, CM, EM, TM,	Nonroutine / QC Hold Points
Pumps	Repair/Replace pressure boundary bolting >2 inch on Class 2 pumps	FT, RT	Nonroutine / QC Hold Points
Pumps	Maintenance that is performed to change, add, or modify pumps in accordance with the Nuclear Station Modification program.	MD, MM, CM, EM, TM	Nonroutine / QC Hold Points
Mechanical Equipment	Repair/Replace pressure boundary parts	FT, RT	Nonroutine / QC Hold Points
Mechanical Equipment	Maintenance on Class 1 mechanical equipment >1 inch pipe size	CO, MO, MD, MM, CM, EM, TM,	Nonroutine / QC Hold Points
Mechanical Equipment	Repair/Replace pressure boundary bolting >2 inch on Class 2 mechanical equipment.	FT, RT	Nonroutine / QC Hold Points
Mechanical Equipment	Maintenance that is performed to change, add, or modify mechanical equipment in accordance with the Nuclear Station Modification program.	MD, MM, CM, EM, TM,	Nonroutine / QC Hold Points
Electrical Equipment	Maintenance that includes crimping/ taping or Raychem™ on connections > 600 volts.	CO	Nonroutine / QC Hold Points
Electrical Equipment	Maintenance that is performed to change, add, or modify electrical equipment in accordance with the Nuclear Station Modification program.	MD, MM, CM, EM, TM	Nonroutine / QC Hold Points

B. Topical Report Description Elements of the selection Process Used to Determine Routine Maintenance Activities that will be Controlled Through Process Monitoring:

1. Clarify that determination of routine maintenance activities to be controlled through process monitoring is procedurally administered through the review of existing or new model work orders, that this is accomplished by qualified personnel, and that this determination is a one-time process for a given task.

RESPONSE

Work Process

The Work Process is used to originate, plan, schedule, and execute work at the three (3) nuclear stations. The Work Process uses the Work Management System (WMS) for planning and execution activities. Maintenance activities (corrective, predefined and preventive) and modification activities are controlled through Work Orders and associated Work Order Tasks under the Work Management System (WMS). Tasks planning personnel (Planners) provide the determinations and content of individual Work Order Tasks. Planning personnel are trained and qualified to make determinations in accordance with planner training guidelines specific to the planning support function. The proficiency of planning personnel is monitored on an ongoing basis by line management.

QC Determination

The QC determination (currently coded QC Yes or QC No) on the Work Order Task indicates whether independent QC hold and inspection points are applicable. The Planner makes the QC determination by comparing the work activity with the information provided in QC Determination Tables.

Basis for Categorizing Inspections

The term "inspection" encompasses many activities performed at Duke's nuclear stations. These include but are not limited to: fuel inspections; post-maintenance testing; the supervisor's inspection of work in progress; double verification; self checks; and independent Quality Control inspections. The information in the QC Determination Tables was established to differentiate between the broader term "inspection" as it applies to routine maintenance and "QC inspection" as it applies to non-routine maintenance activities.

The activities in the revised QC Determination Tables (See Attachment 1) are categorized as QC H or QC P. The QC H code indicates that the activity encompasses work requiring independent QC inspections. Technical procedure steps indicate a QC Hold/Inspection that requires witnessing or review by certified inspection personnel before work can proceed. The QC P code indicates that the activity does not

encompass work requiring independent QC inspections. The QC Hold/Inspection sign offs are not applicable and the work activity may qualify for process monitoring.

Review of Model Work Orders

When process monitoring is approved and implemented, Model Work Orders and Work Tasks that were originally determined QC Y will be reviewed and re-determined to QC H or QC P. The review of existing and model Work Orders will be performed by planning personnel using the guidance provided in the QC Determination Tables. Oversight of the new determinations will be provided by QA personnel.

To further clarify the determinations discussed above the QA Topical Report (17.3.2.12 Inspection) has been revised to include the following:

"Knowledgeable plant personnel, utilizing approved procedures, determine if a quality control inspection or quality control monitoring is applicable and if so, which is to be utilized for the work being planned. The result of this determination is reviewed by cognizant quality assurance personnel. If, as a result of this review, a conflict in the determination is identified, resolution is accomplished prior to work execution."

2. Provide specific clarification on how activities coded QC P that are not determined to be candidates for process monitoring are controlled."

RESPONSE

Document Controls

Station procedures which address activities associated with QA Condition 1 structures, systems and components are subjected to a well-defined and established preparation, review, and approval process. This process includes the requirement that procedures be prepared by a knowledgeable individual organization. This process also includes the requirement that each procedure be reviewed for adequacy by an individual organization other than the individual organization which prepared the procedure.

Work Controls

Duke's Quality Assurance program places the responsibility on line management of achieving and assuring quality in all areas of their operation. Therefore, regardless of the QC determination and subsequent QC involvement, specific operational activities associated with nuclear safety related systems, structures or components are required to be accomplished in accordance with technical procedures, instructions, drawings, and checklist appropriate to the nature of the activities being performed. Detailed technical procedures are available for activities that are of a repetitive nature and other situations requiring a procedure that may occur in the future. Permanent technical procedures describe maintenance steps for specific vendor supplied components and equipment (e.g. Atwood & Morrill Pressure Seal Check Valve Corrective Maintenance). Nuclear site

modifications (NSM) and maintenance minor modifications which physically alter nuclear safety related systems, structures or components must either have a temporary procedure (TN) written specifically for the modification or an existing approved technical procedure.

Group Superintendents, Section Managers, and Supervisors are responsible for ensuring that personnel are properly trained and qualified to accomplish their assigned task.

Quality Control Inspections

Maintenance, instrumentation and modification procedures are reviewed by cognizant station personnel to determine the need for inspections. QC inspection hold points are incorporated into the procedures in accordance with the Nuclear Inspection Program.

The following examples describe the format used to incorporate QC inspections into Mechanical Maintenance procedures (MP):

MP Example A

	____ 4.7.1	Clean jam nut with Electron Dielectric Solvent or equivalent.
Date	QC Hold	

MP Example B

	____ 4.7.8	Lubricate coupling plate fasteners with N-5000 lubricant or equivalent.
Date	QC Hold	

MP Example C

	____ 3.3.2	Inspect body seat for the following:
Date	QC-Insp	• Nicks • Scratches • Cuts.
		Repair OR replace as necessary.
		Inspection Results/Corrective Action: _____
		_____
		_____ _____

MP Example D

____	11.4.2	Have QC Inspector perform dye penetrant test on fire dome area as shown below and inspect for cracks/flaws.
Date	QC Hold	A. If cracks are present, notify responsible Technical Support/Engineering Rep.

The steps in Examples A, B, and C above are from mechanical procedures that may be applied to routine (corrective, predefined or preventive) or non-routine maintenance activities. The performer must be qualified to perform the activity regardless of the QC determination.

If the Examples A, B, and C above were associated with a Work Order Task that was coded QC H, then the procedure step would be performed by a qualified maintenance technician and verified by a certified QC inspector.

If the Examples A, B, and C above were associated with a Work Order Task that was coded QC P, then the procedure step would still be performed by a qualified maintenance technician however; the action would not require verification by a certified QC inspector.

The step in Example D requires NDE. In this case, the procedure performer's responsibility is to contact QC to perform the examination/ test.

The following examples describe the format used to incorporate inspections into Instrumentation and Electrical procedures (IP):

IP Example A

____	10.4.8	Install new main seal disc into disc assembly (5).
Date	QC Hold	

IP Example B

____	K.	Torque bolts (5) to 27 in-lbs (25 to 30). Record torque value:
Date	QC Hold	_____ in-lbs

IP Example C

Enclosure 11.1.2

Circuit Alteration/Restoration Log Sheet

IP/0/A/3550/009
Page 1 of __*

Motor Control Center _____ Compartment _____ Work Order Number _____

PERFORMED BY	DV	QC/Date *	ACTION REQUIRED	RESTORED BY	DV	QC/Date
		/				/
		/				/
		/				/

IP Example D

DV		B. Label and disconnect solenoid leadwires at power junction box.
Date	QC-Hold	

The steps in the examples above are from Instrumentation and Electrical procedures that may be applied to routine (corrective, predefined or preventive) or non-routine maintenance activities. The performer must be qualified to perform the activity regardless of the QC determination.

If the steps in the examples above were associated with a Work Order Task that was coded QC H, then the procedure step would be performed by a qualified maintenance technician, applicable double verification (DV), and verified by a certified QC inspector.

If the steps in the examples above were associated with a Work Order Task that was coded QC P, then the procedure step would be performed by a qualified maintenance technician and applicable DV. The actions would not require an additional verification by a certified QC inspector.

Management Controls

Duke's Quality Assurance program places the responsibility on line management of achieving and assuring quality in all areas of their operation. This responsibility is carried out with the assumption that every work task, whether routine or non-routine, carries some element of risk. Each site group is responsible for reviewing and screening assigned work activities for inclusion into the risk management process. Numerous management controls are in place to assess the potential impact of maintenance work task on nuclear safety, personnel safety or unit reliability. For example, maintenance activities that involve complex/critical evolutions require management involvement for enhanced planning and oversight. QA/QC representatives provide input and support for the planning of complex/critical maintenance. Workers are required to attend pre-job briefings to ensure that they understand the work description, critical steps, error-likely situations, consequences associated with not performing the work correctly, and defenses to prevent errors and consequences.

Examples of other Management controls and programs that are implemented as an integral part of work activities at Duke are as follows:

- Maintenance Risk Assessments
- Pre-job Walkdown
- 91-01 Critical and Complex Evolution Plans
- Supervisor and Manager Job Observation Program
- Peer Observation Program
- Maintenance Self-Assessments
- Post -job Critiques
- QC Inspections
- Plant Operations Review Committee Oversight
- Internal Audits
- Safety Assurance (monitoring day to day performance of the plant)
- Corporate Audits

When implemented, the Quality Process Monitoring Program becomes another management control.

3. The checklist for selecting activities for process monitoring needs to be more specific and robust. Provide additional checklist details such that:
(1) The NRC staff can understand how the process is applied, and
(2) Knowledgeable persons using the checklist for the same activity or similar activities would arrive at the same conclusion as to selecting process monitoring to control a selected activity.

RESPONSE

The activities in the QC Determination Tables (Reference Attachment 1) that are coded QC H indicate work activities that require QC hold/ inspection points as a method of assuring quality. The activities that are coded QC P indicate work activities that have other options available to assure quality. The work activity lists are not all-inclusive of every station maintenance activity. These activities were chosen because they are typical of maintenance activities requiring QC involvement. The work planner makes an initial QC determination based on available information such as Work Order type, task description, QA Condition, ASME Code Class, pipe diameter, bolt diameter, and special processes such as crimping, coatings, welding and NDE. If the work planner cannot make a determination based on the information available then QA personnel make the determination. When the maintenance schedule is issued, the QA/QC Team Leader or designee provides oversight of the QC determination by reviewing the task description and initiating any needed changes.

Philosophy for Selecting Activities for Process Monitoring

The QA/QC Team Leader or designee performs a review of the maintenance schedule prior to the start of each work day. The QA/QC Team Leader selects scheduled

maintenance activities (corrective, predefined, preventive) for process monitoring from the Maintenance Schedule Focus (Reference Exhibit 1, 2 and 3). The selection process is based on risks factors such as:

The safety importance of the equipment affected. This means how severe are the consequences if this job is not performed correctly and the equipment fails? Failure of the Emergency Diesel and equipment within ECCS would warrant more attention than failure of a small manual valve or one of two redundant backup power sources. The Maintenance Schedule Focus includes risk codes with the individual Work Tasks such as:

CC - Continuous Coverage	CM - Component Mispositioning
CE - Complex Evolution	EV - Environmental Concerns
CR- Control Room Work	MH - Maintenance High Risk
FM - Foreign Material Exclusion	PR - PRA Risk Item
MG - Multiple Groups	RM - Reactivity Management
SA - Safety Concerns	SH - System Health
T1 - Trip Single Component	UT - Unit Trip
TS - Tech Spec	VO -Vendor Oversight

The complexity of the task. This means how much opportunity is there for the job to go wrong undetected? Does the activity warrant increased QA/QC involvement due to worker qualifications, e.g., contract workers? This whould also include consideration of how frequently the task is performed.

The availability of a functional test or other post maintenance tests to verify success of the work activity. For example, if a leak test is to be performed after final assembly of a component it may not be necessary to monitor seal installation.

The critical value of the attributes involved. For example, the running clearances in a high pressure pump (charging pump or RCP seals) are more important to the successful performance of the equipment than the quality of the paint on the pump casing.

Performance and inspection history. Does the activity or equipment have a history associated with issues that are being tracked by QC?

Management/Engineering requests. For example, has line management or engineering requested that QA/QC increase their involvement with specific activities or functional areas to provide independent oversight?

4. Define the qualifications of the personnel making the routine maintenance determinations (American Nuclear Society (ANS) standard 3.1 or equivalent). Include specific commitments in the topical report for training required for personnel including planners, maintenance and QC personnel who would select activities to be controlled through process monitoring.

RESPONSE

Personnel Qualifications

Duke's plant personnel meet the requirements of ANSI N18.1- 1971 or as otherwise stipulated in the Technical Specifications. (Reference Duke's QA Topical Table 1)

Duke's planning personnel are trained in accordance with planner training guidelines specific to the planning function.

Duke's quality control inspectors are certified to ANSI N45.2.6 or SNT-TC-1A .

Duke's Quality Assurance Program Topical Report section 17.3.1.5 Personnel Training and Qualifications, currently states in part: "A training program is established for each nuclear station and support organization to develop and maintain an organization qualified to be responsible for operation, engineering, testing, inspection, maintenance, modification and other technical aspects of the nuclear station involved. The program is formulated to provide the required training based on individual employee experience and intended position. The program is in compliance with Nuclear Regulatory Commission licensing requirements, where applicable. The training program is such that trained and qualified operating, maintenance, engineering, inspection, testing, technical support and supervisory personnel are available in necessary numbers at the times required. In all cases, the objectives of the training program shall be to assure safe and reliable operation of the station."

To clarify that this statement includes work control this paragraph (17.3.1.5 Personnel Training and Qualifications) was revised to include the work control function as follows:

"A training program is established...The training program is such that trained and qualified operating, maintenance, work control, engineering, inspection, testing, technical support and supervisory personnel are available in necessary numbers at the times required. In all cases, the objectives of the training program shall be to assure safe and reliable operation of the station."

Section C. <u>Topical Report Description of Process Monitoring Elements</u>

The definition of Quality Process Monitoring provided in the draft procedure QAM-3, attached to the licensee's response dated April 24, 2003, states that Quality Process Monitoring (Process Monitoring) is monitoring or direct observation to verify whether an item or activity conforms to specified requirements. Provide specific clarification on the determination process, the criteria used, how the determination is documented in the work package, and what actions are taken when an item or activity does not conform.

RESPONSE

The inspection determination process is described in our response to NRC Request B.2.

The criteria used to make the determination of activities that are candidates for process monitoring are described in our response to NRC Request B.3.

The determination that the work activity may be monitored by QC is documented in the Work Order package on panel R214 (Reference Exhibit 4).

Activities that do not conform to established expectations are documented in accordance with the Problem Investigation Process.

QC Determination Tables

NUCLEAR STATION MODIFICATIONS	QA Condition				
	1	2	3	4	5
All types of Modifications	H	H	H	H	H

	QA Condition				
	1	2	3	4	5
Mechanical Connections Pressure Test: Repair/Replacement - ISI Class A, B, & C >1" pipe size when pressure boundary parts are replaced	H				
Mechanical Valves: Repair/Replacement - ISI Class A >1" pipe size	H				
Repair/Replacement - ISI Class B when bolting is > 2" diameter.	H				
Repair/Replacement - ISI Class B or C when bolting is ≤ 2" diameter.	P				
Repair/Replacement - All other Classes	P	P	P	P	P
Repair/Replacement – Safety Relief Valves (McGuire Only)	H	H	H	H	
Operators: Disassemble/Reassemble	P	P	P	P	P
Repair/Replacement	P	P	P	P	P
Pumps (See Note 2) Repair/Replacement - ISI Class A >1" pipe size	H				
Repair/Replacement - ISI Class B when bolting is > 2"diameter.	H				
Repair/Replacement - ISI Class B or C when bolting is ≤ 2" diameter.	P				
Repair/Replacement - All other Classes	P	P	P	P	P
Support / Restraints Disassemble/Reassemble	P			P	P
Repair/Replacement - ISI Class A, B, and C >1" pipe size	H				
Repair/Replacement - All other Classes	P	P	P	P	P
Visual and freedom of movement inspections only	P				
Flange/ Manway Connections Remove and Reinstall - ISI Class A >1" pipe size	H				
Remove and Reinstall - ISI Class B when bolting is > 2" diameter.	H				
Remove and Reinstall - ISI Class B or C when bolting is ≤ 2" diameter.	P				
Remove and Reinstall - All other Classes	P	P	P	P	P
Equipment Repair/Replacement - ISI Class A >1" pipe size	H				
Repair/Replacement - ISI Class B when bolting is > 2" diameter.	H				
Repair/Replacement - ISI Class B or C when bolting is ≤ 2" diameter.	P				
Repair/Replacement - All other Classes (including motors)	P	P	P	P	P
Threaded Piping	P				
Hydros -Inservice Leak Test	H	P	P	P	
HVAC Repair/Replacement	P				
Remove and Reinstall	P				

Note 1: *The ISI Class at Catawba and McGuire are determined by the Duke Class (e.g. Duke Class A- ISI Class 1; Duke Class B- ISI Class 2 and Duke Class C- ISI Class 3). The ISI Class at Oconee is determined by engineering and specified on flow diagrams.*

Note 2: Some pump procedures may have a procedure step to perform NDE on items such as pump shafts, couplings, motor flywheels, etc. Although the work order may be coded QC P, the procedure step must be *performed by certified NDE personnel.*

Note 3: Bolting refers to pressure retaining bolts.

