

SCOPING DOCUMENT FOR THE
IMPLEMENTATION OF THE MAINTENANCE RULE
FOR MONITORING THE EFFECTIVENESS
OF MAINTENANCE ON STRUCTURES

ST. LUCIE UNITS 1 AND 2

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Introduction

The implementation of the Maintenance Rule requires monitoring of the effectiveness of maintenance activities on structures as well as on systems and components. Structures are different from systems and components in that they perform their functions in a passive manner. They tend to have long service lives and age relatively slowly. Performance monitoring typically used for systems and components which rely on active indication such as flow or change of state are generally not applicable or sufficient for structures. Condition monitoring is generally more effective means of monitoring the performance of structures.

A structure which is damaged or degraded to the point to where they can no longer perform their structural functions should be classified as a functional failure in accordance with the Maintenance Rule. Because of the safety factors included in the design of structures at St. Lucie Nuclear Power Plant, Units 1 and 2, (PSL), it would take extreme environmental conditions or years of neglect for a functional failure of a structure to occur.

Several monitoring and assessment programs are already in place at PSL which collectively address potential and actual degradation. The existing monitoring programs will be incorporated into a systematic structural monitoring program, which will consist of procedures that describe the importance of these existing programs to the assurance of structural performance, and establishes responsibilities and requirements for monitoring, reviewing, and evaluating the performance of structures at PSL.

Purpose

The purpose of this document is to identify the bases and scope for the structures included in the structural monitoring program at St. Lucie Nuclear Power Plant, Units 1 and 2, (PSL), as required under the 10 CFR 50.65 - Maintenance Rule.

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Scope/Bases for Determination

The scope of structures that are part of the PSL structural monitoring program shall include all safety related structures and in addition any non-safety related structures that are:

1. Relied upon to mitigate the accidents or transients
2. Are used in Emergency Operating Procedures (EOP's)
3. Whose failure could prevent safety related SSC's from fulfilling their intended function.
4. Whose failure could cause a scram or actuation of a safety related system.
5. That are relied upon for :
 - a) Fire Protection(10 CFR 50.48)
 - b) Environmental Qualification (10 CFR 50.49)
 - c) Pressurized Thermal Shock (10 CFR 50.61)
 - d) Anticipated transients without scram (10 CFR 50.62)
6. Additionally, the methodology in this program may be applied, in a non-regulatory application to structures outside of the scope of the rule due to a favorable, cost-benefit analysis that justifies inspections to ensure continued performance of the structure, to increase availability of the plant, or minimize repair costs.

Included within the scope of structures, besides the structural supporting elements such as walls, floors, roofs, and related structural members are the following items which are located within or on top of structures that are part of the Maintenance Rule:

1. The structural portion of cranes (i.e. bridge, rails, anchorage, etc).
2. Platforms located within safety related structures.
3. Missile/Radiation shields.
4. Embedded structural members such as plates angles, and channels.
5. Steel cavity liners such as fuel pool and reactor cavity.

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Structure Identification

All structures at PSL were reviewed for applicability to the scope identified above and categorized based on their required functions.

1. Applicability to scope

Determination for application of scope was based on following considerations and expert panel discussion.

1. UFSAR requirements and classifications
2. Technical Specifications requirements
3. EOP requirements
4. Key structural components of the structure
5. Probability Risk/Safety Analysis requirements
6. Commercial Considerations

2. Function

The structures included in the PSL Structural Monitoring Program can be divided into five groups based on their primary functions.

- | | |
|---------|---|
| Group 1 | Structures that resist and/or retain pressures due to gaseous radioactive release. (Control the release of radioactivity) |
| Group 2 | Structure that provide support and protection for safety related equipment. |
| Group 3 | Structures that provide for the ability to maintain the environment required for safe and reliable operation, such as serving as radiation shields or missile shields |
| Group 4 | Structures that retain fluids. |
| Group 5 | Miscellaneous Structures (II/I or commercial considerations) |

Note: Reference 5, gives additional discussion and description of the basis for the five functional groups. Also discussed is experience data from other Nuclear plants associated with each group.

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Structure Identification (continued)

3. Structures Included in PSL Monitoring Program

The structures which are part of the PSL monitoring program and their primary function as identified above are listed below:

Reactor Building

Shield building (Group 3)

Containment Vessel (Group 1)

Interior Structure (Group 2)

Reactor Auxiliary Building (Group 2)

Fuel Handling Building (Group 2)

Steam Trestle (Group 2)

Diesel Generator Building (Group 2)

Intake Structure (Group 2)

Component Cooling Water Heat Exchanger and Pump Area

including pipe trenches (Unit 1) (Group 2)

Component Cooling Area Structure, including pipe trenches (Unit 2) (Group 2)

Ultimate Heat Sink Dam (Group 4)

Refueling Water Tank & Foundation (Group 4)

Condensate Storage Tank (Group 4)

Condensate Storage Tank Shielding (Group 3)

Diesel Oil Storage Tank (Group 4)

Diesel Oil Storage Tank Pumphouses (Group 3)

Turbine Building (Group 5)

Flood Protection Stop Logs (South side of Unit 2 RAB and southern most door on east wall) (Group 5)

Main Transformer Barrier Walls & Foundations (Group 5)

Start-Up Transformers Barrier Walls & Foundations (Group 5)

Auxiliary Transformers Foundations (Group 5)

Cooling Canals (Group 5)

Intake Head Wall (Group 5)

Intake Pipe Line (Group 5)

Intake Velocity Cap (Group 5)

Seal Well Structure (Group 5)

Discharge Head Wall (Group 5)

Discharge Piping (Group 5)

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Risk Significance

Risk significance for the structures identified as part of this program were established based on review of PSL Probability Risk/Safety Analysis, and critical safety functions system performance review. Additionally Group 1 structures were considered to be the most risk significant, based on their function to contain pressures essentially by serving as a leak tight barrier under postulated accident conditions and extreme environmental loads. Based on this review the following structures were identified as being risk significant.