IAE	QA Condition				
	1	2	3	4	5
Investigate/Repair/Corrective	P	P	P	P	P
Calibration Work	P		P	P	
Replacement of QA Parts	P	P	P	P	P
Crimping/Taping/Raychem on wiring ≤ 600 volts	P				
Crimping/Taping/Raychem on wiring > 600 volts	H				
Cable Separation	P				

WELDING	QA Condition				
	1	2	3	4	Non-QA
Pressure Retaining Welds	H	H	H	H	H
Piping/Components/Tubing/Base Metal Repair	H	H	H	H	H
Structural Steel/ Miscellaneous Steel	H	H	H	H	H

CIVIL	QA Condition			
	1	2	3	4
Structural Steel/Misc. Steel	H	P	P	P
Concrete Anchors- Repair/Replacement activities associated with ISI Class A, B, and C support/restraints >1" pipe size.	H			
Concrete Anchors- Installations that do not require a modification and; disassemble/reassemble activities	P			P
Firestops (Complete Replacement)	H		P	
Firestops Repair - Oconee Only	H		H	
Repairs to Concrete	H			H
Soils	H			H
Coatings - service level must be determined regardless of QA Condition (*See Note 4).	Service Level			
	I	II	III	IV
	H	*H	H	P

***Note 4:** Applies to coatings on containment on the annulus side at Catawba and McGuire Only.

Exhibit 1

Maintenance Schedule Focus

Maintenance Schedule Focus

98589619 - 04	2RNTE7510 WALKDOWN/VERIFY PARTS	DAY	SPOC		
98607742 - 03	2KFDM0006 / INSTALL FILL FUNNEL	DAY	SPOC		
98607742 - 05	2KFDM0006 / REMOVE FILL FUNNEL	DAY	SPOC		
98607742 - 06	2KFDM0006 / RESTORE BLIND FLANGE	DAY	SPOC		
98615446 - 01	2ENBLPXXX1: PERFORM BEST ESTIMATE	DAY	SPOC		
98531133 - 17	PM 2NC-RX-59 PRE-OUTAGE MISC SUPPORT	RHT	JMP		

I&C / Electrical

Unit 0

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes
98572616 - 01	MQMM13797 IAE CREW REVIEW TASK	303	BLM		
98594432 - 01	PT 0WZPG5200, SUMP B RECIRCULATION FLOW	303	BLM		
98594433 - 01	PT 0WZPG5240, SUMP B PUMP A DISCH PRESS	303	BLM		
98585977 - 01	PT 0EHTLPXXX1, INSPECT HEAT TRACE	316	MDH		
98597079 - 01	PM 0WCMT5030, CAL AND OPERATIONAL TEST	319	PJR		EV
98597080 - 01	PM 0WCMT5230, CAL AND OPERATIONAL TEST	319	PJR		EV
98488548 - 01	PT 0EPKBACXB PERFORMANCE DISCHARGE TEST	321	RES		CR

Unit 1

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes
98591425 - 01	PT 1EMF-17 / SFP BRDG FUEL POOL AREA	303	BLM		CR, TS
98603383 - 01	PT 1EMF-17 / SFP BRDG FUEL POOL AREA	303	BLM		CR, TS
98577281 - 01	PM 1IEELP9010, CALIBRATE INSTRUMENTS	319	PJR		CR, MQ, TS
98590233 - 01	PT 1NVPG6460, CALIBRATE/REPAIR INST.	319	PJR		
98590233 - 02	PT 1NVPT6460, CALIBRATE/REPAIR INST.	319	PJR		
98590233 - 03	PT 1NVPT6460, PERFORM F/V (PRESS REQ'D)	319	PJR		
98595018 - 01	1IEELP9010: REPL. RECORDER CANNON CONN.S	319	PJR		TS
98595018 - 03	1IEELP9010: PERFORM IAE RETEST	319	PJR		
98610305 - 01	PM 1IEELP9010, PERFORM CHANNEL CHECK	319	PJR		CR, MQ, TS
98610726 - 01	PCB20 REPAIR X PHASE FAIL TO TRIP	SYD	GSW		

Zoom: 100%

Print Exit

Start Wednesday, August 20, 2003

Exhibit 2

Maintenance Schedule Focus

Maintenance Schedule Focus

Help ? About ?

Mods/Welding/Gen Maintenance

Zoom: 100%

Unit 0

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes
98605290 - 01	0WLTK0104B/INVESTIGATE-REPAIR WELD.....	407	JLT		
98605290 - 04	0WLTK0104B/WALK/DOWN REVIEW.....	407	JLT		
98531475 - 03	PM-0NFCP0028/A,B,C-I/C TEAM SUPPORT	427	JBB		
98599550 - 04	MGMM13878 / 0NFTK0010 / MNPLT GLYCOL LVL	427	JBB		FM, MG
98599550 - 05	MGMM13878 / 0NFTK0011 / MNPLT GLYCOL LVL	427	JBB		FM, MG
98599550 - 06	MGMM13878 / 0NFTK0012 / MNPLT GLYCOL LVL	427	JBB		FM, MG
98594998 - 22	MGMM14055 PH/MOVE LADDER/RADWASTE FAC	8527	RPF		

Unit 1

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes
98570102 - 12	1YD PIPING / PRE-FAB COPPER FITTINGS....	407	JLT		
98601829 - 05	1YMPIPING: MNT F/V, (PSI).....	407	JLT		

Unit 2

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes
98485497 - 04	2BB-294/PRE-FAB PIPING & VALVE (INNAGE).	407	JLT		
98531727 - 02	PM-(PRE-OUTAGE) HYDRO TEST SPARE HOSES	407	JLT		
98559209 - 08	MGMM13947-2SP-10/PRE-FAB PIPING.....	407	JLT		
98565276 - 11	2HSIV5200: PRE-FAB PIPING.....	407	JLT		
98585866 - 04	MGMM13997 / 2QHPPPIPING: PRE-FAB PIPING.	407	JLT		
98588882 - 06	2KR-137: PRE-FAB PIPING.....	407	JLT		>=90
98604928 - 03	2VSPIPING: PRE-FAB PIPING (SOLDER JOINT)	407	JLT		
98604928 - 05	2VSPIPING: WALK/DOWN REVIEW.....	407	JLT		
98613330 - 03	2HAST0Y02: WALK/DOWN REVIEW.....	407	JLT		
98602839 - 07	2NFAH0041 / PERFORM F/V	427	JBB		
98614535 - 01	2NFAHINSPMNT: U-2 ICE COND INSPECTION	427	JBB		FM, MG, SA
98591231 - 07	2FWTK0001: PROVIDE GROVE CRANE SUPPORT	437	JPS		
98591231 - 09	2FWTK0001: REMOVE & INSTALL TRENCH COVER	437	JPS		
98591231 - 25	2FWTK0001: REMOVE/REPLACE TRENCH (SHORT)	437	JPS		
98591231 - 27	2KWTK0001: REPAIR TYPICAL HANGER	437	JPS		

Print Exit

Start 3:53 PM

Exhibit 3

Maintenance Schedule Focus

Maintenance Schedule Focus

98577586 - 15	PAPERWORK	PIPE	GDC		
98577586 - 22	2MCT-HS-H438 PERFORM HANGER WALKDOWN	PIPE	GDC		

QC / ISI / Inspections

Unit 0

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes
98592023 - 04	0XNA RT TEST COUPONS	NDE	RSC		

Unit 1

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes

Unit 2

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes
98536835 - 46	2MCA-RN-3115 (ISI) INSPECT RN HANGER	331	KWM		
98536835 - 47	2MCA-RN-3127: (ISI) INSPECT RN HANGER	331	KWM		

Rotating Equipment

Unit 0

WO/Component	Tasks	Team	Supv	Night	Special Emphasis Codes
98531475 - 01	PM-0NFCP0028/A,B,C-INSPECT CHILLERS	405	SMB		
98584421 - 01	PM-0VACH0114-PERIODIC INSPECTION	405	SMB		
98586038 - 01	PM-0VACH0115-PERIODIC INSPECTION	405	SMB		
98591713 - 03	0NFCU0028C: PERFORM FUNCTIONAL RUNNING	405	SMB		
98600835 - 01	0VACH0115/REPAIR CIRCUIT 2 ON CHILLER	405	SMB		
98600835 - 03	0VACH0115/REPLACE T4 THERMISTOR & LUGS	405	SMB		
98613627 - 01	INSPECT HVAC EQUIP SRV, TURB AND AUX BLD	405	SMB		
98584404 - 01	PM/0VWAH0157/PERIODIC INSPECTION	420	WWF		
98586014 - 01	PM/0VWAH0219/PERIODIC INSPECTION	420	WWF		
98587559 - 01	PM/0VWAH0004/PERIODIC INSPECTION	420	WWF		
98588929 - 01	PM-0WVSF0024-PERIODIC INSPECTION	420	WWF		
98602104 - 01	PM-0WVAH0015-PERIODIC INSPECTION	420	WWF		

Zoom: 100%

Print Exit

Start 3:57 PM

Exhibit 4

Fac: __ Un: __ Equip: ___ __ _____ Comp: ___ __ _____
Wrk Item: ___ _____ UTC: _____ Train: ___

TASK TYPE: _____ __

Date Created: ___/___/___ Page: 2

SECTION I - ORIGINATION ____ Additional Sheets

Originator: _____

Orig Section : _____
ID Tag Placed (Y/N) : _____

Critical Task (Y/N) : _____ Equipment List: _____

Problem Statement:
_____

Failure Description: _____

==========

SECTION II - DETERMINATIONS & PROCEDURES ____ Additional Sheets

Tech Spec Item: ____ Tech Spec Expiration Date: _____ Time: _____ Tech Spec Related : ____
QA Cond : ___ _____ Confined Space: ____
Funct : ___ _____ Enclosed : ____
Retest : ___ _____ NPRDS Related : ____
ALARA : ___ _____ Rework : ____
RWP/SRWP : ___ _____ RWP/SRWP# _____ IRW: ____
Red Tag : ___ _____ From: _____ To: _____ Cleared: _____
QC Reqd : ____ _____
ANI : ___ _____ SSPS : ___ Duke Class : ____
Clean Zone : ___ _____ 7300 : ___ ISI Class : ____
EQ Item : ___ Active: ___ Size : _____
Scaffolding Req: ___ Insulation Removal Req: ___ Control Room Inst: ____ ES Related : ____
Block Tag Out: _____ PMT Block: _____ OOC : ____
Safety Stmt./ _____
Special Inst:
_____

Procedures / Standards
_____ _____ _____ By _____

Planner Review And Approval _____ Date: _____

Enclosure 2

Duke Energy Corporation Topical Report Quality Assurance Program

DUKE ENERGY CORPORATION
TOPICAL REPORT
QUALITY ASSURANCE PROGRAM

DUKE-1-A

ABSTRACT

This topical report describes the Duke Energy Corporation quality assurance program for the operational phase of its nuclear power plants. The report is organized like and is generally used for Chapter 17, "Quality Assurance" of Duke's Safety Analysis Reports.

The Duke Quality Assurance Program conforms to applicable regulatory requirements such as 10CFR 50, Appendix B and to approved industry standards such as ANSI N45.2-1971 and ANSI N18.7-1976 and corresponding daughter standards, or to equivalent alternatives. The Duke Energy Corporation Quality Assurance Program also conforms to the regulatory position of the NRC Regulatory Guides listed in Table 17-1 of this report with the exception of the clarifications, modifications, and alternatives stated therein.

The Duke Energy Corporation Quality Assurance Program Policy Statement, issued by the Chairman and Chief Executive Officer, describes the corporate policy and assigns responsibility for implementation of the Quality Assurance Program.

Section 17, "Quality Assurance, Introduction" describes the purpose of this report, provides definitions, and shows conformance to regulations, standards, and guides.

Section 17.3, "Quality Assurance Program Description" describes the quality assurance program and organization for station operation.

Section 17.3, "Quality Assurance Program Description" follows the format of NUREG-0800, "Standard Review Plan For The Review of Safety Analysis Reports for Nuclear Power Plants", Section 17.3, "Quality Assurance Program Description," except that the Duke Energy Corporation Quality Assurance Program is based on ANSI N18.7-1976 in lieu of ANSI/ASME NQA-1 and NQA-2.

The topical is intended to be a comprehensive up-to-date description of Duke's Quality Assurance Program for nuclear power plants.

W. R. McCollum, affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.

W. R. McCollum, Senior Vice President

Subscribed and sworn to me: 10-20-2003
Date

Mary P. Nelson
Notary Public

My Commission Expires: JAN 22, 2006
Date

SEAL

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Original	March 1, 1974
1	October 1, 1974 (Complete Revision)
2	February 14, 1975
3	November 22, 1976
4	June 29, 1978
5	July 14, 1981
6	February 3, 1983
7	June 22, 1984
8	May 20, 1985
9	July 30, 1985
10	October 17, 1986
11	November 12, 1987
12	March 30, 1989
13	April 18, 1990
14	August 23, 1991
15	August 7, 1992 (Complete Rewrite)
16	June 16, 1994
17	June 16, 1994
18	December 12, 1994
19	March 30, 1995
20	June 29, 1995
21	July 11, 1996
22	November 1, 1997
23	June 30, 1998
24	January 5, 1999
25	May 31, 1999
26	September 13, 2000
27	December 14, 2000
28	June 21, 2001
29	December 10, 2001
30	July 31, 2002
31	December 16, 2002
32	October 16, 2003

17. QUALITY ASSURANCE

INTRODUCTION

Duke Energy Corporation maintains full responsibility for assuring that its nuclear power plants are designed, constructed, tested and operated in conformance with good engineering practices, applicable regulatory requirements and specified design bases and in a manner to protect the public health and safety. To this end Duke has established and implemented a quality assurance program which conforms to the criteria established in Appendix B to 10CFR, Part 50, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants" published June 27, 1970 (35 F. R. 10499) and amended September 17, 1971 (36 F. R. 18301) and amended January 20, 1975 (40 F. R. 3210D).

This topical report is written in the format of a Safety Analysis Report (SAR) Chapter 17, "Quality Assurance", in accordance with Revision 2 of the NRC's Regulatory Guide 1.70, "Standard Format and Content of Safety Analysis Reports for Nuclear Power Plants - LWR Edition" and subsequent NRC guidelines. The quality assurance program described herein is applicable to all Duke nuclear power plants as referenced by Chapter 17 of the plants' SAR's.

This Topical Report describes the Quality Assurance Program for those systems, components, items, and services which have been determined to be nuclear safety related (QA Condition 1). In addition, Duke's Quality Assurance Program provides a method of applying a graded Quality Assurance Program to certain non-safety related systems, components, items, and services. These are classified as QA Conditions 2, 3, 4, or 5. This method involves defining a Quality Assurance "Condition" for each level of quality assurance required. These will be designated as "QA Condition _____". The quality of systems, components, items, and services within the scope of QA Conditions 1, 2, 3, 4, and 5 is assured commensurate with the system's, component's, item's, or service's importance to safety. The following conditions have been defined.

QA Condition 1 covers those systems and their attendant components, items, and services which have been determined to be nuclear safety related. These systems are detailed in the Safety Analysis Report applicable to each nuclear station. The Topical Report applies in its entirety to systems, components, items, and services identified as QA Condition 1.

QA Condition 2 covers those systems and their attendant components, items, and structures important to the management and containment of liquid, gaseous, and solid radioactive waste.

QA Condition 3 covers those systems, components, items, and services which are important to fire protection as defined in the Hazards Analysis for each station. The Hazards Analysis is in response to Appendix A of NRC Branch Technical Position APCSB 9.5-1.

QA Condition 4 covers those seismically designed/restrained systems, components, and structures whose continued functions are not required during and after the seismic event. The general scope of these systems, components, and structures, identified as Seismic Category II (SCII) are defined in Regulatory Guide 1.29, Seismic Design Classification.

QA Condition 5 covers those systems, components, items, and services which are important to the mitigation of design basis and other selected events as defined in applicable procedures and directives. QA Condition 5 only applies to Oconee Nuclear Station.

Subsequent changes to Duke's Quality Assurance Program shall be incorporated in this topical report. The topical report is intended to be a comprehensive up-to-date description of Duke's Quality Assurance Program for nuclear power plants.

Any programmatic changes to the Quality Assurance Program that constitute a reduction in commitment will be submitted for review and acceptance prior to implementation. Significant organizational changes will be submitted as required by 10CFR50.54 (a) (3).

DEFINITIONS

The following definitions are applicable to terms used in this report. Terms used in this report which are not defined in this section are defined in ANSI N45.2.10, "Quality Assurance Terms and Definitions."

Approver - An individual who reviews an activity for concept and conformity with codes and standards; the approver is a person other than the originator or checker.

Audit (Internal) - An activity to determine through investigation the adequacy of, and adherence to, established procedures, instructions, specifications, codes, and other applicable contractual and licensing requirements, and the effectiveness of implementation.

Basic Component – See QA Condition 1 in previous section.

Checker - An individual, other than the originator or approver, who is qualified in the area being checked and who has the responsibility to check the activity and/or all revisions for completeness, clarity, and accuracy.

Designer - The individual who performed the design.

Deficiency - Any condition considered to be adverse to quality including inadequacies of personnel, procedures, systems, methods, or items.

Documents - Any written or pictorial information describing, defining, specifying, reporting, or certifying activities, requirements, procedures, or results. Examples of documents are drawings, specifications, instructions and procedures significant to the design, construction, testing, maintenance and operation of QA Condition 1 equipment and systems.

Hold Point - That point in the manufacturing, preparation, development, installation and construction, inspection, or testing process that requires witnessing or review by qualified Duke personnel.

Item - Any level of unit assembly, including structure, system, subsystem, subassembly, component, part, or material.

Nuclear Station Modification - A planned change in plant design accomplished in accordance with the requirements and limitations of applicable codes, standards, specifications, licenses and predetermined safety restrictions.

Problem Investigation Process - A process used during the operation phase of nuclear stations that documents an occurrence, situation, or nonconformance that resulted in other than expected equipment performance, personnel action, or failure to operate within established limits.

Quality Assurance - The planned and systematic actions necessary to provide adequate confidence that a material, component, system or facility will perform satisfactorily in service. (Note: See Section 17, "Quality Assurance, Explanation of "Quality Assurance"" below for further explanation.)

Quality Assurance Records - Those records which furnish documentary evidence of the quality of items and of activities affecting quality.

Quality Assurance Requirements - Those inspection, test, examination, certification and documentation requirements which are imposed to provide objective evidence of the conformance of an item or activity to established design, engineering, standards, and code requirements.

Quality Control - Those quality assurance actions which provide a means to control and measure the physical characteristics of an item, process or facility to established requirements.

Quality Control Inspector (Inspector) - Any individual certified to the requirements of ANSI N45.2.6 or SNT-TC-1A who performs required inspections, tests or examinations.

Responsible Engineer - The engineer assigned responsibility for an item or service.

Revisions - Any addition, correction, deletion or change.

Services - The performance by a supplier of activities such as calibration, design, investigation, inspection, nondestructive examination, software applications, and installation.

Preaward Survey - A documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that the quality assurance program has been developed, documented, and implemented in accordance with specified requirements.

Variation Notice - A notice to provide a process by which field variations from design drawings and specifications are evaluated and permitted.

Supplier Audit - A documented activity performed in accordance with written procedures or checklists to verify, by examination and evaluation of objective evidence, that applicable elements of the quality assurance program have been developed, documented and implemented in accordance with specified requirements.

EXPLANATION OF "QUALITY ASSURANCE"

Quality Assurance as used in this document includes: 1) the independent assurance activities associated with items and tasks critical to the safety and integrity of the facility and 2) quality verifications performed by the Nuclear Performance Assessment and Procurement Quality sections and by the Nuclear Safety Review Board in the Nuclear Generation Department. The Quality Assurance program as defined above is not an alternative to good technical work. Rather, it is a system of controls to verify that quality is achieved. The Quality Assurance program places the responsibility on line management of achieving and assuring quality in all areas of their operation. As defined, the Executive Vice President, Nuclear Generation / Chief Nuclear Officer has been given the responsibility to develop and manage a Quality Assurance Program for the Corporation.

QUALITY ASSURANCE STANDARDS AND GUIDES

The Duke Quality Assurance Program conforms to Appendix B of 10CFR 50, as discussed in Section 17, "Quality Assurance." The Quality Assurance Program also conforms to applicable NRC Regulatory Guides and approved ANSI Standards, or applicable alternatives. Table 17-1 addresses quality assurance program conformance to the referenced regulatory and program guidance contained in NUREG-0800.

Quality Assurance Program conformance with the documents identified in Table 17-1 may, however, be modified contingent upon future NRC or ANSI action. For example, if a draft document is subsequently approved and issued or if an approved document is revised, provisions of the more recent issue of such a document may be complied with in lieu of those contained in the version listed in Table 17-1, provided the more recent issue has been endorsed by the NRC. Also, formal regulatory actions of the NRC (e.g., issuance or amendment of a station's Facility Operating License) are considered to supersede the contents of Table 17-1, as applicable.

Table 17-1 (Page 1 of 7) Conformance of Duke's Program to Quality Assurance Standards, Requirements and Guides

Standard, Requirement or Guide	Conformance Status	Remarks
Regulatory Guide 1.8 Rev (1-R) – Personnel Selection and Training	Alternative	RG 1.8 Rev (1-R) incorporates ANSI N18.1. Duke's program conforms to ANSI N18.1-1971 or as otherwise stipulated in the Technical Specifications
Regulatory Guide 1.26 Rev (3) – Quality Group Classifications & Standards for Water, Steam, and Radioactive-Waste Containing Components of Nuclear Power Plants	Alternative	Duke's Program conforms to this Regulatory Guide except for additional details and directions noted in Station FSAR's.
Regulatory Guide 1.28 Rev (2) – Quality Assurance Program Requirements (Design and Construction)	Conforms	-------
Regulatory Guide 1.29 Rev (3) – Seismic Design Classification	Alternative	Duke's Program conforms to this Regulatory Guide except for additional details and directions noted in Station FSAR's.
Regulatory Guide 1.30 Rev (0) – Quality Assurance Requirements for the Installation, Inspection and Testing of Instrumentation and Electric Equipment	Conforms	RG 1.30 Rev (0) incorporates ANSI N45.2.4-1972 for both construction and operation
Regulatory Guide 1.33 Rev (2) – Quality Assurance Program Requirements (Operations)	Alternative	RG 1.33 Rev (2) incorporates ANSI N18.7-1976/ANS-3.2. Duke's program conforms to ANSI N18.7-1976 except the frequency of audits of selected aspects of operational phase activities is defined in Section 17.3.3, "Self Assessment" and the frequency for procedure review, as described in Section 17.3.2.14, "Document Control," is based on ANSI/ANS-3.2 (1994) with appropriate reviews performed when the need is identified by normal use, unusual incidents, modifications, or established quality programs. Review frequencies for Abnormal Procedures, Emergency Procedures, and Emergency Response Procedures shall not exceed six years. Procedures that have not been used for six years shall be reviewed prior to reuse.

Standard, Requirement or Guide	Conformance Status	Remarks
Regulatory Guide 1.36 Rev. (0) – Nonmetallic Thermal Insulation for Austenitic Stainless Steel	Adopted	Regulatory Guide is adopted for all Austenitic Stainless Steel piping and components located outside containment. Inside containment, reflective Thermal Insulation is used.
Regulatory Guide 1.37 Rev (0) – Quality Assurance Requirements for Cleaning of Fluid Systems and Associated Components of Water-Cooled Nuclear Power Plants	Conforms	RG 1.37 Rev (0) incorporates ANSI N45.2.1-1973 for both construction and operation
Regulatory Guide 1.38 Rev (2) – Quality Assurance Requirements for Packaging, Shipping, Receiving, Storage and Handling of Items for Water-Cooled Nuclear Power Plants	Alternative	RG 1.38 Rev (2) incorporates ANSI N45.2.2-1972. Duke's program conforms to ANSI N45.2.2-1972 except container markings shall be marked on at least one side (A.3.9(1)) and shall be applied with waterproof ink or paint in characters of a legible size, and caps and plugs for pipe and fittings are required unless specified by Engineering, and off-site inspection, examination, and testing is monitored by personnel qualified to ANSI N45.2.12 in lieu of ANSI N45.2.6.
Regulatory Guide 1.39 Rev (2) – Housekeeping Requirements for Water-Cooled Nuclear Power Plants	Conforms	RG 1.39 Rev (2) incorporated ANSI N45.2.3-1973 for both construction and operation
Regulatory Guide 1.54 Rev (0) – Quality Assurance Requirements for Protective Coatings Applied to Water-Cooled Nuclear Power Plants	Alternative	Catawba has adopted the Regulatory Guide. McGuire and Oconee adopt portions of the Regulatory Guide and address alternatives which meet the intent of this Guide, in each respective Station FSAR.
Regulatory Guide 1.58 Rev (1) – Qualification of Nuclear Power Plant Inspection, Examination and Testing Personnel	Alternative	RG 1.58 Rev (1) incorporates ANSI N45.2.6-1978 for both construction and operation. Duke's nondestructive examination personnel will meet the qualification requirements of SNT-TC-1A-1980. Duke's operational/functional testing personnel will meet the requirements of ANSI N18.1-1971 rather than ANSI N45.2.6. Also, Duke's Level I inspectors receive a minimum of 4 months experience as Level I before being certified as Level II, in lieu of one year experience recommended by ANSI N45.2.6. Inspectors are only assigned tasks for which they have been qualified.

Standard, Requirement or Guide	Conformance Status	Remarks
Regulatory Guide 1.64 Rev (2) – Quality Assurance Requirements for Design of Nuclear Power Plants	Adopted with Clarification	RG 1.64 Rev (2) Incorporates ANSI N45.2.11-1974. The use of the originator's immediate supervisor for design verification shall be restricted to special situations where the immediate supervisor is the only individual capable of performing the verification. Advance justification for such use shall be documented and signed by the supervisor's management. And the frequency and effectiveness of the supervisor's use as design verifier are independently verified to guard against abuse. The supervisor will not be the design verifier on work for which he is the actual performer / originator.
Regulatory Guide 1.74 Rev (0) – Quality Assurance Terms and Definitions	Conforms	RG 1.74 Rev (0) Incorporates ANSI N45.2.10-1973. Some definitions used by Duke's are worded differently than those in this standard; however, the general meanings are the same.
Regulatory Guide 1.88 Rev (2) - Collection, Storage, and Maintenance of Nuclear Power Plant Quality Assurance Records	Alternative	RG 1.88 Rev (2) Incorporates ANSI N45.2.9-1974. The Duke Program conforms to RG 1.88 except the records storage facilities have a minimum 3-hour rating. A qualified Fire Protection Engineer will evaluate record storage areas (including satellite files) to assure records are adequately protected from damage. The fire protection engineer shall be a graduate of an engineering curriculum of accepted standing and shall have completed not less than 6 years of engineering attainment indicative of growth in engineering competency and achievement, 3 years of which shall have been in responsible charge of fire protection engineering work. The Duke program for storage of records on optical disks meets the quality controls contained in NRC Generic Letter 88-18.
Regulatory Guide 1.94 Rev (1) – Quality for Installation, Inspection, and Testing of Structural Concrete and Structural Steel During the Construction Phase of Nuclear Power Plants	Alternative	RG 1.94 Rev (1) Incorporates ANSI program for McGuire and Catawba conforms to ANSI N45.2.5-1974 except the length of bolts shall be flush with the outside face of the nut.

Standard, Requirement or Guide	Conformance Status	Remarks
Regulatory Guide 1.116 Rev (0-R) – Quality Assurance Requirements for Installation, Inspections, and Testing of Mechanical Equipment and Systems	Conforms	RG 1.116 Rev (0-R) Incorporates ANSI N45.2.8-1975
Regulatory Guide 1.123 Rev (1) – Quality Assurance Requirements for control of Procurement of Items and Services for Nuclear Plants	Conforms	RG 1.123 Rev (1) Incorporates ANSI N45.2.13-1976
Regulatory Guide 1.143 Rev (1) – Design Guidance For Radioactive Waste Management Systems, Structures, and Components Installed in Light-Water-Cooled Nuclear Power Plants	Conforms	------
Regulatory Guide 1.144 Rev (1) - Auditing of Quality Assurance Programs for Nuclear Power Plants	Alternative	RG 1.144 Rev (1) incorporates ANSI N45.2-12, (1977). Duke's Program conforms to ANSI N45.2.12-1977 for internal/external audits except Section 4.4.6. In lieu of making recommendations for correcting program deficiencies we will identify the deficiencies to the audited organization. For external audits, the results of the audit will be provided to the audited organization in lieu of the audit report. Also, the re-evaluation may be extended to 15 months and the triennial period as specified in the Reg. Guide may be extended by 3 months as described in Section 17.3.2.4, "Procurement Control." Additionally, Duke program meets regulatory position C.3.b of this regulatory guide, as clarified by NRC Information Notice 86-21, Supplement 2. Internal Technical Audits shall require a response describing corrective action and implementation schedule as requested by the audit report but not to exceed sixty days of receipt of the audit report.

Standard, Requirement or Guide	Conformance Status	Remarks
Regulatory Guide 1.146 Rev (0) – Qualification of QA Program Audit Personnel for Nuclear Power Plants	Alternative	Duke's Program conforms to ANSI/ASME N45.2.23 – 1979 except Section 2.3.4. In lieu of prospective lead auditors participating in a minimum of five quality assurance audits within a period of three years prior to date of certification, prospective lead auditors shall demonstrate their ability to effectively lead an audit team and shall have participated in at least one nuclear quality assurance audit within one year preceding the individual's effective date of qualification. Upon successful demonstration of the ability to lead audits, and having met the other provisions of ANSI N45.2.23-1978, the individual may be certified as being qualified to lead audits. This process is described in approved procedures which require documentation of the evaluation and demonstration of results.
Regulatory Guide 1.152 Rev (0) – Criteria For Programmatic Digital Computer System Software In safety-Related Systems of Nuclear Power Plants	Not applicable	Regulatory Guide does not apply to plants prior to 11/85
Regulatory Guide 4.15 Rev (1) – Quality Assurance For Radiological Monitoring Program (Normal Operations) – Effluent Streams and the Environment	Adopted	Adopted at Oconee, McGuire, and Catawba via various site procedures that meet the intent of the Regulatory Guide.
Regulatory Guide 7.10 Rev (1) – Establishing Quality Assurance Programs For Packaging Used In The Transport of Radioactive Material	Alternative	Duke's Program conforms to the intent of this Regulatory Guide as addressed in each Station's FSAR
Criteria 1 of Appendix A to 10CFR 50	Conforms	------
10CFR 50, Appendix B – Quality Assurance Criteria for Nuclear Power Plants	Conforms	------
10CFR 50.55a – Licensing of Production and Utilization Facilities (ASME Boiler and Pressure Vessel Code, Section XI - Rules for Inservice Inspection of Nuclear Reactor Coolant Systems)	Conforms	10CFR 50.55a Specifies ASME Section XI Code dates. The Duke program conforms to 10CFR 50.55a with the specific editions and addenda of Section XI specified in the Duke's Inservice Inspection Plan for each station.

Standard, Requirement or Guide	Conformance Status	Remarks
10CFR 55 – Operators Licenses	Conforms	-------
10CFR 55, Appendix A – Requalification Programs for Licensed Operators of Production and Utilization Facilities	Conforms	-------
10CFR 50.55(e) – Conditions of Construction Permits	Conforms	-------
10CFR 21	Conforms	-------
Regulatory Positions 2 & 4 of Branch Technical Position CMEB 9.5-1	Conforms	Fire protection controls are in accordance with the intent of regulatory positions 2 & 4 of Branch Technical Position CMEB 9.5-1 as stated in the Safety Evaluation Reports for the respective nuclear stations.
Generic Letter 89-02, NCIG-07.	Conforms	-------

17.1 QUALITY ASSURANCE DURING DESIGN AND CONSTRUCTION

Deleted

17.2 OPERATIONAL QUALITY ASSURANCE

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17.3 QUALITY ASSURANCE PROGRAM DESCRIPTION

17.3.1 MANAGEMENT

17.3.1.1 Methodology

The Executive Vice President Nuclear Generation and Chief Nuclear Officer is the corporate executive responsible for quality assurance and is the highest level of management responsible for establishing Duke's quality assurance policies, goals, and objectives. The Duke Energy Corporation Quality Assurance Program Policy Statement, issued by the Chairman, President and Chief Executive Officer as shown in Figure 17-1, assigns this responsibility and requires development of and compliance with procedures in all QA Condition 1 matters. All organizations performing quality affecting activities are bound by this Policy Statement. The Quality Assurance Program has been developed in accordance with this Policy Statement.