1. Reactor Building - Shield Building/Containment Vessel/Interior Structure

The Reactor Building represents the third and final barrier between the fission products in the fuel and the environment. This is accomplished in part by having a negative differential pressure between the containment vessel and the shield building annulus. The Reactor Building is safety related structure which is relied upon to remain functional during and following design basis events to ensure the capability to mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR part 100 guidelines. This structure is risk significant per the PSA.

- 2. Refueling Water Tank
- 3. Condensate Storage Tank
- 4. Diesel Oil Storage Tank

All of the tanks included in this program were modeled in the PSA and are risk significant.

Performance Criteria

1. Specific Criteria

A. Reactor Building

- 1. Surveillance and testing criteria as identified in Technical Specification Surveillance Requirements. (Reference sections 4.6.1.6, 4.6.4.2.b.2, 4.6.6.2, 4.6.6.3) Although an indication of structural degradation, leakrate testing/surveillance and performance is monitored and tracked within the scope of Containment Penetrations, system 68.
- 2. No Maintenance Preventable Functional Failures

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- B. Refueling Water Tank
Condensate Storage Tank
Diesel Oil Storage Tank
 - 1. No Maintenance Preventable Functional Failures.
 - 2. Tank shall be surveyed for signs of degradation as part of the Plant Level Performance Criteria.
- 2. Plant Level Performance Criteria for ALL Structures in Program
 - A. No Maintenance Preventable Functional Failures.
 - B. All structures will perform their required functions throughout their service lives without impairment by degradation effects. Criteria for identification of degradation effects for baseline and periodic surveys are contained in ADM-17.08 and for general monitoring are contained in SCE-03.
 - C. No structure shall fail in such a way which would cause a reactor scram or excessive unplanned unit availability.

Initial Assessment of Structures Performance

1. Review of Historical Plant Data

A review of historical plant data from July 1, 1993, for approximately a three year period prior to the implementation date for the rule, has been performed to determine whether or not the subject structures have had acceptable performance based on the above performance criteria. Historical plant data that was reviewed included but was not limited to Condition Reports (CR), Plant Change Modifications (PCM), Non-Conformance Reports (NCR), St. Lucie Action Requests (STAR), and Plant Work Orders (PWO). Based on this review, attachment 1 to this document describes specific documents used for assessing the condition of the structures in more detail.

2. Baseline Survey of the Condition of the Plant

An initial walkdown shall be performed to determine the condition of the plant structures. This walkdown shall include:

- ▶ description and location of any identified degradation
- ▶ photos, sketches, to identify the as-found condition of the degradation.
- ▶ photos, sketches of newly repaired areas to be used to gauge effectiveness of the repair methods over time.

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3. Periodic Surveys of the Condition of the Plant

Based on the results of the initial baseline survey of the condition of the plant, periodic condition surveys of the plant will be conducted to update the baseline survey, and to identify any trends in the condition of the structures. The periodic condition surveys shall be performed at intervals not to exceed five years.

NUREG and NEI (references 4 and 3) guidelines recommend that the periodic surveys be conducted within a range of every five to ten years. A maximum five year interval, which is on the low end of the range, was chosen for PSL primarily due to the salt environment that exists around the plant. The interval may be shortened if it is deemed necessary, based on information such as the structural condition assessments, on-going general monitoring activities, unusual events, or industrywide operating experience.

4. Review of Industry Operating Experience

Monitoring of plant and industry experience provides the principal discovery means for unknown and theorized causes of structural degradations. The materials used for construction at PSL are common to nuclear plants and to many non-nuclear power plants and have long operating histories. Monitoring plant and industry experience provides timely information related to potential degradations that can give reasonable assurances that similar degradations could be identified before they severely affect the functions of structures at PSL.

Industry information is distributed via the Institute of Nuclear Power Operation's Significant Event Evaluation Information Network program. Examples of information that is contained in the program are:

- Part 21 Notices
- NRC Bulletins
- NRC Information Notices
- NRC Generic Letters
- Vendor Information Letters
- Operating Experience Information
- Significant Event Reports
- Operations and Maintenance Reminders
- Significant Operating Experience Reports

A review of this program has been conducted, the specific results of this review is contained in attachment 1. Based on this review no messages were considered applicable or identified unexpected degradation effects for structures at PSL.

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Existing Plant Programs Used for Ongoing Condition Monitoring

Existing plant programs are often the most direct and systematic method of detecting and preventing structure degradation. They already exist to meet regulatory requirements or recommendations, warranty requirements, or for economic considerations.

A review of existing plant programs was performed to determine which programs may be useful for ongoing condition monitoring of structures. A list of the identified programs is contained in attachment 3. These existing programs have been divided into the following groups -

- General Monitoring Requirements
- Power Block Structure Monitoring
- Land Utilization Structure Specific Inspections & Tests
- System specific inspections and surveillances
- Structural Walkdowns for plant modifications

Based on this review most of the existing programs are adequate, as they currently exist, to identify and detect potential areas of structure degradation. These programs are used to supplement the baseline and periodic condition surveys. The following procedures shall be revised to identify and clarify the responsibilities for the general monitoring requirements for surveying the condition of structures as part of plant personnel's daily work activities.