The individuals who constitute Duke Energy Corporation have full personal and corporate responsibility to assure that nuclear power plants are designed, constructed, tested and operated in a manner to protect the public health and safety. The comprehensive program to assure this begins with initial design and continues throughout the life of the station. The Duke Quality Assurance Program must assure that the necessary quality requirements for QA Condition 1 structures, systems, components and materials are achieved. All special equipment, environmental conditions, skills and processes that are determined to be QA Condition 1 will be provided within the scope of the Quality Assurance Program.

A controlled listing of QA Condition structures, systems, and components is approved, issued, and periodically updated. Each Nuclear Site Vice President is responsible for approval and issuance after issuance of the operating license.

This program applies to the QA Condition 1 portions of the plant but may also be optionally applied, in whole or in part, to other selected items necessary for reliable operation. Section 17, "Quality Assurance" identifies those items currently included under the Duke Energy Corporation Quality Assurance Program.

17.3.1.2 Organization

17.3.1.2.1 Corporate Organization

The Duke Corporate organization is shown in Figure 17-2. The Chairman, President, and Chief Executive Officer has overall responsibility for Design, Construction, and Operation of generation and transmission facilities. Reporting to the Chairman, President and Chief Executive Officer is the President Duke Energy Services, who directs several activities including Duke Energy Generating Services and Energy Services Human Resources. Also reporting to the Chairman, President, and Chief Executive Officer is the President, Duke Power, who directs several activities including the Nuclear Generation and Electric Transmission Departments. Reporting to the President Duke Power is the Executive Vice President Nuclear Generation / Chief Nuclear Officer who has the overall authority and responsibility for the quality assurance program and directs several activities including the operation of the nuclear sites through the Senior Vice President Nuclear Operations.

Reporting to the Chairman, President and Chief Executive Officer is the Executive Vice President and Chief Administrative Officer, who directs several activities, including the Information Management and the Corporate Services Departments through their respective senior vice presidents.

Duke's organization reflects the concept of quality assurance as an interdisciplinary function involving various groups. As such, the attainment of quality rests with those assigned the responsibility of performing the activity. The verification of quality is assigned to qualified personnel independent of the responsibility for performance or direct supervision of the activity. The degree of independence varies commensurate with the activity's importance to safety.

The policies described in this document are implemented through departmental program manuals and procedures, and are, therefore, transmitted to all levels of management.

Organization charts for various departments/locations are contained in Chapter 13 of the respective Station Final Safety Analysis Report.

17.3.1.2.2 Nuclear Generation Department

The Nuclear Generation Department has direct line responsibility for all Duke Energy Corporation nuclear station operations. The Nuclear Generation Department is responsible for achieving quality results during engineering, preoperational testing, operation, testing, maintenance and modification of the Corporation's nuclear stations and with complying with applicable codes, standards and NRC regulations. The functions of Nuclear Generation are directed by the Executive Vice President, Nuclear Generation / Chief Nuclear Officer.

The Executive Vice President, Nuclear Generation / Chief Nuclear Officer formulates, recommends, and carries out plans, policies, and programs related to the nuclear generation of electric power; and reports to the President, Duke Power. The Executive Vice President, Nuclear Generation / Chief Nuclear Officer is informed of significant problems or occurrences relating to safety and quality assurance through established administrative procedures, and participates directly in their resolution, where necessary.

a) Nuclear Site Organization

The Senior Vice President, Nuclear Operations, reports to the Executive Vice President, Nuclear Generation / Chief Nuclear Officer. The Nuclear Site Vice Presidents (Site Officer) report to the Senior Vice President, Nuclear Operation. The Site Officer is also responsible for the administration, implementation, and assessment of the quality assurance program as it applies to station operation. In the discharge of their responsibilities, the Site Officers direct the activities of the station organizations.

Reporting to the Site Officer for each nuclear station is a Manager, Nuclear Station who is assigned the direct responsibility for the safe operation of the facility. The qualification requirements for the Manager, Nuclear Station are in accordance with the provisions of ANSI N18.1-1971 and are presented in each station's FSAR.

b) Nuclear Generation Department, Nuclear Generation Office

The Nuclear Generation Department, Nuclear General Office, is divided into four divisions. The activities of each division are directed by a manager who reports to the Senior Vice President, Nuclear Support, who reports to the Executive Vice President, Nuclear Generation / Chief Nuclear Officer. The four divisions within the Nuclear General Office are: 1) Nuclear Engineering, which provides support to the stations in severe accident analysis, safety analysis, nuclear design, fuels/core management, and plant engineering, (2) Nuclear Services, which provides technical support to the stations in work control, chemistry, radiation protection, steam generator maintenance, quality assurance inspection support, inservice inspection, NDE, and

special projects such as RM&C, and steam generator replacement; (3) Nuclear Supply Chain, which provides support to the station in procurement engineering, procurement, and supplier quality and (4) Nuclear Assessment and Issues, which provides technical and business support to the stations in operating experience assessment, operations assessment, business/financial support, special projects such as license renewal, regulatory/industry affairs, information technology, NSRB, and regulatory audits. The Nuclear Performance Assessment section has the authority and organizational freedom to:

1) Identify quality problems

2) Initiate, recommend or provide solutions to quality problems through designated channels.

3) Verify the implementation of solutions to quality problems.

4) Ensure cost and schedule do not unduly influence decision making involving quality.

If significant quality problems are identified by Nuclear Performance Assessment personnel, the Manager, Nuclear Assessment and Issues Division or designee, has the responsibility and authority to notify management to direct the affected work activity to cease pending satisfactory resolution of the identified problem.

17.3.1.2.3 Energy Services Human Resources Department

Human Resources provides input to Nuclear Generation in such areas as Fitness For Duty and Nuclear Access. Human Resources is directed by the Senior Vice President, Human Resources who reports to the President, Duke Energy Services.

17.3.1.2.6 Information Management Department

Information Management is responsible for the development and maintenance of selected information technology services and support for the Nuclear Generation Department, some of which support QA Condition activities. These activities are directed by managers and directors reporting to the Senior Vice President, Information Management.

17.3.1.2.7 Electric Transmission Department

The Electric Transmission Department provides maintenance and testing services to the nuclear stations for selected electrical equipment. These services are directed by the Senior Vice President, Electric Transmission who reports to the President, Duke Power.

17.3.1.2.8 Information Technology Department

Information Technology provides a variety of services and technical support for critical information technology applications and systems such as equipment data bases, plant process information systems, electronic document management, and operation of any document management and retention services. These activities are directed by managers and directors reporting to the Vice President, Information Technology.

17.3.1.2.9 Department Interfaces

Departmental interfaces are identified in quality assurance program manuals. Quality related activities performed by the Electric Transmission, Information Systems, and the Information Management Departments are identified by and conducted in accordance with approved departmental interface agreements.

Organization charts for these departments are maintained in appropriate manuals for the respective departments.

17.3.1.3 Responsibility

The individuals who constitute the Duke Energy Corporate Organization have full personal and corporate responsibility to assure nuclear power plants are designed, constructed, maintained, tested and operated in a manner to protect the public health and safety; and to assure the effectiveness of the Quality Assurance Program.

Corporate audits are initiated and directed by the Executive Vice President, Nuclear Generation / Chief Nuclear Officer. This audit is performed biennially to assess the adequacy of the Quality Program. This audit is discussed in greater detail in Section 17.3.3.2.5, "Corporate Audit."

Appropriate procedures are developed, approved by the responsible implementing manager, issued for use, and used at the location where the prescribed activity is performed, where appropriate. Sufficient personnel are available and trained with necessary resources prior to performing activities that affect quality.

17.3.1.4 Authority

Anyone involved in quality activities in the Duke organization has the authority and responsibility to stop work if they discover deficiencies in quality. Personnel performing quality assurance and quality control functions have the authority and responsibility to stop unsatisfactory work and to assure the item/activity is controlled to prevent further processing, delivery, installation, or use until authorized by appropriate management. If a member of the group performing the work disagrees, they are instructed to take the matter to their management. The disagreement may either be resolved at this level or at any level up to and including the Chief Executive Officer.

17.3.1.5 Personnel Training and Qualification

A training program is established for each nuclear station and support organization to develop and maintain an organization qualified to be responsible for operation, engineering, testing, inspection, maintenance, modification and other technical aspects of the nuclear station involved. The program is formulated to provide the required training based on individual employee experience and intended position. The program is in compliance with Nuclear Regulatory Commission licensing requirements, where applicable. The training program is such that trained and qualified operating, maintenance, work control, engineering, inspection, testing, technical support and supervisory personnel are available in necessary numbers at the times required. In all cases, the objectives of the training program shall be to assure safe and reliable operation of the station.

The training program is kept current to reflect station modifications and changes in procedures. A continuing effort is used after a station goes into commercial operation for training of replacement personnel and for periodic retraining, reexamining, and/or recertifying as required to assure that personnel remain proficient. Personnel receive formal orientation training in basic quality assurance policies and practices.

Personnel receive additional formal training, as appropriate, which addresses specific topics such as NRC regulations and guides, quality assurance procedures, auditing and applicable codes and standards. Special training of personnel in quality assurance related matters, particularly new or revised requirements, is conducted as necessary. Training and qualification records are maintained for each

employee. Documentation of formal training includes the objectives, content of the program, attendees, and date of attendance.

17.3.1.6 Corrective Action

Duke has established a corrective action process whereby all personnel are to assure conditions adverse to quality are promptly identified, controlled, and corrected. This process is administered to correct the problem and its cause rather than establish blame or fault. This process also provides for trending of problems to detect adverse trends in quality performance, including reporting of results to appropriate levels of management. This process is discussed in Section 17.3.2.13, "Corrective Action."

17.3.1.7 Regulatory Commitments

Duke management is committed to applicable quality assurance regulations, codes, and standards as identified in Section 17, "Quality Assurance, Quality Assurance Standards and Guides" of this report.

Duke Energy.

Richard B. Priory
Chairman, President and Chief Executive Officer

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June 18, 2001

DUKE ENERGY CORPORATION
QUALITY ASSURANCE PROGRAM
POLICY STATEMENT

Duke Energy Corporation has developed a comprehensive quality assurance program, described in the Topical Report, to answer our needs and the regulatory requirements established by the Nuclear Regulatory Commission and other jurisdictional authorities for safe and effective design, construction, operation, and modification of nuclear stations. This program has my unqualified support and is to be followed at all times.

The authority and responsibility to administer the quality assurance program is assigned to the Executive Vice President Nuclear Generation and Chief Nuclear Officer.

The quality assurance program is documented in quality and administrative manuals prepared by the involved departments and approved by the responsible department heads. These manuals delineate the actions taken by Duke Energy Corporation personnel during the design, construction, operation, testing, refueling, maintenance, repair, and modification of its nuclear stations.

The department heads of all the corporation's departments engaged in nuclear activities are responsible for implementing procedures required by the quality assurance program.

Duke Energy Corporation personnel are given authority commensurate with their responsibility, including the authority to stop work that does not conform to established requirements. This stop work authority must be exercised in accordance with approved procedures.

All matters concerning quality that cannot be resolved at the normal interfaces among departments shall be referred to the Executive Vice President Nuclear Generation and Chief Nuclear Officer. Matters that cannot be resolved at this level shall be referred to me for final resolution.

RBP

R. B. Priory

TOPICAL REPORT
QUALITY ASSURANCE PROGRAM

Figure 17-1 Duke Energy Corporation Quality Assurance Policy Statement

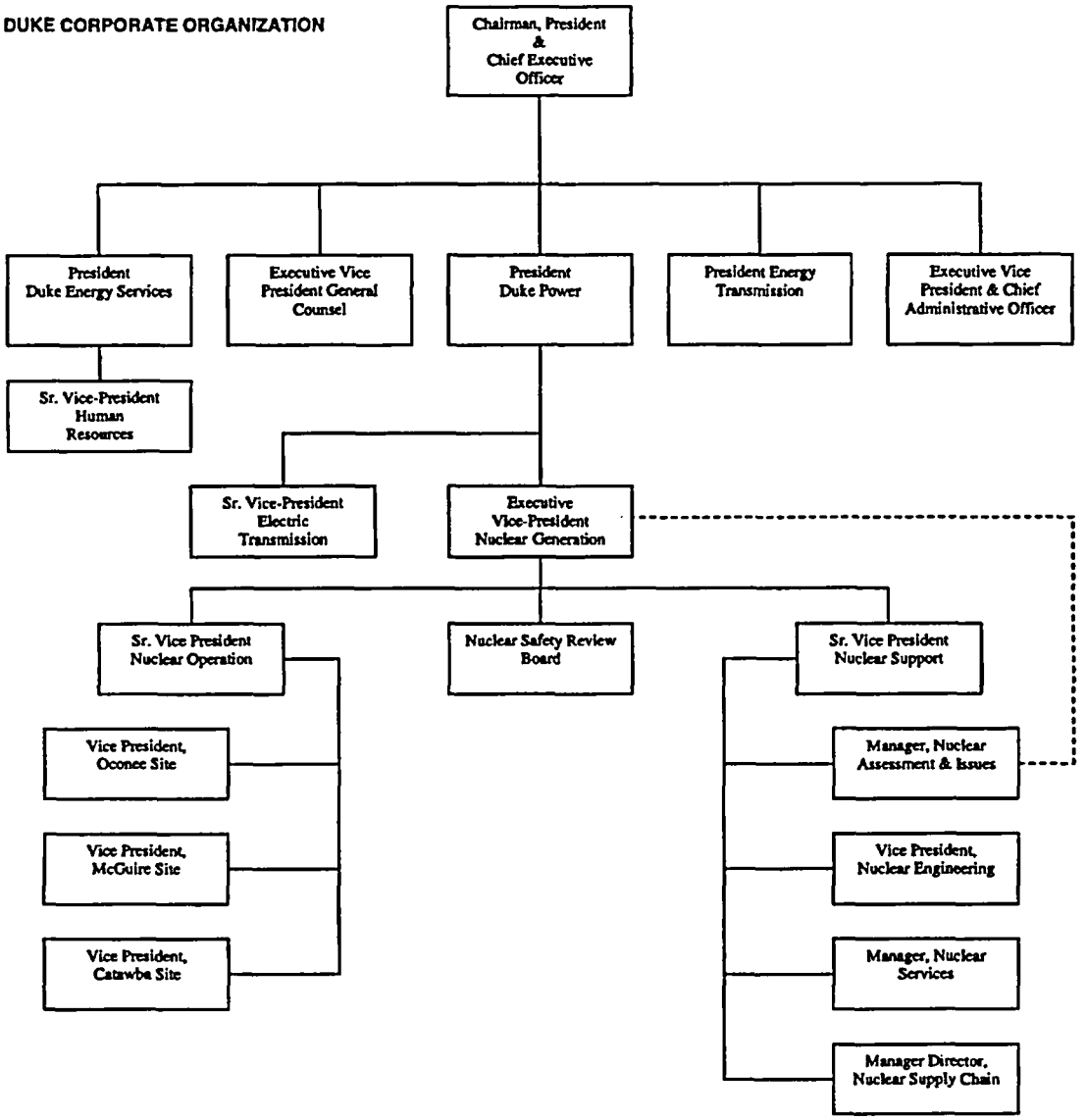

Figure 17-2 Duke Energy Corporation Corporate Organization

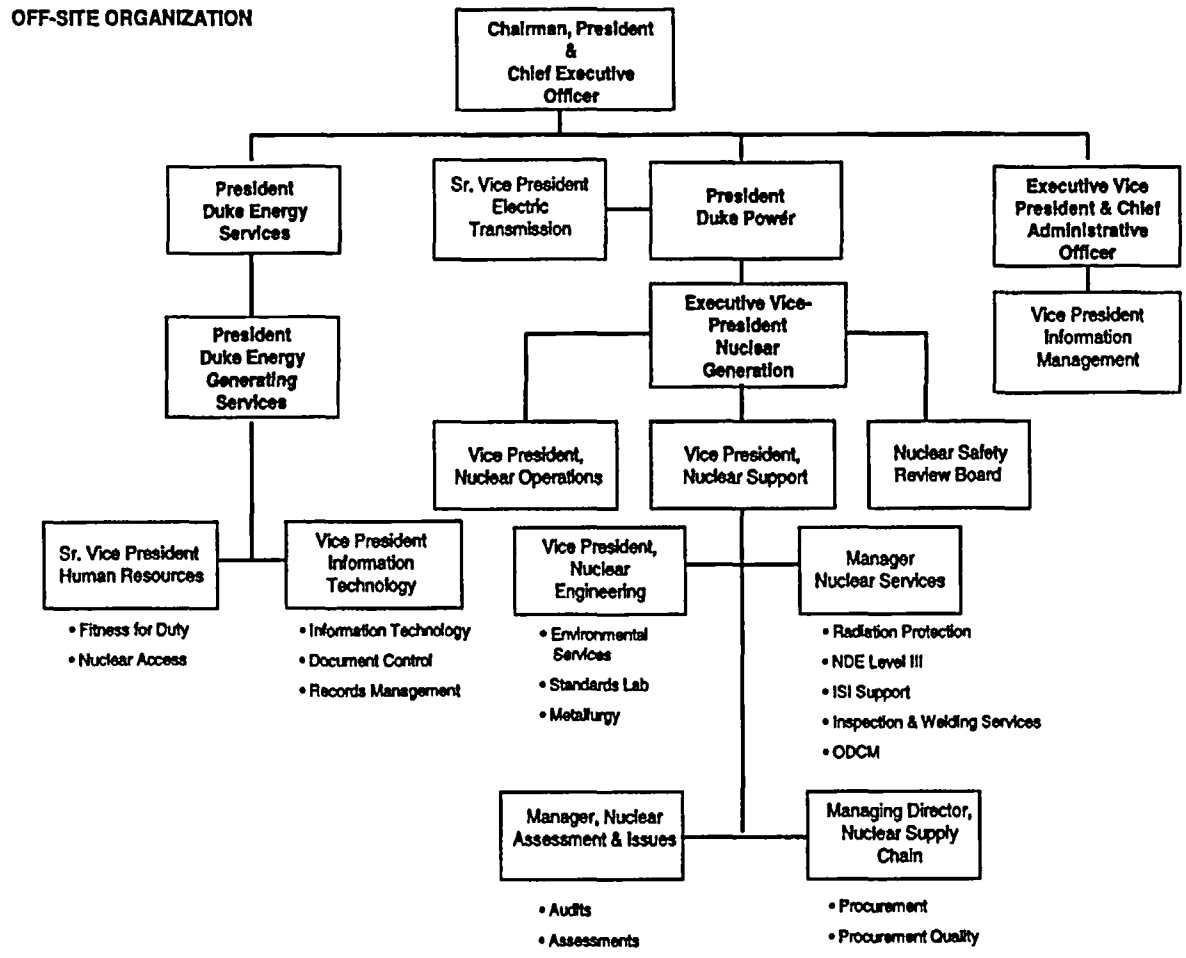

Figure 17-3 Off-Site Organization

NUCLEAR SITE ORGANIZATION

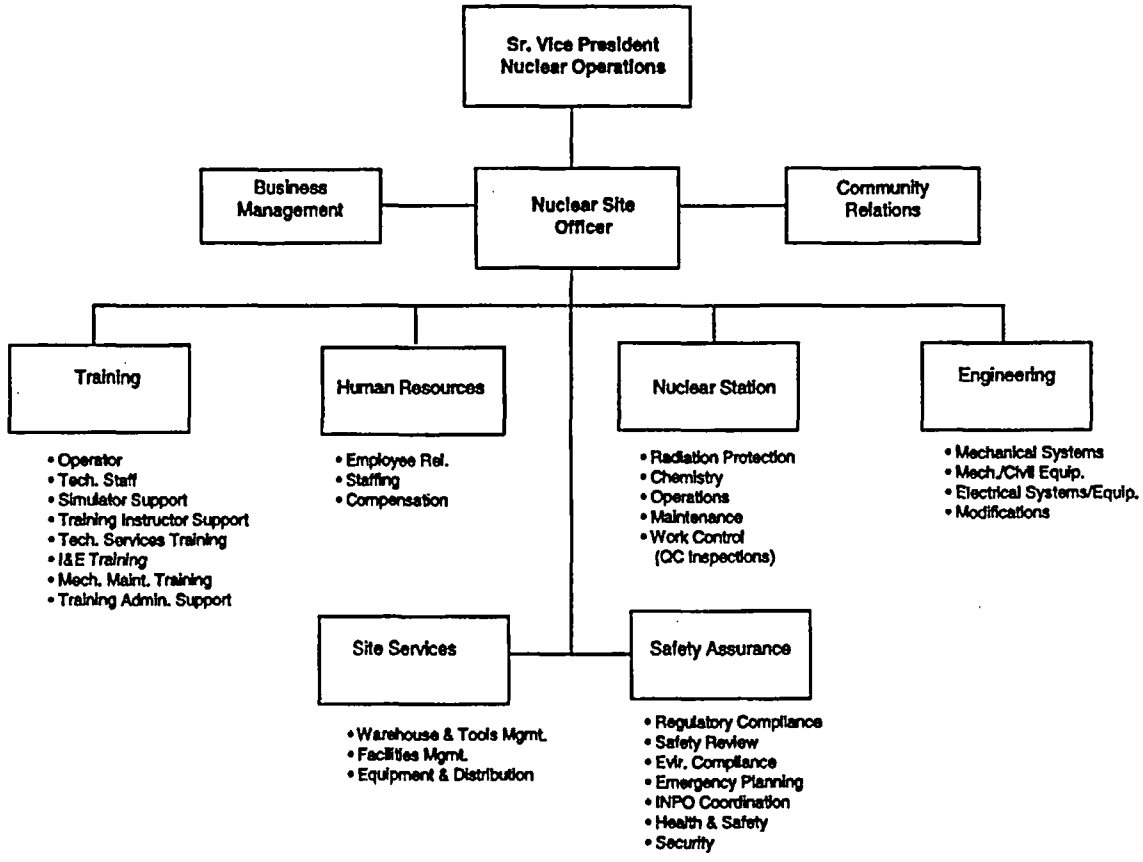

Figure 17-4 Nuclear Site Organization

17.3.2 PERFORMANCE/VERIFICATION

17.3.2.1 Methodology

The Duke Energy Corporation operational quality assurance program is described in various Corporation manuals. Procedures and work instructions necessary to implement the requirements of the operational quality assurance program are developed and approved by the organization responsible for the activity. These procedures and instructions may be contained in manuals, station procedures and directives, administrative instructions and/or other documents. These documents identify the criteria to determine acceptable quality for the activity being performed. On-site implementation of procedures and work instructions is the responsibility of the Site Officer. Verification of quality against these documents is performed by means of inspections, tests, audits, and reviews. Procedures for such inspections, audits and reviews are developed and approved by the responsible implementing manager.

The program receives on-going review and is revised as necessary to assure its continued effectiveness.

17.3.2.2 Design Control

In order to provide for the continued safe and reliable operation of a nuclear station's QA Condition 1 structures, systems and components, design control measures commensurate with those applied to the original design are implemented during the operational phase to assure that the quality of such structures, systems and components is not compromised by modifications.

Duke has assigned the responsibility for design activities during the operational phase of nuclear stations to the Nuclear Generation Department.

The operational quality assurance program establishes procedures and instructions for implementation and assurance of design control during the operational phases for QA Condition 1 items. These procedures and instructions assure the design is performed in accordance with approved criteria, and that deviations and nonconformances are controlled.

Each QA Condition 1 design document, such as a calculation, specification, or drawing, is prepared by a knowledgeable individual who specifies and includes the appropriate codes, standards, SAR commitments, and other design input within the design documents. The preparer notes any deviations or changes from such standards within the design documentation package. Each design document is then checked by another individual qualified in the same discipline and is reviewed for concept and conformity with applicable codes, standards, and other design inputs (as specified within the design documentation package). The document is approved by the individual having overall responsibility for the design function. A review of each specification is made to assure incorporation of necessary quality assurance information. The entire review process is documented.

Prior to the release of any QA Condition 1 design document, it is reviewed to assure coordination of disciplines. If the document clearly involves no coordination with the other disciplines, this review may be waived by the sponsor, with documented concurrence by the other disciplines.

In order to assure proper interface control, the responsibilities of the various individuals/organizations involved in modifications are formally identified. The assignment of responsibility for the evaluation and design of a particular modification to a specific individual/organization is documented. Also, the written instructions addressing the control of modifications address the communication of information between involved individuals/organizations and, where appropriate, require documentation of such communications.

For each proposed modification, the individual/organization assigned responsibility for evaluation and design of the modification considers the following in the design of the modification:

a) Necessary design analyses, e.g., physics, stress, thermal, hydraulic, accident, etc.

b) Compatibility of materials.

c) Accessibility for operation, testing, maintenance, inservice inspection, etc.

d) Necessary installation and periodic inspections and tests, and acceptance criteria therefore.

e) The suitability of application of materials, parts, components, and processes that are essential to the function of the structure(s), system(s) and/or component(s) to be modified.

Final approval prior to implementation of each station modification shall be by the Station Manager or the Manager of Engineering; or for the Station Manager by the Operations Superintendent, the Maintenance Superintendent, the Work Control Superintendent, or the On-Duty Emergency Coordinator as previously designated by the Station Manager. Modifications are then executed in accordance with approved checklists, instructions, procedures, drawings, etc., appropriate to the nature of the work to be performed. These checklists, instructions, procedures, drawings, etc. include criteria for determining the acceptability of the modification.

Errors and deficiencies noted in the design of a modification are corrected by means of a variation notice or a revision to the modification. The control measures applied to each such modification revision or variation notice are equivalent to the control measures applied to the modification originally. Each modification revision or variation notice and the review and approval thereof, is documented.

Prior to a modification being declared operable and returned to service, all procedures governing the operation of the modification are reviewed and revised as necessary. If the modification significantly alters the function, operating procedure, or operating equipment, then additional training is administered as necessary.

Adequate identification and retrievable documentation of station modifications is retained for the life of the station.

Computer programs are controlled in accordance with appropriate department procedures, whereby programs are certified to demonstrate their applicability and validity.

17.3.2.3 Design Verification

During the check and review, of design documents, particular emphasis is placed on assuring conformance with applicable codes, quality standards, SAR design commitments, and other design input. The individuals assigned to perform the check and review of a QA Condition 1 document have full authority to withhold approval of the document until every question concerning the work has been resolved. If required, the matter can be carried up to the Executive Vice President, Nuclear Generation Department by individuals in Nuclear General Office or to the Site Officer by individuals in Site Engineering for resolution. The checker verifies calculations by checking or by alternate computations. Analytical models, theories, examples, tables, codes, computer programs, etc., used as bases for design must be referenced in the design document and their application verified during check and review. Model tests, when required, to prove the adequacy of concept or design are reviewed and approved by the responsible engineer. The tests used for design verification must meet all the requirements of the designing activity. Computer programs are controlled in accordance with the applicable Quality Assurance Manual whereby programs are certified to demonstrate their applicability and validity.

Design verification may consist of reviews, alternate calculations, and/or qualification testing. Design reviews are intended to verify the correctness of design inputs, logic, calculations, and analyses. Calculations by alternate methods provide assurance that, for instance, computer codes are performing as expected, and that no systematic error in calculation procedures exist. Qualification testing, when suitable, is guided by Duke's adoption of various regulatory guides which deal with qualification testing. Qualification testing will simulate the most adverse design conditions that are expected to be encountered. Design verification is performed by qualified individuals in accordance with approved procedures which identify the responsibilities, features and pertinent considerations to be verified such as verification method, design parameters, acceptance criteria, and documentation requirements. Design verification is required to be completed before relying on the item to perform its function and before its installation becomes irreversible. The use of the originator's immediate supervisor for verification is: 1) restricted and justified to special situations where the immediate supervisor is the only individual capable of performing the verification 2) the need is individually documented and approved in advance by the supervisor's management and 3) the frequency and effectiveness of the supervisor's use as design verifier are independently verified to guard against abuse.

The individual/organization assigned responsibility for evaluation and design of a modification performs a safety evaluation of the proposed modification. This evaluation provides the bases for the determination that the modification does or does not involve an unreviewed safety question. This evaluation is reviewed by an individual/group other than the individual/group performing the safety evaluation, but who may be from the same organization as the individual/group which performed the safety evaluation. This evaluation and the review thereof are documented.

Following completion of design and evaluation of a modification, the responsible individual/organization summarizes the modification design and identifies the design documents and information required for modification implementation. This addresses such items as:

a) A description of the modification.

b) References utilized in the evaluation and design of the modification, and necessary for the implementation of the modification.

c) Special installation instructions.

d) Operational, test, maintenance and inspection requirements.

e) Materials, parts and components required in order to implement the modification.

f) Drawings revised and/or requiring revision.

g) FSAR revision(s) and/or Technical Specifications amendment(s) necessary.

h) Whether or not the modification involves an unreviewed safety question.

The reviews of the proposed modification, including applicable implementing procedures associated therewith, certifies that quality assurance requirements have been met and determines inspection requirements prior to implementation of the modification. Modifications which are determined to involve an unreviewed safety question are reviewed by the Nuclear Safety Review Board and must be authorized by the Nuclear Regulatory Commission prior to implementation.

17.3.2.4 Procurement Control

Duke's Quality Assurance Program requires the control of QA Condition 1 items or services purchased from a supplier, subsupplier, or consultant through appropriate processes and specific procurement documents. Pertinent provisions of 10CFR50, Appendix B are applied to these organizations.

The Quality Assurance Program supplements appropriately the ASME QA requirements with the regulatory guides listed in Table 17-1, with the clarifications or alternatives stated therein.

Procurement of QA items is to the quality program requirements in effect at the time of purchase.

Nuclear Generation is responsible for the technical qualification of suppliers and control of the initial procurement of all QA Condition 1 items and services. Procurement requirements/specifications are prepared, checked, and approved by appropriate personnel and forwarded to the Nuclear Supply Chain division, who prepares an inquiry and forwards it to approved suppliers. The Nuclear General Office, Nuclear Supply Chain Procurement Quality section is responsible for qualification of supplier's quality assurance programs.

QA Condition 1 material, equipment and services procured as basic components may only be procured from qualified suppliers. Supplier qualification is accomplished by a Procurement Quality section evaluation of the supplier's quality assurance program. An audit or pre-award survey is performed by the Procurement Quality section when required. The audit or pre-award survey is carried out in accordance with a comprehensive audit checklist to determine the ability of the supplier's quality assurance program and manual(s) to meet applicable criteria of 10CFR50, Appendix B, the ASME Code when required, and any other codes and standards determined to be appropriate for the prospective scope of supply. The audit or survey includes a review of the supplier's QA program manuals. The audit team prepares a formal audit report which states whether or not the supplier is qualified to supply the specific items or services. The audit report is reviewed and approved or disapproved by the Procurement Quality section Manager. Approved suppliers of basic components will then be included on the Approved Supplier's List. Technical qualifications are determined by engineering personnel. Commercial qualification is determined by the Nuclear Supply Chain division following evaluation of bids from qualified suppliers. Bid evaluation includes evaluation of the technical, quality and commercial qualifications of the prospective suppliers.

When QA Condition 1 basic components and services are procured from a supplier whose quality performance has not been verified by audit, additional assurance of product quality shall be obtained by supplier surveillance, inspection or test.

The Procurement Quality section manager may place a supplier on the Approved Suppliers list following review, approval and acceptance of an audit performed by another licensed nuclear utility or joint utility audit team. Review of such third party audits shall ensure that items to be procured are within the audit scope and any unique plant quality and technical requirements are adequately addressed by such audits.

The Procurement Quality section will perform a documented on-going evaluation of each supplier in order to maintain the supplier on the Approved Suppliers List. Where applicable, this evaluation will take into account (1) review of supplier-furnished documents such as certificates of conformance, nonconformance notices, and corrective actions, (2) results of previous source verifications, audits, and receiving inspections, (3) operating experience of identical or similar products furnished by the same supplier, and (4) results of audits from other sources (e.g., customer, ASME, or NRC audits). The results of the evaluations will be reviewed and appropriate corrective action will be taken. Adverse findings resulting from these evaluations will be periodically reviewed in order to determine if, as a whole, they result in a significant condition adverse to quality and to provide input to support supplier audit activities conducted by the licensee or a third party auditing entity. Additionally, suppliers will be re-evaluated by means of an audit at least triennially, if initial approval was by audit or survey. The triennial audit requirement may be extended by 3 months, from 36 to 39 months, with written approval of the Procurement Quality section manager . Extensions would be on an infrequent basis for reasons such as: accommodating manufacturing schedules, synchronizing with other utility audits, or allowing time for implementation of supplier QA program changes.

Materials, parts and components shall be procured to specified technical and quality requirements at least equivalent to those applicable to the original equipment or those specified by a properly reviewed and approved revision. As required by the applicable purchase documents, suppliers furnish documentation which identifies the material and equipment purchased and the specific procurement requirements met by the items. Also, as required by the applicable purchase documents, suppliers will provide documentation which identifies any procurement requirements which have not been complied with, together with a description of any deviations and repair records.

When QA Condition 1 products/services are not supplied as a basic component and meet the definition of commercial grade, the item may be procured without the performance of a supplier qualification audit or the existence of a documented supplier Quality Assurance Program. These commercial grade items used in QA Condition 1 applications require evaluation, dedication and approval by Nuclear Generation Department personnel. Supplier selection for commercial grade items is the responsibility of the responsible engineering personnel. These items are subject to the same verification and checking process for suitability of application as other QA Condition 1 items.