- AP 000750 Duties and Responsibilities of the System Engineer
- ADM-08.02 Conduct of Maintenance
- 0-01-99-02 Watchstation General Inspection Instructions

In order to provide guidance to plant personnel performing condition surveys of structures, a new guideline shall be issued (Reference Guideline SCE-03), which shall provide general criteria to assist in identifying potential areas of degradation.

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Results

Assessment of degradation:

Based on review of the historical and industry wide data all structures that are part of the program are considered acceptable.

The historical plant data did not identify conditions which appear to be repetitive in nature or indicate any adverse trends in the performance of the structures.

Condition Survey Results.

The baseline condition survey shall be scheduled and the results documented via the Plant Management Action Item Corrective Action Tracking Program, Procedure No. AP 0006129.

Information relative to the changes in condition or the continued degradation since previous examination of the areas will be addressed in the quarterly assessments based on monitoring corrective actions and periodic updates of the baseline survey.

Conclusions on the ability of the structures to perform their intended function:

Based on the acceptable condition of the structures, and application of the specific and plant level performance criteria all are capable of performing their intended functions as identified in this scoping document.

Recommendations

Recommendations for additional investigation, corrective actions, or future examination where appropriate.

1. Based on the environmental conditions associated with the Intake Structure, the on going repair that was partially implemented during the current refueling outage (April 1996) as part of the disposition for STAR 1-950606 should be monitored at least once every 12 months for accelerated signs of degradation. This item will be incorporated in to our schedule for baseline and periodic walkdowns, which shall be made part of a documented and retrievable plant process such as the PMAI Corrective Action Tracking Program.

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References

1. 10 CFR 50.65, The Maintenance Rule
2. NUREG 1526 "Lessons Learned From Early Implementation of the Maintenance Rule at Nine Nuclear Power Plants" June 1995.
3. NEI 96-03, "Guideline for Monitoring the Condition of Structures at Nuclear Power Plants", Rev. C, March 14, 1996.
4. NUREG 1522 "Assessment of Inservice Conditions of Safety-Related Nuclear Plant Structures"
5. Ashar, H., Jeng, D., "Regulatory Perspective on Performance of Structures-Current Issues Related to Nuclear Power Plant Structures, Equipment and Piping", Orlando, FL., December 1994.
6. ADM-17.08, Implementation of 10 CFR 50.65, The Maintenance Rule

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Review of Plant Historical Data (July 1993 up to July 1996)

Condition Reports(CR), Action Requests(STAR), and Non-Conformance Reports(NCR)

Reactor Containment Building

CR 96-512 (April 12, 1996)

The shaft seal for the outer door's handwheel on the outer containment Personnel Hatch failed during the semi-annual strong back test. Due to LCO time constraints, a temporary blind flange was installed on the door operator shaft opening as allowed by Engineering Safety Evaluation. The shaft seal assembly was reinstalled at a later date to restore the field condition in accordance with design documentation.

The root cause evaluation associated with this CR identified a number of PWO's identified with the exterior door's exterior handwheel for this personnel airlock. This review suggests a specific localized problem associated with this handwheel. Specifically the evaluation suggested that the problems associated with this handwheel is due to local drive shaft misalignment. As part of the CR's final disposition on 4/20/96 Engineering recommended that the handwheel assembly be disassembled and the drive components be inspected for misalignment.

STAR's 950587 (May 31, 1995) and 950588 (May 31, 1995)

These STAR's were issued to document the response to NRC Generic Letter 92-01, Revision 1, Supplement 1: Reactor Vessel Structural Integrity. The response to the GL consisted of Engineering Evaluation JPN-PSL-SESP-95-097, and Letter L-95-232.

Reactor Auxiliary Building

STAR 1-94110396 (November 8, 1994)

This STAR identified a spalled area at the top of a masonry block wall. This wall was determined to be a non load bearing, non-fire barrier wall. Based on field walkdown the spalled area was not due to degradation, but was probably caused when the area was removed to allow installation of a support, which is located directly above the area. Due to the location, extent of the non-conforming area the function or structural integrity of the wall was not affected and repair of the subject area was not required.

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STAR 960377 (March 4, 1996)

This STAR identified corrosion at Non-safety related RAB air intake hoods and embedded angles around the opening in the RAB concrete wall. Some minor concrete repair was performed around the embedded angles, the existing structure repaired and all surfaces metalized in accordance with plant procedures.

STAR's 2-950522 (May 16, 1995), 2-950407 (April 17, 1995), 2-950883 (August 15, 1995)

These STAR's identified voids in masonry block walls that are fire walls. Probe holes were drilled to identify extent of the voids and repairs were made to fill the voids.

NCR-4672-3038C (June 28, 1994)

This NCR addresses degraded fire doors. The NCR required the repair/replacement of these doors.

Reactor Auxiliary Building/Control Building

NCR-2-574 (March 9, 1994)

This NCR identified a door that was severely corroded. The NCR provided repair/replacement instructions for the subject door.

Fuel Handling Building

STAR 1-960432 (March 21, 1996)

Embedded steel angles around an opening in the concrete wall were identified as being corroded and causing the concrete to spall adjacent to the toe of the angles. The corrosion from the base metal of the embedded plates was removed, and the degraded concrete was removed. The angles were coated and the joint between the angle and the concrete was caulked.

NCR-4669-3040C (June 28, 1994)

This NCR identifies a corroded exterior door. Repair instruction were provided with the NCR disposition.

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Intake Structure

STAR's 1-94110333 (November 3, 1994) and 1-94110447 (November 17, 1994)

These STAR's document that connections for ladders attached to embed plates had significant corrosion and had separated from the embed plate at two locations. Severely degraded embeds were removed including the nelson studs and stainless steel plates and expansion anchors were used to support the ladders. Concrete and existing supports were repaired and coated in accordance with plant procedures.