Critical characteristics for the dedication of Commercial Grade Items are determined by Nuclear Supply Chain technical sponsors and approved by the responsible engineering personnel based on the manufacturer's published specifications and the intended safety function for the items. Critical characteristics used for acceptance and dedication of commercial grade items are selected to provide reasonable assurance that the items will meet their catalog or manufacturer specifications and will perform the necessary safety functions in the intended applications. Verification of critical characteristic acceptability will be by manufacturer/supplier survey, manufacturing surveillance, receipt tests or inspections, or post installation testing. Historical data, when documented, will represent industry wide experience.

If verification of a critical characteristic is to be by supplier survey, Procurement Quality section is responsible for verifying the acceptability of the supplier control of the identified critical characteristic.

Procurement of materials, parts, components and services associated with a station's QA Condition 1 structures, systems, and components is controlled during the operational life of the station so as to assure the suitability for their intended service and that the safety and reliability of the station are not compromised.

Each procurement information for materials, parts, components, and services associated with QA Condition 1 structures, systems and components is identifiably designated as such. The procurement requirements applicable to each item are determined by a cognizant individual. This determination is reviewed by another cognizant individual who may be from the same organization as the individual/group making the determination. Procurement information must include or reference other documents such that to assure sufficient information is fully identified to specify the items being procured. Subsequent to preparation, procurement information is approved by the Nuclear Supply Chain manager or designee who is qualified by experience and training for the function.

Procurement information for QA Condition 1 materials, parts and components is reviewed to assure that quality assurance, technical and regulatory requirements including supplier documentation requirements are adequately incorporated into the purchase document(s). Significant changes to the content of such purchasing information are reviewed and approved in a manner consistent with the original.

Where necessary, procurement documents require that QA Condition 1 materials, parts, and components be acquired from suppliers determined to be acceptable by the Nuclear General Office, Procurement Quality section – see Section 17.3.3.2.6, "Suppliers." Determination of acceptability requires that a supplier provide Duke the right of access to the supplier's facilities and records for inspection and audit.

Except for some commercial grade items each shipment of items procured from a supplier must be accompanied by a certificate of conformance (or equivalent) which identifies the applicable procurement documents and item(s). The certificate and supplier documentation specifies that the item meets the procurement requirements and includes repair records and a description of any deviations. This documentary evidence must be on site (any location under the QA Program) and all procurement, inspection, and testing requirements satisfied before the item is placed in service or used.

Nuclear Generation Department personnel will review and approve this documentary evidence of item conformance with procurement requirements.

17.3.2.5 Procurement Verification

The approved procurement documents along with all quality and technical requirements are provided to the supplier by the Nuclear Generation Department. Procurement information is provided to the Procurement Quality section and the receiving location.

As required by procurement criteria, in order to assure that material and equipment are fabricated in accordance with applicable requirements, supplier review, audit and surveillance are performed by the Nuclear General Office, Procurement Quality section. The review, audit and surveillance may include witnessing of tests, observation of fabrication checkpoints, and documentation review. Evaluation of overall supplier performance is performed at intervals and to a depth consistent with the item or service's importance to safety, complexity, and the quantity and frequency of procurement.

Procedures are established which implement the surveillance program for suppliers. This assures that items and services procured for use in nuclear QA Condition 1 applications are in compliance with applicable procurement requirements/specifications.

These procedures provide for surveillance of those characteristics or processes to be witnessed, inspected or verified. Surveillance activities assure that the supplier complies with all quality requirements outlined in the procurement document(s). The surveillance report becomes a part of the Nuclear General Office, Procurement Quality section files. The surveillance representative has the authority and responsibility to stop work when the required quality standards are not met.

Upon receipt, QA Condition 1 materials, parts and components are placed in a controlled, designated area and are subjected to a receipt inspection. This inspection is intended to determine whether or not each item received conforms with applicable procurement requirements. Such inspections and the subsequent determination of conformance or nonconformance are documented by means of reports, which are retained on file and as appropriate, by tags attached to the items. Until a determination of conformance is made, a QA Condition 1 material, part or component cannot be issued and installed.

17.3.2.6 Identification and Control of Items

Control of materials, parts, and components at nuclear sites is the ultimate responsibility of the Executive Vice President, Nuclear Generation Department with responsibilities delegated to Nuclear Supply Chain.

Identification requirements for materials, parts and components important to nuclear safety are stated in specifications, drawings and purchase documents. Specific identification requirements are as follows:

a) Materials, parts, components, assemblies, and subassemblies shall be identified either on the item or records traceable to the item to show that only correct items are received, issued and installed.

b) Some components, such as pressure vessels are identifiable by nameplates as required by applicable codes, or Duke specifications. Materials, parts, and components are traceable from such identification to a specific purchase order to manufacturer's records and to quality assurance records and documentation.

c) When required by procurement documents, materials are identified by heat, batch or lot numbers which are traceable to the original material at receipt. Upon receipt, a unique tracking number is assigned to provide traceability. When several parts are assembled, a list of parts and corresponding numbers is included in the documentation.

d) When required by specifications or codes and standards, identification of material or equipment with the corresponding mill test reports, certifications and other required documentation is maintained throughout the life of the material or equipment by a unique tracking number.

e) Sufficient precautions will be taken to preclude identifying materials in a manner that will affect the function or quality of the item being identified.

Control of material, parts and components is governed by approved procedures. Specific control requirements include:

a) Nonconforming or rejected materials, parts, or components are identified to assure that they will not be inadvertently used.

b) The verification of correct identification of material, parts, and components is required prior to release for assembling, shipping and installation.

c) Upon receipt, procedures require that materials, parts or components undergo a receipt inspection to assure they are properly identified and that the supporting documentation is available as required by the procurement requirements/specifications. Items having limited shelf or service life are identified and controlled.

d) Each organization which performs an operation that results in a change in the material, part or component is required to make corresponding revisions and/or additions to the documentation record as applicable.

Following QA receipt inspection, materials, parts and components which are determined to be acceptable are assigned an identifying designation such as a unique tracking number in order to provide traceability of each item. This traceability is maintained for QA Condition 1, 2, 3, and 4 items. In the event that the identification of an item becomes lost or illegible, the item is considered nonconforming and not utilized until proper resolution of the nonconformance. When a designated item is subdivided, each subdivision is identified in accordance with the above requirements. Where physical identification of an item is impractical or insufficient, physical separation, administrative controls or other appropriate means are utilized.

17.3.2.7 Handling, Storage, and Shipping

The quality assurance program requires that QA Condition 1 materials, parts and components be handled, stored, issued and shipped in such a manner that the serviceability and quality assurance traceability of an item is not impaired. Handling, storage and shipping of an item is in accordance with any special requirements identified in documents pertaining to the item. Such requirements may include special handling tools and equipment, special protective coverings and/or special protective environments. Items are to be marked or labeled to preserve the item's integrity and indicate the need for any special controls.

Procedures identify predetermined requirements for handling, preservation, storage, cleaning, packaging, issuing and shipping and are utilized by suitably trained individuals.

Conforming QA Condition 1 materials, parts and components are stored in controlled, segregated areas designated for the storage of such items. Inspections and examinations are performed on a periodic basis to assure that recommended shelf life of chemicals, reagents, and other consumable materials is not exceeded. Hazardous items are stored in suitable environments with controls to prevent contamination of QA Condition 1 structures, systems, or components.

Nonconforming items are identified, segregated, or otherwise controlled in such a manner as to preclude their inadvertent substitution for and use as conforming materials parts and components.

17.3.2.8 Test Control

The operational quality assurance program addresses both preoperational and periodic (surveillance) testing. The program requires that such testing associated with QA Condition 1 structures, systems and components demonstrate that they will perform satisfactorily in service. Testing activities are accomplished in accordance with approved, written procedures. Testing schedules are provided and maintained in order to assure that all necessary testing is performed and properly evaluated on a timely basis.

Test controls include requirements on the review and approval of test procedures, and on the review and approval of changes to such procedures, as discussed in Section 17.3.2.14, "Document Control." Also, specific criteria are established with regard to procedure content. Examples of items which must be considered in the preparation and review of procedures include:

a) References to material necessary in the preparation and performance of the procedure, including applicable design documents.

b) Tests which are required to be completed prior to, or concurrently with, the specified testing.

c) Special test equipment required to perform the specified testing.

d) Limits and precautions associated with the testing.

e) Station, unit and/or system status or conditions necessary to perform the specified testing.

f) Criteria for evaluating the acceptability of the results of the specified testing, compatible with any applicable design specifications.

Test procedures contain the following information or require this information be documented:

a) Requirements and acceptance limits contained in applicable design and vendor documents.

b) Instructions for performing the test.

c) Test prerequisites such as calibrated instrumentation, adequate test equipment and instrumentation including their accuracy requirements, completeness of the item to be tested, suitable and controlled environmental conditions, and provisions for data collection and storage.

d) Mandatory inspection hold points.

e) Acceptance and rejection criteria.

f) Methods of documenting or recording test data and results.

g) Provisions to assure test prerequisites have been met.

Requirements are also established for verification of test completion and for determining acceptability of tests results. Test results are reviewed and accepted by the testing organization and the organization responsible for the item being tested. In the event that test results do not meet test acceptance criteria, a review of the test, test procedure and/or test results is conducted to determine the cause, required corrective action, and retest as necessary.

In addition to the above periodic testing, after maintenance to, or modification of, QA Condition 1 structures, systems and components, other post maintenance testing, post modification testing, or functional verifications are performed and documented as required to verify satisfactory performance of the affected items. Post maintenance/modification functional verifications are not subject to the requirements of periodic testing described above because they are acceptable good industrial practices that are simple and straightforward. Included in these tests are such items as diesel generators, reactor control rod systems, and leak testing of appropriate pressure isolation valves.

17.3.2.9 Measuring and Test Equipment Control

The organizations performing QA Condition 1 work activities have the responsibility to assure the required accuracy of tools, gauges, instruments, radiation measuring equipment, non-destructive testing equipment and other measuring and test devices affecting the proper functioning of QA Condition 1 structures, systems and components and that a program of control and calibration for such devices is provided. This program includes the following:

a) Devices are assigned permanent, identifying designations.

b) Devices are calibrated at prescribed intervals, and/or prior to use, against certified equipment having known, valid relationships to nationally recognized standards. The calibration interval for a device is based on the applicable manufacturer's recommendations. If experience dictates that the manufacturer's recommendations are not appropriate, the calibration interval is changed as necessary.

c) Devices that have been acceptably calibrated are affixed, where practical, with a tag, or tags, showing the date of calibration, the date the next calibration is due, an indication that the device is within calibration specifications and the identification of the individual who was responsible for performing the calibration. When attaching tags is not practical, the device is traceable by unique identification to the applicable calibration records.

d) Devices which fail to meet calibration specifications are affixed with a tag, or tags, showing the date of rejection, the reason for rejection and the identification of the individual rejecting the device. "Accepted" and "Rejected" calibration tags are sufficiently different to preclude confusion between them.

e) Items and processes determined to be acceptable based on measurements made with devices subsequently found to be out of calibration are re-evaluated.

f) Devices stored under conditions which are in accordance with, or more conservative than, the applicable manufacturer's recommendations.

g) Devices are issued under the control of responsible personnel so as to preclude unauthorized use.

h) Devices are shipped in a manner that is in accordance with, or more conservative than, the applicable manufacturer's recommendations.

i) Records are maintained on each device which identify such items as the device designation and the calibration frequency and specifications. Records are maintained to reflect current calibration status.

j) As a rule, the calibration program achieves a minimum ratio of 4-to-1 calibration standard accuracy to measuring and test equipment accuracy unless limited by the state of the art; however, when an accuracy ratio of less than 4-to-1 is utilized, an evaluation of the specific case is made and documented.

Installed instrumentation is subject to the requirements of the Technical Specification and is not subject to the tagging requirements discussed in (c) and (d) above. The Nuclear General Office, Nuclear Performance Assessment section verifies implementation of the calibration program through periodic audits.

The basis for this exception on the installed Technical Specification required equipment is the PMPT, Preventive Maintenance Periodic Testing program. This is a computerized scheduling program that automatically schedules PMPT using SWR's, Standing Work Requests. When devices have been acceptably calibrated, the clock starts for the next calibration due date. The indication that the device is within calibration specifications and identification of the individual who was responsible for performing the calibration is documented within the calibration procedure for the device. If the device fails to meet calibration specifications, it will be repaired, replaced and/or engineering involvement will be requested to further evaluate. The PMPT program along with the calibration procedures address all the requirements in Topical Report Sections 17.3.2.9 c and d listed above. Therefore, there is no need to place tags on the devices to identify the calibration status.

17.3.2.10 Inspection, Test, and Operating Status

In order to assure that equipment status is clearly evident, and to prevent inadvertent operation, the operational quality assurance program requires QA Condition 1 structures, systems and components which are in an other than operable status to be identified as such. This identification may be means of tags, labels, stamps or other suitable methods. Where appropriate, an independent verification of the correct implementation of such identification measures is performed. When tags, labels or stamps are utilized for the identification of equipment status, the issuance and removal thereof is documented in order to assure proper control of such identification measures. Also, procedures require that the operability of an item removed from operation for maintenance or testing be verified prior to returning the item to normal service.

Inspections and tests required by the written approved procedures which address work activities are infrequently, temporarily deferred. When such a deferral does occur, a discrepancy is considered to exist and documentation of the acceptable completion of the affected work activity is not performed until the discrepancy is resolved.

Proposed tests and experiments which affect station nuclear safety and are not addressed in the Updated Final Safety Analysis Report or Technical Specifications shall be prepared and approved in a manner identical to that used for station procedures as described in Section 17.3.2.14, "Document Control." These proposed tests and experiments shall be reviewed by a knowledgeable individual/organization other than the individual/organization which prepared the proposed tests and experiments.

Measures taken to identify equipment inspection and test status by Nuclear Generation Department personnel are controlled by the Nuclear Generation Department

17.3.2.11 Special Process Control

The Nuclear Station Manager is responsible for directing the organization and performance of the station's program for the control of special processes, and for assuring the necessary qualified personnel are available.

Nuclear Generation is responsible for furnishing qualified personnel, performance of and documentation of Non Destructive Examination (NDE).

The operational quality assurance program contains or references procedures for the control of special processes such as welding, heat treating, non-destructive examination, coatings, crimping, and cleaning. The program requires that approved, written procedures, qualified in accordance with applicable codes and standards, be utilized when the performance of such processes affects the proper functioning of a station's QA Condition 1 structures, systems, and components. These procedures shall provide for documented evidence of acceptable accomplishment of special processes using qualified procedures, equipment, and personnel.

Personnel performing such activities must be qualified in accordance with applicable codes and standards. Adequate documentation of personnel qualifications is required prior to performance of the applicable special process. Non-destructive examination personnel are certified to required codes and standards.

17.3.2.12 Inspection

In order to assure safe and reliable operation, a program of inspections for QA Condition 1 structures, systems and components is established at each nuclear station. Inspection procedures for those activities affecting QA Condition 1 structures, systems, and components are established by Nuclear Generation personnel.

The inspection criteria for performing inspections are established from codes, specifications, and standards applicable to the activity. Inspection requirements are included as part of the document controlling the activity, or as a separate inspection procedure that includes the inspection performance requirements as noted below:

a) Identification of characteristics and activities to be inspected

b) Acceptance and rejection criteria

c) Identification of procedures, drawings, specifications, and revisions utilized

d) Measuring and test equipment information

Current qualification and certification files are maintained for each inspector. Nondestructive examination inspectors are certified in accordance with ANSI/American Society for Non-destructive Testing (SNT-TC-1A, ANSI/SNT-CP-189) recommended practice. Written procedures require the test and certification of inspectors in other categories such as Mechanical, Electrical, and Structural as described in the appropriate quality assurance manual. For cases where inspectors will perform limited functions within a category, they are tested and certified to those limitations. These inspectors are only allowed to perform inspections specifically defined in this limited certification.

For inspections of concrete containments, personnel fulfilling the role of Responsible Engineer, shall be a Registered Professional Engineer experienced in evaluating the in-service condition of structural concrete and knowledgeable of the design and construction codes and other criteria used in the design and construction of the concrete containment structure. The Responsible Engineer may also perform inspections as discussed in this section.

Certification procedures and certifications are approved by Nuclear Generation personnel responsible for these processes. These procedures comply with the requirements of applicable codes and standards.

Examples of the activities subject to inspection include:

a) Activities specified by the ASME Code Section XI

b) Special processes

c) Modifications

d) Maintenance

e) Receipt of materials, parts and components

f) Packaging, shipping and handling of radioactive waste material

The inspection program includes examinations, measurements, inspections, tests, observations, and reviews to verify that quality is achieved. The type of inspection applied to a work activity is dependent upon the nature of the work being performed.

Knowledgeable plant personnel, utilizing approved procedures, determine if a quality control inspection or quality control monitoring is applicable and if so, which is to be utilized for the work being planned. The results of this determination is reviewed by cognizant quality assurance personnel. If, as a result of this review, a conflict in the determination is identified, resolution is accomplished prior to work execution.