STAR 1-950606 (June 5, 1995)

This STAR documents cracks on the underside of the concrete slab of the Intake bays 1A1, 1A2, 1B1, and 1B2. The STAR gave instructions for the removal of the degraded concrete and materials for repair of the structure.

STAR 2-951911 (November 20, 1995)

This STAR documents a bolt for a missile shield that was broken during maintenance activities. PCM 205-295 was issued for the repair of the broken bolt.

Component Cooling Water Area/Structure

CR 96-1068 (May 24, 1996)

Building support steel which was used to support a valve actuator was significantly degraded due to corrosion. A root cause evaluation determined that the degradation was due to a lack of coating directly beneath the bearing plate for the actuator. The member was repaired and coated.

STAR 1-950421 (April 21, 1995)

This STAR documents the response to NRC IR 95-002, that identified several embedded plates in the Unit 1 pit that were covered with water. The inspector expressed concern that water would get beneath the plate and cause undetected damage to the Nelson Stud anchors for the embed plate. The evaluation concluded that adequate and apparent warning signs, such as plate bulging and concrete damage would provide evidence of nelson stud corrosive damage.

STAR 1-950452 (April 27, 1995)

This STAR documents an area of spalled concrete and deteriorated rebar at the base

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of the 2A and 2B heat exchanger pedestal wall. The degradation is at the location of a 4" weep hole. The weep holes appeared to have been created by being chipped out after the wall was poured. No sleeve was installed. The STAR provides direction for removal and repair of the degraded concrete and rebar and installation of PVC pipe sleeve to protect the reinforcing steel.

Steam Trestle

NCR N/A-3005C (May 10, 1993)

This NCR documented a concrete trench cover/missile shield that has a broken corner and provided repair/replacement instructions.

Turbine Generator Building

STAR 1-950338 (March 23, 1995)

The north-east pier of the 1A1 water box was found to have cracking and spalled surfaces. The root cause for the degraded area was attributed to improper construction techniques associated with the installation of the grouting for the bearing plate. The STAR provided direction for the removal of the degraded concrete and repair for the pier.

STAR 1-94110334 (November 3, 1994)

An area of spalled concrete was documented on the edge of a cantilevered section of the elev. 19.5 floor slab. This STAR provided for the removal and repair of the degraded concrete.

STAR 2-94120534 (December 6, 1994)

The expansion joints located in the floor of the west condensor pit have deteriorated, which resulted in corroded rebar and spalled concrete. The STAR provided direction for the removal and repair of the degraded concrete and repair and details for the repair of the expansion joints.

NCR-N/A-3001C (April 28, 1993)

This NCR identified cracks, exposed rebar and missing anchor bolts associated with the Unit 1, 1A Heater drain cooler pedestal, El 19.5. This item was previously documented via NCR 1-703 and repair instructions have been issued per PC/M 561-191.

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NCR-6466-3017C (November 4, 1993)

This NCR documented a voids under the concrete laydown slab between the two TGB's. These voids were attributed to degraded expansion joints and were evaluated and based on the evaluation, repair instruction were provided.

Diesel Generator

CR 96-747 (May 10, 1996)

Identifies cracks on the west face of the 1A Diesel Generator Building in the west radiator exhaust plenum area. The cracks were determined to be surface cracks only and did not affect structural integrity of the building.

STAR 1-951746 (November 6, 1995)

This STAR identifies a crack in the 1B EDG roof. This was determined to be a structural crack through the full thickness of the roof. A required actions as a result of the STAR evaluation were to repair the crack by sealing it with an epoxy grout, and sealing the entire Unit 1 diesel generator roof with a elastomeric urethane coating. Engineering recommendations were to coat the U2 diesel generator building, CCW building, and diesel oil tank structure.

Tanks

CR 96-844 (May 14, 1996)

Inspection of the interior of the Unit 1 CST have identified deteriorated coatings, incomplete welds, a cracked weld, wet regions, and a region where the dome has buckled. This CR provides for evaluation of the existing conditions and required repairs.

STAR 1-94110442 (November 17, 1994)

The Unit 1 RWST manway leaks. This STAR attributes the root cause of the leak to the use of the wrong gasket material by maintenance.

STAR 1-9411405 (November 10, 1994)

Unit 1 RWST show signs of exterior corrosion on the bottom of the tank. This STAR provides instructions for addition of a tank liner to ensure leak tightness of the tank.

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Intake Canal

NCR-6489-3021C (January 5, 1994)

This NCR documented a void under a concrete slab used for soil retention at the intake canal. The void was caused by poor grading of the surrounding area causing inadequate drainage and excessive runoff of water under the slab. The NCR provided instructions for filling of the void using a sand cement mixture and regrading and sodding the surrounding area.

Review of Plant Change Modifications

Review of the PCM's issued for repair of structures that are part of the scope of the monitoring program identified the following documents

Ultimate Heat Sink Dam

PCM 208-193

Addressed repair of an embed located in the Ultimate Heat Sink Dam structure. The damage was caused during welding of an air tank to the embed.

Intake Structure

PCM 205-295

This PCM was issued to address repair options for a bolt for a missile shield that was broken during maintenance activities.

Review of Plant Work Orders

Based on review of the PWO's associated with the repair of plant structures, see listing of specific PWO's reviewed, the items addressed did not appear to be repetitive in nature or indicate that they were maintenance preventable.

A number of similar conditions were identified as part of the inspection of block walls that are part of the fire barrier inspection program. The conditions were documented via the CR process and is discussed above. The condition of these block wall continue to be monitored as part of the masonry block wall inspection program for fire barriers.