The inspection methods applied to systems, structures, and components under construction or otherwise in process are equivalent to inspection methods applied during the construction phase. When continual inspection of items under construction is impossible or disadvantageous, indirect control by monitoring of processing methods, equipment, and personnel is provided. Both inspection and process monitoring are provided when control is inadequate without both.

Modifications and non-routine maintenance activities are inspected in accordance with the original design and inspection requirements, or acceptable alternatives. Mandatory inspection hold points are included in the documents addressing the activities being performed, as necessary, and work does not proceed beyond such hold points until satisfactory completion of the required inspection, disposition of any item not meeting the acceptance criteria, and any required reinspection.

Routine maintenance activities are monitored, as necessary, to ensure that ongoing processes and activities are adequately and effectively performed. In contrast to the use of mandatory hold points which ensure quality at predetermined process steps, monitoring may be used to overview a single process step or the entire work process. Monitoring reports identifying quality successes, problems, and trends are provided to line organization management to supplement line self-assessment efforts.

With regard to the inspection function, maintenance consists of those activities necessary to maintain or restore systems to within specified design limits. Routine maintenance consists of repair, rework, replacement, adjustment, cleaning or other actions necessary to maintain an item to acceptable conditions and is performed by trained and qualified personnel in accordance with documented procedures and/or instructions. Non-routine maintenance activities are intended to change specified design limits, such as modifications. Non-routine maintenance includes maintenance that may be routine, but is performed by personnel who may not have the requisite training and qualification to perform the activity without supervisory oversight, or first time evolution performed in an operating environment. Non-routine maintenance includes ASME Section XI Code activities, special processes, Civil activities, and modifications.

Inspections are documented on the work controlling document or on forms that specifically address the inspection. Inspection records contain, as a minimum, the following information:

a) Item inspected

b) Date of inspection

c) Inspector

d) Type of observation/inspection

e) Results and acceptability

f) Reference to information on action taken in connection with nonconformance

g) Test equipment used

After inspection data is collected and reviewed by the inspector, the reports are technically reviewed by personnel designated to perform that quality assurance function.

Inspection activities involving the supplier quality assurance program are evaluated and approved by the Nuclear General Office, Procurement Quality section.

17.3.2.13 Corrective Action

Station personnel are responsible for the implementation of the quality assurance program as it pertains to the performance of their activities. Specific to this responsibility is the requirement for informing the responsible supervisory personnel and/or for taking appropriate corrective action whenever any deficiency in the implementation of the requirements of the program is determined.

Procedures require that conditions adverse to quality be corrected. In the case of significant conditions adverse to quality, the procedures assure that the cause of the condition is determined and action be taken to preclude repetition. Performance and verification personnel are to:

a) Identify conditions that are adverse to quality.

b) Suggest, recommend, or provide solutions to the problems as appropriate.

c) Verify resolution of the issue.

Additionally, performance and verification personnel are to ensure that reworked, repaired, and replacement items are to be inspected and tested in accordance with the original inspection and test requirements or specified alternatives.

For significant incidents occurring during operation where a safety limit is exceeded, or which could otherwise be related to the nuclear safety of the station, the Site Vice President shall be notified and reports are generated. These reports:

a) Contain a summary description of the circumstances and information relating to the subject incident.

b) Contain an evaluation of the effects of the incident.

c) Describe corrective action taken or recommended as a result of the incident.

d) Describe, analyze and evaluate any significant QA Condition 1 implications of the incident.

Such reports shall be reviewed by the Station Manager (or for the Station Manager by: 1) the Operations Superintendent, 2) the Maintenance Superintendent, 3) or the Work Control Superintendent, as previously designated by the Station Manager) and approved by the Manager, Safety Assurance. Such

reports shall be provided to the Site Vice President, the Plant Operations Review Committee, the Nuclear Safety Review Board, and the Nuclear Regulatory Commission as required by applicable regulations. Outstanding corrective action commitments made with regard to such incidents are identified and periodically reviewed to assure that the identified corrective actions are properly completed and documented. An identified corrective action commitment is closed out upon written notification by a cognizant, responsible individual or other written documentation, of the satisfactory completion thereof. Closure of corrective action commitments which specifically involve other Department(s) require written notification by the other Department(s) of the satisfactory completion thereof.

All violations of Technical Specifications, safety limit violations, and all other reportable events shall be investigated and a report prepared which evaluates the occurrence and which provides recommendations to prevent recurrence. Such reports and other special reviews and investigations shall be reviewed by a knowledgeable individual/organization other than the individual/organization which prepared the report. Reports of safety limit violations shall be reviewed by the Station Manager and the Operations Superintendent. A knowledgeable individual/organization shall review every unplanned onsite release of radioactive material to the environs and prepare reports covering evaluation, recommendations, and disposition of the corrective action to prevent recurrence. All special reviews and investigations, and the preparation of reports thereon, shall be performed by a knowledgeable individual/organization.

Electronic processes are used to track, trend, and to facilitate in the resolution of site problems. Additionally, these electronic processes are used to measure and classify nuclear performance. Identified problems are considered for generic implications. Monthly reports are processed electronically and are also provided directly to senior management and the NSRB.

Discrepancies revealed during the performance of station operation, maintenance, inspection and testing activities must be resolved prior to verification of the completion of the activity being performed. In the event of a significant malfunction of QA Condition 1 structures, systems, and components, the cause of the failure is evaluated and appropriate corrective action taken. Items of the same type are evaluated to determine whether or not they can be expected to continue to function in an appropriate manner. This evaluation is documented in accordance with applicable procedures.

QA Condition 1 materials, parts and components which are determined to be nonconforming are identified, segregated or otherwise controlled in such a manner as to prevent installation and/or use. The determination of an item's nonconformance is documented and is retained on file by the Nuclear Generation Department and, as appropriate, by tags attached to the item. Nuclear Generation Department personnel are notified of any nonconformances identified in accordance with approved procedures.

The Nuclear Generation Department maintains a listing of the status of all nonconformance documents. These reports, when complete, identify the nonconforming material, part or component; applicable inspection requirements; and the resolution, and approval thereof, of the nonconformance. Provisions are established for identifying those personnel with the responsibility and authority for approving the resolution of nonconformances. Until a determination of conformance is made, a QA Condition 1 material, part or component cannot be issued or installed. Tags which are placed on items to identify nonconformances are removed upon resolution.

Information relating to nonconforming materials, parts and components is analyzed by Safety Assurance to determine if any discernible trends which might affect quality exist. When recurring nonconformances indicate possible supplier deficiencies, such information is considered in evaluation of supplier acceptability by the Nuclear General Office, Procurement Quality section.

Significant trends will be/are reported to appropriate levels of management.

17.3.2.14 Document Control

The Topical Report describes Duke's Quality Assurance Program for the operational phase of Duke's Nuclear Stations. This document is certified to meet NRC Quality Assurance Regulations by the Executive Vice President Nuclear Generation / Chief Nuclear Officer. The Nuclear Policy Manual establishes the policies and instructions governing activities associated with Duke's nuclear stations and identifies the various departments performing these activities. These activities include measures to control the issuance of documents such as, instructions, procedures, and drawings, and changes thereto, which prescribe all activities affecting quality. This manual is approved by the Executive Vice President, Nuclear Generation / Chief Nuclear Officer, or the Site Vice Presidents, or designee. These manuals are considered controlled documents and copies are distributed by distribution indices from the Manager, Nuclear Assessment and Issues Division or designee.

The station Facility Operating License and Technical Specifications are considered Nuclear Regulatory Commission controlled documents and are distributed within Duke Energy Corporation by appropriately authorized personnel under the cognizance of the site Regulatory Compliance Manager. Proposed changes to the station Facility Operating License or Technical Specifications shall be prepared in accordance with appropriate administrative controls by a knowledgeable individual/organization. Each proposed change shall be reviewed by a knowledgeable individual/organization other than the individual/organization that prepared the proposed change. Proposed changes to the station Facility Operating License and Technical Specifications shall be approved by the Station Manager, or for the Station Manager by a designated manager or corporate officer. Submittal cover letters for proposed changes to the station Facility Operating License and Technical Specifications shall be signed by an officer of Duke Energy Corporation.

The Safety Analysis Reports are considered controlled documents and are distributed by cover letter from the Site Officer or his designee.

The Nuclear Generation Department Nuclear Policy Manual and the manuals listed below specify the requirements for the development, review, approval, issue, control, and use of manuals and procedures to implement the requirements contained within the Topical Report.

The Nuclear Policy Manual also provides the governing procedures for the Assessment Organization, the Plant Operations Review Committee and the Nuclear Safety Review Board. This manual is approved by the Site Vice Presidents or designee, except for the Nuclear Safety Review Board procedure, which is approved by the Executive Vice President, Nuclear Generation / Chief Nuclear Officer.

The Nuclear Supply Chain Process Manual contains the policies and procedures that control nuclear procurement and supplier qualification. This manual imposes requirements on all departments involved with procurement. This manual is approved by the Executive Vice President, Nuclear Generation or designee.

With regard to specific operational activities associated with QA Condition 1 structures, systems and components, it is required that such activities be accomplished in accordance with procedures, instructions, drawings, and checklists, appropriate to the nature of the activities being performed. As necessary, such documents identify equipment necessary to perform an activity, specify conditions which must exist prior to and during performance of an activity, and include quantitative and/or qualitative acceptance criteria, compatible with any applicable design specifications, for determining that the activity addressed is satisfactorily accomplished. Also, the procedure will require independent verification by qualified personnel of the performance of specific procedural steps. Examples of documents established concerning quality related operational activities are:

a) Preoperational Test Procedures

b) Periodic Test Procedures

c) Operating Procedures

d) Emergency Procedures

e) Maintenance Procedures

f) Instrument Procedures

g) Radiation Protection Procedures

h) Alarm Responses

i) Chemistry Procedures

j) Process Control Program Implementing Procedures

k) Plant Operations Review Committee Implementing Procedures

l) Abnormal Procedures

m) Emergency Response Procedures

Procedures are reviewed for adequacy based upon: lessons learned from normal use, audits, unusual incidents (such as an accident, unexpected transient, significant operator error, or equipment malfunction), station modifications, the operating experience program, root cause analysis, or the corrective action program. The frequency of review for Abnormal Procedures, Emergency Procedures, and Emergency Response Procedures shall not exceed six years. Procedures that have not been used for six years shall be reviewed before reuse to determine if changes are necessary or desirable. Reviews of procedures can be accomplished in several ways, including (but not necessarily limited to) documented step-by-step use of the procedure (such as occurs when the procedure has a step-by-step checkoff associated with it), or detailed scrutiny of the procedure as part of a documented training program, drill, simulator exercise, or other such activity. A revision of a procedure can constitute a procedure review.

A knowledgeable individual/organization shall review changes to the Process Control Program, Offsite Dose Calculation Manual, radiological effluent controls of the UFSAR, and radwaste treatment systems. A knowledgeable individual/organization shall review the Fire Protection Program and implementing procedures. Changes to the Offsite Dose Calculation Manual shall be reviewed for acceptability by either the Radiation Protection Manager or the Station Manger.

In addition to the above, files of drawings and supplier documents applicable to the station's structures, systems and components are maintained at each nuclear station and are utilized, as appropriate, in the performance of quality related activities.

Station procedures which address activities associated with QA Condition 1 structures, systems and components are subjected to a well-defined and established preparation, review, and approval process. This process includes the requirement that procedures be prepared by a knowledgeable individual/organization. This process also includes the requirement that each procedure be reviewed for adequacy by an individual/organization other than the individual/organization which prepared the procedure. As appropriate, such procedures are also reviewed by personnel from the Nuclear General Office, by other departments within the Corporation, by the Nuclear Safety Review Board, or by vendor personnel. Individuals responsible for procedure reviews and reviews of changes to the radiological effluent controls of the UFSAR performed in accordance with this Section shall have been previously designated by the Executive Vice President Nuclear Generation Department / Chief Nuclear Officer or direct reports, or Site Vice President or direct reports to perform such reviews and have as a minimum a high school diploma or equivalent and four years of technical experience. Review of environmental radiological analysis procedures shall be performed by the Manager, Environmental Radiological

Laboratory or designee. Each such review shall include a determination of whether or not additional, cross-disciplinary, review is necessary. If deemed necessary, such review shall be performed by the appropriate designated review personnel. Reviews performed in accordance with this Section shall be documented. Approvals shall be by the head of the appropriate site organization, the head of the appropriate station organization, or the head of the appropriate site engineering organization; such as the appropriate division manager, superintendent/manager, or one of their designated direct reports. Each procedure and changes thereto, shall be reviewed and approved prior to implementation. Temporary changes to procedures may be made provided: a) the intent of the original procedure is not altered; and b) the change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator License on the affected unit; and c) the change is approved by an appropriate division manager, superintendent/manager, or one of their designated direct reports within 14 days of implementation. For procedures which implement offsite environmental, technical, and laboratory activities, the above approval may be performed by the Manager, Environmental Radiological Laboratory or designee. Maintenance, instrumentation and modification procedures are reviewed by cognizant station personnel to determine the need for inspections. Procedures developed and implemented for inspection identify the certifications, inspection methods, acceptance criteria, and provide means for documenting inspection results.

In the case of station activities of a non-recurring nature, e.g., preoperational tests, only an original copy of an approved procedure is available for use. Such copies are controlled and are replaced whenever the procedure is superseded by a new issue. For activities which are of a recurring nature, e.g., surveillance testing, current original copies of approved procedures are maintained in a controlled manner. Copies of these original copies are then utilized in the performance of work activities. When such "working copies" involve the documentation of compliance with acceptance criteria contained in the procedure, the "working copy" of the procedure utilized is compared with the applicable original copy to assure validity. Station procedures administratively control and provide means to document this comparison. Such completed procedures are retained - See Section 17.3.2.15, "Records." When recurring work activities do not involve documentation of compliance with acceptance criteria within the procedure, e.g., certain operating activities, issuance of the applicable "working copies" is controlled to assure that only current copies are available for use.

Drawings and supplier documents, as-built drawings and changes thereto, are normally received from Engineering for distribution and use. Distribution indices are established and utilized for such documents within each station in order to assure their proper distribution and use. A master file of drawings is maintained and a master index, updated regularly, is used to identify drawings, revisions, number of copies, and distribution. Design and procurement documents are maintained, controlled, and are updated, as necessary, by Engineering. As documents are received from Engineering all superseded copies shall be destroyed or clearly marked superseded.

A master copy of all controlled documents is maintained in the document control area of each station. Copies of controlled documents are distributed by station document control personnel utilizing a distribution index to assure proper distribution and use. Station line organizations may maintain the index of records for technical procedures under their organizational responsibility. These station line organizations may directly issue control copies without issuance directly from Document Control personnel. Document Control personnel will review the index of records periodically for station line organizations that maintain an index and issue control documents in this manner. Controlled documents may also be provided to station personnel by use of an electronic medium. Reviews are performed regularly and documented to assure proper functioning of the control system.

17.3.2.15 Records

Each nuclear station is required to maintain adequate identifiable and retrievable quality assurance records. Such records are managed in a controlled and systematic manner by means of a station Master File Index. Access to, and use of, this file is controlled. Some records noted below may be generated by the Nuclear General Office and are retained at that location in a manner similar to that of the stations. Records required to be retained include:

a) QA Condition 1 preoperational testing records.

b) Records of modifications to station QA Condition 1 structures, systems and components described in the Updated Final Safety Analysis Report.

c) Radiation monitoring records, including records of radiation and contamination surveys.

d) Personnel radiation exposure records.

e) Records of radioactive releases, shipments, and waste disposal.

f) Isotopic and physical inventory records of special nuclear materials.

g) Records of the qualifications, experience and training of appropriate station personnel.

h) Current calibrations for measuring and test devices.

i) Copies of approved purchasing documents for items requiring quality assurance certification.

j) Maintenance histories on QA Condition 1 instrumentation and electrical, mechanical, and civil structures, systems, and components.

k) Records of special processes affecting QA Condition 1 structures, systems and components.

l) Copies of purchase specifications.

m) Operating records and logbooks covering time interval at each power level, including: switchboard record, reactor operator's logbook, and shift supervisor logbook.

n) Periodic testing records.

o) Records of inspections.

p) Copies of approved and of completed station procedures, and changes thereto; including review and approval documentation.

q) Copies of audit reports received from the Nuclear General Office, Nuclear Performance Assessment section, and responses thereto.

r) Copies of drawings, design specifications, calculations, design analyses, and vendor documents.

s) Copies of reports of all reportable and other significant events.

t) Records of inservice inspections.

u) Records of quality control inspections.

v) Records such as vendor documentation packages and inspection reports, piping isometric drawings, welding records, etc. compiled during the design and construction of a nuclear station.

w) Records of the qualifications of quality control and other appropriate personnel.

x) Records of off-site environmental surveys.

y) Records of special reactor tests or experiments.

z) Records of environmental qualification.

aa) Records of the service life of all snubbers, including the date at which seal service life commences and associated installation and maintenance records.

ab) Records of the reviews performed for changes made to the Process Control Program, Offsite Dose Calculation Manual, and Radwaste Treatment Systems.

ac) By-product material inventory records.

ad) Radioactive liquid effluent, gaseous effluent, and gaseous process monitoring instrumentation alarm/trip setpoints.

ae) Records of sealed source and fission detector leak tests and results.

af) Records of annual physical inventory of all sealed source material of record.

ag) Records of new and irradiated fuel inventory, fuel transfers, and assembly burnup histories.

ah) Records of review performed for changes made to procedures; or modifications to station structures, systems, and components; or reviews of tests and experiments pursuant to 10CFR50.59.

ai) Records of secondary water sampling and water quality.

aj) Records of analyses required by the Radiological Environmental Monitoring Program that would permit evaluation of the accuracy of the analysis at a later date. This should include procedures effective at specified times and QA records showing that these procedures were followed.

ak) Records of component cyclic or transient limits established for the reactor coolant system, reactor vessel, and secondary coolant system.

al) Records of reviews performed for changes made to Radiological Effluent Controls.

am) Records of reviews performed on the Fire Protection Program and implementing procedures.

an) Calibration standard records and Measuring and Test Equipment (M & TE) calibration records.