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Review of Industry Operating Experience

A review of Institute of Nuclear Power Operation's Significant Event Evaluation Information Network program was performed on the following words "structural degradation" (49), "structura steel" (95), "reinforcing steel" (7), and "concrete" (244). The search identified a total of 395 messages containing the search words. Based on a review of these messages none were considered to address degradation of structures that would be applicable to structures at PSL. Most of the degradations identified dealt with system or component related structural degradations, which are not part of this scoping.

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REVIEW OF PWO's THAT APPLY TO STRUCTURES

BLDG	PWO #	REMARKS	STAR	CR	PCM	OTHER
CANAL	91-7333	REPAIR WASHOUT DAMAGE AT INTAKE CANAL				
CCW	94020625	REPAIR CCW HTX PEDESTAL				
CCW	95022000	CCW BLDG CONCRETE REPAIR	950452			
CONTROL	95017806	CONTROL ROOM PENTHOUSE DOOR IS RUSTED OUT				
EDG	95034191	EDGB SLAB REPAIR (for drainage of standing water)				
EDG	96004350	REPAIR 1B EDG ROOF PER STAR	951746			
EDG	96011226	FTM CLEAN & DE-SLUDGE DOST 1B & DAY TANK				
FHB	95022001	REPLACE FHB LARGE DOUBLE DOORS PER STAR	950781			
FHB	96002939	FHB L SHAPE DOOR CLIP REPAIR				
FHB	96008331	FHB HATCH SEAL REPAIR				
INTAKE	94020714	REPAIR LADDER IN 1A1 WELL				
INTAKE	94020715	REPAIR LADDER IN 1B1 INTAKE				
INTAKE	94024199	DRAINAGE AFTER RAIN AT S. INTAKE				
INTAKE	94030612	REPAIR WASHOUT AT INTAKE				
INTAKE	96007060-2	REPLACE RUSTED OUT FRAM/SUPPORT & CAVE				
INTAKE	96008454-01	REPAIR CRACKED CONCRETE AT TRAVELING SCREEN BAYS	950606			
RAB	95001575	UNCLOG UNIT 2 FLOOR DRAINS RAB WATER HEATER				
RAB	95002098	SUPPORT M/M UNIT 1 - UNCLOG 'A' BATTERY ROOM FLR DRAIN				
RAB	95015527	BLOCK WALL #89 CELL GROUTING PER STAR 2-950522	950522			
RAB	95031294	REPAIR LEAK OVER U-1 RAB WEST ENTRANCE BY ELEVATOR				
RAB	95032486	REPAIR WALL AND FLR PENETRATIONS PER STAR	951815			
RAB	95033268	REPAIR WALL #35 RAB EL 28.7	951948			
RAB	96007274	REPAIR HVS-4A INTAKE HOOD	960377			
RAB	96012497	REPAIR BW #167 DSR TP WEST STAIRWELL				
RAB	96012501	FIREWALL BW124 BETWEEN A & B ELEC. PEN. COL. LINE RA1				
RAB	96012501	REPAIR BW #124 (A ELEC. PEN. RM TO B ELEC. PEN. RM)				
RAB	96012538	REPAIR BW #6 ECCS TO -0.5' HALLWAY ABOVE RA-6				
RAB	96012539	REPAIR BW #6 ECCS TO -0.5' HALLWAY ABOVE RA-5		96-794		
RAB	96014004	BW 170 RAB EL 43' FIRE ZONE 46 SOUTH WALL				
RAB	96014006	FIRE BW #168				
RAB	96014085	BW #161 BETWEEN 1A AND 1B SWITCHGEAR RM 43'				
RCB	95001843	UNIT 1 RCB DOME HANDRAIL REPAIR				
RCB	95034602	CLEAN RCB FLOOR DRAINS				
RCB	96008066	REPAIR REACTOR CAVITY HANDRAIL AND BOLTS	951185			
RCB	96010029-01	REPLACE TRENCH COVER BOLTS AND MISSING SUPPORT	951184	96-822		
SEAL WELL	94024198	SUPPORT VENDOR IN SEAL WELL REPAIR				058-194
TANK-CST	96012807	RECOATING OF CONDENSATE STORAGE TANK				
TANK-CST	96013718-01	REPAIR WELD ON CONDENSATE TANK		96-844		
TANK-DOST	95015499	ADJUST DIESEL OIL STORAGE TANK ROOM WEST DOORS				
TANK-DOST	95031279	REPAIR DIESEL FUEL OIL TRANSFER PUMP ROOM LEAKS				SPEC-C-13
TANK-DOST	96001896	CLEAR FLOOR DRAINS AT DOST				
TANK-DOST	96002167	REPAIR DOOR LATCHES AT DOST				
TANK-DOST	96008426	CLEAN AND INSPECT DOST 1A				
TANK-DOST	96008430	DOST 1B-CLEAN AND INSPECT				
TANK-RWT	94019436	RWT REPAIR				
TANK-RWT	94028015	SUPPORT MANTA WITH RWT COATINGS				128-194
TANK-RWT	96008084	RWT REPAIR FLANGE LEAK AT MANWAY	94110442			
TGB	94026126	REPAIR ROOF IN 2A BATTERY ROOM				
TGB	95023241	REPAIR LEAKS IN THE SWITCHGEAR ROOM (U1)				
TGB	95028717	REPAIR TURBINE DECK HANDRAIL				
TGB	95034063	MCLAREN TO RE-ROOF THE 2D BATTERY AND CAS BLDG'S				
TGB	96001340	REPAIR LEAK IN BATTERY ROOM 1C				
TGB	96001689	REPAIR & REPAINT I-BEAM ON MEZZ. DECK				
TGB	96003881	REPLACE STAIR TREADS				
TGB	96007062	REPAIR CRACKED CONCRETE AT THE 1A1 WATERBOX PEDESTAL	950338			
UHS	94025857	ULTIMATE HEAT SINK INSPECTION/REPAIR (stop log alignment of tracks)				

ATTACHMENT 2
TO THE
SCOPING DOCUMENT FOR THE IMPLEMENTATION OF THE MAINTENANCE RULE
FOR MONITORING
THE EFFECTIVENESS OF MAINTENANCE ON STRUCTURES

SCOPE DETERMINATION FOR STRUCTURES AT PSL

JNIT	SYSTEM NO.	DESCRIPTION	SAFETY RELATED	NSR USED TO MITIGATE ACCIDENT OR TRANSIENT	NSR USED IN EOP'S	NSR PREVENTS SR SYS FROM PERFORMING SR FUNCTION	NSR CAUSES TRIP OR ACTUATES SAFETY SYS	IN MAINTENANCE RULE	PSA RISK SIGNIFICANT	MR RISK SIGNIFICANT	NOTES
1	73	AUXILIARY TRANSFORMER FND.	N		N		Y	Y			
2	73	AUXILIARY TRANSFORMER FND.	N		N		Y	Y			
1	73	CCW HEAT EXCHANGER AND PUMP AREA	Y	N	N			Y			
2	73	CCW STRUCTURE	Y	N	N			Y			
1	73	CONDENSATE STORAGE TANK	Y	N	N			Y	Y	Y	
2	73	CONDENSATE STORAGE TANK	Y	N	N			Y	Y	Y	
1	73	CONDENSATE STORAGE TANK SHIELDING	Y	N	N			Y			
2	73	CONDENSATE STORAGE TANK SHIELDING	Y	N	N			Y			
C	73	COOLING CANALS	N		N		Y	Y			
1	73	DIESEL GENERATOR BUILDING	Y	N	N			Y			
2	73	DIESEL GENERATOR BUILDING	Y	N	N			Y			
1	73	DIESEL OIL STORAGE TANK	Y	N	N			Y	Y	Y	
2	73	DIESEL OIL STORAGE TANK	Y	N	N			Y	Y	Y	
1	73	DIESEL OIL STORAGE TANK PUMPHOUSES	Y	N	N			Y			
2	73	DIESEL OIL STORAGE TANK PUMPHOUSES	Y	N	N			Y			
1	73	DISCHARGE HEAD WALL	N				Y	Y			
2	73	DISCHARGE HEAD WALL	N				Y	Y			
1	73	DISCHARGE PIPELINE	N				Y	Y			
2	73	DISCHARGE PIPELINE	N				Y	Y			

ATTACHMENT 2
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SCOPING DOCUMENT FOR THE IMPLEMENTATION OF THE MAINTENANCE RULE
FOR MONITORING
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SCOPE DETERMINATION FOR STRUCTURES AT PSL

JNIT	SYSTEM NO.	DESCRIPTION	SAFETY RELATED	NSR USED TO MITIGATE ACCIDENT OR TRANSIENT	NSR USED IN EOP'S	NSR PREVENTS SR SYS FROM PERFORMING SR FUNCTION	NSR CAUSES TRIP OR ACTUATES SAFETY SYS	IN MAINTENANCE RULE	PSA RISK SIGNIFICANT	MR RISK SIGNIFICANT	NOTES
C	73	FLOOD PROTECTION STOP LOGS	N	Y	Y			Y			
1	73	FUEL HANDLING BUILDING	Y	N	N			Y			
2	73	FUEL HANDLING BUILDING	Y	N	N			Y			
1	73	INTAKE HEADWALL	N				Y	Y			
2	73	INTAKE HEADWALL	N				Y	Y			
1	73	INTAKE PIPELINE	N				Y	Y			
2	73	INTAKE PIPELINE	N				Y	Y			
1	73	INTAKE STRUCTURE AND RETAINING WALLS	Y	N	N			Y			
2	73	INTAKE STRUCTURE AND RETAINING WALLS	Y	N	N			Y			
1	73	INTAKE VELOCITY CAP	N				Y	Y			
2	73	INTAKE VELOCITY CAP	N				Y	Y			
1	73	MAIN TRANS. BARRIER WALLS & FND.	N		N		Y	Y			
2	73	MAIN TRANS. BARRIER WALLS & FND.	N		N		Y	Y			
1	73	REACTOR AUXILIARY BUILDING	Y	N	N			Y			
2	73	REACTOR AUXILIARY BUILDING	Y	N	N			Y			
1	73	REACTOR BUILDING- SHIELD BLDG	Y	N	N			Y		Y	
2	73	REACTOR BUILDING- SHIELD BLDG	Y	N	N			Y		Y	
1	73	REACTOR BUILDING- INTERIOR STRUCT.	Y	N	N			Y		Y	

ATTACHMENT 2
TO THE
SCOPING DOCUMENT FOR THE IMPLEMENTATION OF THE MAINTENANCE RULE
FOR MONITORING
THE EFFECTIVENESS OF MAINTENANCE ON STRUCTURES