Test, inspection, and NDE records for QA Condition 1 structures, systems, and components maintained by the station that contain the following:

a) A description of the activity performed.

b) The date and results of the activity.

c) Information relating to discrepancies identified with regard to the activity.

d) An identification of the data recorder(s) or inspector(s) involved in the activity.

e) Evidence of the completion, and verification thereof, of the activity.

f) An identification of the acceptability of the results of the activity.

Records of activities within the purview of the Nuclear Safety Review Board are maintained. These records include:

a) Nuclear Safety Review Board meeting minutes.

b) Audit reports for audits conducted under the cognizance of the Nuclear Safety Review Board.

Records of activities within the purview of the Safety Review Groups are maintained. These records include:

a) Records of in-plant reviews performed on station activities.

b) Records of special reviews and investigations.

c) Copies of special reports.

Records of activities within the purview of the Plant Operations Committees are maintained. These records document the meetings of the Plant Operations Review Committees. These records include:

a) Identification of the chairperson for each meeting.

b) A listing of the Plant Operations Review Committee members present at each meeting.

c) A listing of others present at each meeting.

d) A summary of the items/issue(s) discussed during each meeting.

e) The decisions/approvals reached by the Plant Operations Review Committee during each meeting.

Records of activities within the purview of the Nuclear General Office are maintained. These records include:

a) Supplier audit reports and surveillances.

b) Audit reports of Duke Energy Corporation activities.

c) Audit and Supplier personnel qualification records.

d) NDE inspection personnel certification records.

e) Laboratory quality control records

f) Environmental records

Records of activities within the purview of the Information Management and Information Technology Departments are maintained by these departments in a manner similar to that described above for station quality assurance records. These records include:

a) Software requirements.

b) Software test plans.

c) Software test results.

d) Program/Module specifications and source codes.

The retention times for the various quality assurance records are in accordance with corporate retention policies. The development of these retention policies includes applicable requirements, including those of the Code of Federal Regulations, a station's Technical Specifications, established national codes and standards, and regulatory guidance as listed in Table 17-1. To the maximum extent practicable, records are stored such that they are protected from possible destruction by causes such as fire, flooding, theft, insects and rodents and from possible deterioration due to a combination of extreme variations in temperature and humidity conditions.

Record storage areas shall be evaluated by a qualified Fire Protection Engineer to assure the records are adequately protected from damage. The evaluation shall include the following considerations as a minimum:

a) Structural collapse.

b) Unprotected steel (suspended floor slab or roof).

c) Fire frequency of similar occupancies.

d) Quantities of combustible materials.

e) Ceiling height/Room configuration which would contribute to heat dissipation.

f) Fire detection.

g) Fixed fire suppression systems.

h) On-site fire fighting organizations including available equipment.

This evaluation shall be documented for each record storage area (includes satellite file locations).

17.3.3 SELF ASSESSMENT

17.3.3.1 Methodology

The Self-Assessment process encompasses internal and corporate audits, independent review committee activities, in-plant reviews, and other independent assessments. This process is to confirm to management that activities affecting quality comply with the quality assurance program and that the quality assurance program has been implemented effectively. These functions are directed by the Manager, Nuclear Assessment & Issues Division and the Managers of Safety Assurance. The assessment activities are performed in accordance with instructions and procedures by organizations independent of the areas being assessed. Organizations performing self-assessment activities are technically and performance oriented, with the primary focus on the quality of the end product and a secondary focus on procedures and processes.

17.3.3.2 Assessment

17.3.3.2.1 Nuclear Safety Review Board

The Executive Vice President, Nuclear Generation, appoints a Nuclear Safety Review Board (NSRB) to serve as a nuclear safety review and audit backup to the normal operating organization.

The NSRB shall function to ensure independent review and audit of designated activities in the areas of: nuclear power plant operations, nuclear engineering, chemistry and radiochemistry, metallurgy, instrumentation and control, radiological safety, mechanical and electrical engineering, and administrative control and quality assurance practices.

The Director, members and alternate members of the NSRB are appointed in writing by the Executive Vice President, Nuclear Generation and shall have an academic degree in an engineering or physical science field; and in addition, shall have a minimum of 5 years technical experience, of which a minimum of 3 years shall be in one or more of the above areas. In special cases, candidates for appointment without an academic degree in engineering or physical science may be qualified with a minimum of ten years experience in one of the above areas. The NSRB shall be composed of at least five

members including the Director, which constitutes a quorum. Alternate Director/Members may replace Regular Members as necessary. Members of the NSRB may be from the Nuclear Generation Department, from other departments within the Corporation, or from external to the Corporation. A maximum of one member of the NSRB may be from the nuclear site staff for which a review is being conducted. Consultants shall be utilized as determined by the NSRB Director to provide expert advice to the NSRB. Staff assistance may be provided to the NSRB in order to promote the proper, timely, and expeditious performance of its functions.

The NSRB shall meet at least twice per calendar year. The NSRB shall ensure independent reviews of and provide oversight for the following items:

a) The evaluations for: (1) changes to procedures, equipment, or systems, and (2) tests or experiments completed under the provision of 10CFR50.59 to verify that such actions did not require a license amendment pursuant to 10CFR50.90;

b) Proposed changes to procedures, equipment or systems which when evaluated under the provisions of 10CFR50.59 require a license amendment pursuant to 10CFR50.90;

c) Proposed tests or experiments which involve a license amendment pursuant to 10CFR50.90 as defined in 10CFR50.59;

d) Proposed changes to the stations' Facility Operating Licenses, including Technical Specifications prior to implementation except in those cases where the change is identified to a previously proposed change;

e) Review reports that describe violations of Codes, regulations, orders, Technical Specifications, license requirements, or of internal procedures or instructions having nuclear safety significance;

f) Review reports that describe significant operating abnormalities or deviations from normal and expected performance of unit equipment that affect nuclear safety;

g) Review reports that describe reportable events;

h) Review reports that describe all recognized indications of an unanticipated deficiency in some aspect of design or operation of structures, systems or components that could affect nuclear safety; and

i) Review reports that describe Quality Assurance Program audits relating to station operations and actions taken in response to these audits.

Reviews may be conducted by an organizational unit, subgroup, or member of the NSRB. In either case the review body will collectively have requisite knowledge, experience, and competence to perform reviews in the above areas. Organizations/individuals/groups conducting these reviews will functionally report to the director of the NSRB.

The NSRB shall report to and advise the Executive Vice President, Nuclear Generation on those areas of responsibility specified in Items (a) through (i) above.

Minutes of each NSRB meeting where a quorum is required to be present, shall be prepared, approved, and forwarded to the Executive Vice President, Nuclear Generation and to the Site Vice Presidents, within 30 days following each meeting.

17.3.3.2.2 Plant Operations Review Committee

The Site Vice President appoints a Plant Operations Review Committee (PORC) to review selected nuclear safety related issues. The PORC is composed of specified senior members of the site

management team most responsible for the safe and reliable operation of the station. The PORC also reviews the effectiveness of corrective actions taken for specified reportable events.

17.3.3.2.3 Internal Audits

Duke's Quality Assurance Program requires a comprehensive system of planned and periodic internal audits for all phases of station operations and supporting activities.

All organizational units conducting quality assurance activities are evaluated with a system of audits. These audits are performed to determine the effective implementation of all applicable criteria of 10CFR 50, Appendix B. Periodic audits of activities or records of processes (e.g., welding, maintenance, development of design, record management, or system testing), to verify compliance and effectiveness of the implementation of the Quality Assurance Program are performed. Internal audits are initiated under the direction of the Manager, Nuclear Performance Assessment. The Manager, Nuclear Assessment and Issues Division may initiate special audits or expand upon the scope of an existing audit. The scope of each audit is determined by the responsible Lead Auditor, under the direction of the Manager, Nuclear Performance Assessment. Additionally, the scope of audits performed under the cognizance of the Nuclear Safety Review Board (NSRB) is reviewed by the NSRB staff. The lead auditor directs the audit team in developing checklists, instructions, plans and in the performance of the audit. The audit shall be conducted in accordance with checklists; the scope may be expanded upon by the audit team during the audit, if needed. One or more persons comprise an audit team, one of whom shall be qualified lead auditor.

Audits of site activities shall be performed under the cognizance of the NSRB. These audits shall encompass:

a) The conformance of each nuclear unit's operation to provisions contained within the Technical Specifications and applicable Facility Operating License conditions;

b) The performance, training, and qualifications of the entire station staff;

c) The results of actions taken to correct deficiencies occurring in unit equipment, structures, systems, or method of operation that affect nuclear safety;

d) The performance of activities required by the Operational Quality Assurance Program to meet the criteria of 10CFR50, Appendix B;

e) The Emergency Plan and implementing procedures;

f) The Security Plan and implementing procedures;

g) The Facility Fire Protection programmatic controls including the implementing procedures;

h) The fire protection equipment and program implementation utilizing either a qualified offsite license fire protection engineer or an outside independent fire protection consultant. An outside independent fire protection consultant shall be used at least every third year;

i) The Radiological Environmental Monitoring Program and the results thereof;

j) The Offsite Dose Calculation Manual and implementing procedures;

k) The Process Control Program and implementing procedures for Solidification of radioactive wastes;

l) The performance of effluent and environmental monitoring activities;

m) Any other area of site operation considered appropriate by the NSRB or the Executive Vice President, Nuclear Generation;

n) The acceptability of a representative sample of station procedures, including the effectiveness of the procedure review and revision program.

Audits of selected aspects of operational phase activities are performed with a frequency commensurate with safety significance and in such a manner as to assure that an audit of all QA Condition 1 functions is completed within a period of two (2) years. The audit system is reviewed periodically and revised as necessary to assure coverage commensurate with current and planned activities.

The audit team concludes with a post-audit conference between the audit team and responsible management. The conference includes a brief discussion of audit results, including any deficiencies and recommendations. The audit results are documented in a report.

Within thirty (30) days of the post-audit conference, a report is issued to the responsible management with copies sent to the Vice President of the audited Site or department, the Executive Vice President and other management as appropriate.

Within thirty days after receipt of the audit report, responsible management replies in writing to the Manager, Nuclear Performance Assessment, describing corrective action and an implementation schedule. The established electronic corrective action process may be used to convey this information. When necessary, after receipt of the management reply, a re-evaluation is made to verify implementation of corrective action. This re-evaluation is documented. The audit is closed with a letter to audit management. All pertinent correspondence, checklists, and reports related to the audit are filed.

Audit data are analyzed and the resulting reports on the effectiveness of the QA program, including any quality problems, are reported to management for review and assessment through periodic performance trend summaries. This data is also used to modify the audit schedule as necessary to assess potential weaknesses.

17.3.3.2.4 Safety Assurance

Safety Assurance, through the Safety Review Group, Regulatory Compliance, Security, Environmental Compliance, Health and Safety, and Emergency Planning, monitors the day to day and overall performance of each nuclear station.

The Safety Review Group (SRG) functions to provide the review and assessment of plant design and operating experience for potential opportunities to improve plant safety; evaluation of plant operations and maintenance activities; and, to advise management on the overall quality and safety of plant operations. The SRG makes recommendations for procedure revisions, equipment modifications, or other means of improving plant safety to appropriate station/corporate management. The SRG shall report to and advise the Manager of Safety Assurance. Investigations and reviews performed by the SRG are documented in reports that are submitted to management, the NRC, and other agencies as appropriate.

The SRG shall be composed of at least five dedicated individuals. Each individual shall have either:

a) A bachelor's degree in engineering or related science and at least 2 years professional level experience in his/her field, at least 1 year of which experience shall be in the nuclear field; or

b) At least 15 years of professional level experience in his/her field, at least 10 years of which experience shall be in the nuclear field and shall hold or have held a Senior Reactor Operator License; or

c) At least 5 years of nuclear experience and hold or have held a Senior Reactor Operator License; or

d) At least 8 years of professional level experience in his/her field, at least 5 years of which experience shall be in the nuclear field.

A minimum of two of these individuals shall have the qualifications specified in Item a provided that at least one individual has the qualifications of Item b. Otherwise, a minimum of three of these individuals shall have the qualifications specified in Item a.

The SRG shall be responsible for:

a) Review of selected plant operating characteristics and other appropriate sources of plant design and operating experience information for awareness and incorporation into the performance of other duties.

b) Review of the effectiveness of corrective actions taken as a result of the evaluation of selected plant operating characteristics and other appropriate sources of plant design and operating experience information.

c) Review of selected programs, procedures, and plant activities, including maintenance, modification, operational problems, and operational analysis.

d) Surveillance of selected plant operations and maintenance activities to provide independent verification (not a sign-off function) that they are performed correctly and that human errors are reduced to as low as practicable.

e) Investigation of selected unusual events and other occurrences as assigned by Station Management or the Manager of Safety Assurance.

f) Preparation of summary reports of activities performed by the SRG. These reports are provided to the Manager of Safety Assurance each calendar month.

The Regulatory Compliance Group is responsible for the preparation, issue, and maintenance of all site licensing documents; providing site personnel with interpretations on the licensing documents, the preparation and submittal of violation responses, and coordination of NRC inspection activities on site.

The Environmental Compliance Group is responsible for the overall coordination of the site Environmental Management Programs to assure compliance with applicable Federal, State, and Local requirements.

The Emergency Planning Group is responsible for the overall coordination of the Site Emergency Plan to assure compliance with applicable FEMA and NRC requirements.

Site Security is responsible for the overall coordination of the Nuclear Security and Contingency Plan to assure compliance with applicable NRC requirements.

17.3.3.2.5 Corporate Audit

Corporate audits are initiated and directed by the Executive Vice President, Nuclear Generation. This audit is performed within a period of two years on the Duke Quality Assurance Program.

The Executive Vice President, Nuclear Generation selects the audit team and appoints a team leader. The audit team consists of at least three qualified individuals, none of which is from the area audited.

The scope of the audit is determined by the Executive Vice President, Nuclear Generation and the audit team. Each audit includes a review of internal audits performed by the Nuclear General Office, Nuclear Performance section. The audit is performed with preapproved checklists, instructions, or plans.

The audit team conducts a post-audit conference with the responsible management of the area audited to discuss the audit results, including deficiencies. The audit team prepares checklists and the audit report. The report is sent to the President, Duke Power and the Executive Vice President, Nuclear Generation.

The Executive Vice President, Nuclear Generation determines the need for corrective action and re-evaluation. Necessary corrective action and re-evaluation are performed as required.

All pertinent correspondence, checklists, and reports related to the audit are filed.

17.3.3.2.6 Suppliers

Suppliers quality assurance programs are evaluated and monitored by the Nuclear General Office, Nuclear Supply Chain, Procurement Quality section to assure that quality assurance requirements are met. Supplier Quality Assurance Programs require a system of periodic and planned supplier and subsupplier audits conducted by persons not directly involved in the activity being audited.

Duke assures that supplier quality assurance programs provide for surveillance, evaluation and approval of subsupplier supplying items and services. This assurance is accomplished by reviewing supplier audits of subsupplier as part of the pre-bid audit, by making supplier control of subsupplier work a criterion for supplier approval or disapproval, and by making supplier surveillance of subsupplier a requirement of the purchase requisition.

The Nuclear General Office, Nuclear Supply Chain, Procurement Quality section maintains surveillance and performs audits on suppliers' quality assurance programs including the activities of their suppliers and subsuppliers, to assure that operations are in compliance with specified quality assurance requirements. In the case of an audit of a supplier, any deficiencies noted by the auditor are clearly outlined in writing and given to the suppliers quality assurance organization, which takes appropriate steps to resolve the deficiencies.

A reaudit is performed, if appropriate, to verify the implementation of the corrective action.