SCOPE DETERMINATION FOR STRUCTURES AT PSL

UNIT	SYSTEM NO.	DESCRIPTION	SAFETY RELATED	NSR USED TO MITIGATE ACCIDENT OR TRANSIENT	NSR USED IN EOP'S	NSR PREVENTS SR SYS FROM PERFORMING SR FUNCTION	NSR CAUSES TRIP OR ACTUATES SAFETY SYS	IN MAINTENANCE RULE	PSA RISK SIGNIFICANT	MR RISK SIGNIFICANT	NOTES
2	73	REACTOR BUILDING- INTERIOR STRUCT.	Y	N	N			Y		Y	
1	73	REACTOR BUILDING- VESSEL	Y	N	N			Y		Y	
2	73	REACTOR BUILDING- VESSEL	Y	N	N			Y		Y	
1	73	REFUELING WATER TANK	Y	N	N			Y	Y	Y	
2	73	REFUELING WATER TANK	Y	N	N			Y	Y	Y	
1	73	REFUELING WATER TANK FOUNDATION	Y	N	N			Y			
2	73	REFUELING WATER TANK FOUNDATION	Y	N	N			Y			
1	73	SEAL WELL STRUCTURE	N				Y	Y			
2	73	SEAL WELL STRUCTURE	N				Y	Y			
1	73	START-UP TRANS. BARRIER WALLS & FND.	N		N		Y	Y			
2	73	START-UP TRANS. BARRIER WALLS & FND.	N		N		Y	Y			
1	73	STEAM TRESTLE	Y	N	N			Y			
2	73	STEAM TRESTLE	Y	N	N			Y			
1	73	TURBINE BUILDING	N		N		Y	Y			
2	73	TURBINE BUILDING	N		N		Y	Y			
C	73	ULTIMATE HEAT SINK DAM	Y	N	N			Y			

ATTACHMENT 3
TO THE
SCOPING DOCUMENT FOR THE IMPLEMENTATION OF THE MAINTENANCE RULE FOR
MONITORING THE EFFECTIVENESS OF MAINTENANCE ON STRUCTURES

EXISTING PROGRAMS THAT ARE USED TO MONITOR GENERAL CONDITION OF
STRUCTURES AT PSL

i GENERAL MONITORING REQUIREMENTS FOR ALL STRUCTURES

AP 0005750	DUTIES AND RESPONSIBILITIES OF THE SYSTEM ENGINEER
ADM-08.02	CONDUCT OF MAINTENANCE
AP 0010120	CONDUCT OF OPERATIONS
0-OI-99-02	WATCHSTATION GENERAL INSPECTION INSTRUCTIONS
QI-13.2	HOUSEKEEPING AND CLEANLINESS CONTROL METHODS
TS 10.2	QUALITY CONTROL SURVEILLANCE
OSHA	SAFETY DEPARTMENT SURVEILLANCE IN ACCORDANCE WITH OSHA

ii POWER BLOCK STRUCTURE MONITORING

AP 0010437	SCHEDULE OF MECHANICAL MAINTENANCE SURVEILLANCE REQUIREMENTS
AP 0010141	OPERATIONS SUPPORT & TESTING (OST) SCHEDULE FOR TECHNICAL SPECIFICATION SURVEILLANCE REQUIREMENTS

PRIMARY CONTAINMENT STRUCTURE INSPECTION PROGRAM

QI-10.5	TECHNICAL SPECIFICATION SURVEILLANCE INSPECTION OF REACTOR BUILDING
SPEC-C-010	PROTECTIVE COATINGS FOR SERVICE LEVEL I APPLICATIONS INSIDE THE REACTOR CONTAINMENT
OP-1300052	PERSONEL AND EMERGENCY AIR LOCKS
OP-1300051	LLRT
OP 1[2]-1300050	ILRT
QI 10.4	ISI INSPECTIONS

REACTOR AUXILIARY BUILDING

AP 1800022	FIRE PROTECTION PLAN - FIRE BARRIERS/ WALLS/ SEALS/DAMPERS
AP 1800022	FIRE PROTECTION PLAN - FIRE DOORS(DAILY/6MONTH)
OP 1-1300054	RAB LEAK TEST

DIESEL OIL STORAGE TANKS

5-YEAR PLAN	DIESEL OIL STORAGE TANK CLEANING
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FUEL HANDLING BUILDING

OP 2-1600025	FUEL HANDLING BUILDING VENT TEST
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ATTACHMENT 3
TO THE
SCOPING DOCUMENT FOR THE IMPLEMENTATION OF THE MAINTENANCE RULE FOR
MONITORING THE EFFECTIVENESS OF MAINTENANCE ON STRUCTURES

EXISTING PROGRAMS THAT ARE USED TO MONITOR GENERAL CONDITION OF
STRUCTURES AT PSL

iii LAND UTILIZATION STRUCTURE SPECIFIC INSPECTIONS & TESTS

LU-QI-11.0-4	INSPECTION OF OCEAN INTAKE HEADWALLS
LU-QI-11.0-5	INSPECTION OF OCEAN INTAKE MISC. COMPONENTS
LU-QI-11.0-7	INSPECTION AND TESTING OF OCEAN INTAKE STEEL COMPONENTS
LU-QI-11.0-8	INSPECTION AND TESTING OF OCEAN INTAKE SHEAR GATE FOR 16 FT DIAMETER PIPE
LU-QI-11.0-9	INSPECTION OF OCEAN INTAKE 16 FOOT AND 12 FOOT DIAMETER PIPELINES AND VELOCITY CAPS
LU-QI-11.0-11	INSPECTION OF OCEAN INTAKE CANAL BANKS
LU-QI-11.0-12	INSPECTION OF OCEAN INTAKE CANAL CROSS SECTION
LU-QI-11.0-13	INSPECTION OF OCEAN INTAKE CANAL SLOPE/BOTTOM JUNCTION
LU-QI-11.0-18	INSPECTION OF OCEAN INTAKE BUBBLER PIPE
LU-QI-11.0-21	INSPECTION OF OCEAN DISCHARGE HEADWALL
LU-QI-11.0-22	INSPECTION OF OCEAN DISCHARGE MISCELLANEOUS COMPONENTS
LU-QI-11.0-24	INSPECTION AND TESTING OF OCEAN DISCHARGE STEEL COMPONENTS
LU-QI-11.0-25	INSPECTION AND TESTING OF OCEAN DISCHARGE SHEAR GATE FOR 16 FOOT DIAMETER PIPE
LU-QI-11.0-26	INSPECTION AND TESTING OF OCEAN DISCHARGE SHEAR GATE FOR 12 FOOT DIAMETER PIPE
LU-QI-11.0-27	INSPECTION OF OCEAN DISCHARGE 16 FOOT AND 12 FOOT DIAMETER PIPELINES AND DIFFUSERS
LU-QI-11.0-29	INSPECTION OF OCEAN DISCHARGE CANAL BANKS (inner/outer)
LU-QI-11.0-30	INSPECTION OF OCEAN DISCHARGE CANAL CROSS SECTION
LU-QI-11.0-31	INSPECTION OF OCEAN DISCHARGE CANAL OVERFLOW SPILLWAY
LU-QI-11.0-32	INSPECTION OF OCEAN DISCHARGE CANAL SLOPE/BOTTOM JUNCTION
LU-QI-11.0-38	INSPECTION AFTER MAJOR STORMS

iii SYSTEM RESONSIBLE ENGINEER WALKAROUND INSPECTIONS

AP 0005750	DUTIES AND RESPONSIBILTIES OF THE SYSTEM ENGINEER
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iv STRUCTURAL WALKDOWNS REQUIREMENTS FOR PLANT MODIFICATIONS

PMAI 96-05-023

ATTACHMENT 3

64 PAGES

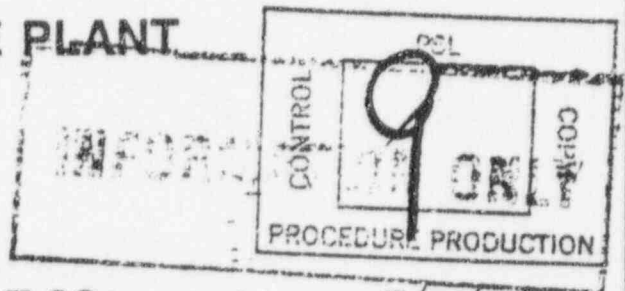
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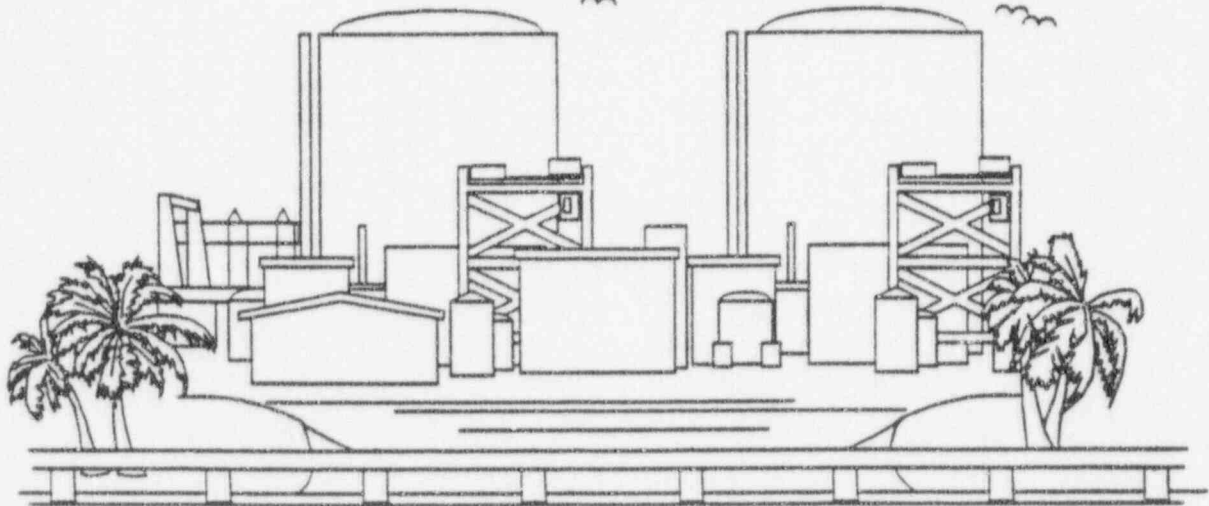
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DOCN ADM-17.08
SYS _____
COMP COMPLETED
ITM 4

FLORIDA POWER & LIGHT

ST. LUCIE PLANT



ADM-17.08
REVISION 4



IMPLEMENTATION OF 10 CFR 50.65, THE MAINTENANCE RULE

ADMINISTRATIVE PROCEDURE

REVISION	REVIEWED BY FRG ON	APPROVED BY	DATE
0	<u>9/26/95</u>	<u>J. Scarola</u> Plant General Manager	<u>9/26/95</u>
4	<u>6/28/96</u>	<u>J. Scarola</u> Plant General Manager	<u>6/28/96</u>

Responsible
Department: SYSTEM & COMPONENT ENGINEERING

BMG 7/2/96

REVISION NO.: 4	PROCEDURE TITLE: IMPLEMENTATION OF 10 CFR 50.65, THE MAINTENANCE RULE ADMINISTRATIVE PROCEDURE ST. LUCIE PLANT	PAGE: 2 of 63
PROCEDURE NO.: ADM-17.08		

1.0 TITLE:

IMPLEMENTATION OF 10 CFR 50.65, THE MAINTENANCE RULE PROGRAM

THIS PROCEDURE HAS BEEN COMPLETELY REWRITTEN, PLEASE READ ENTIRE PROCEDURE BEFORE PROCEEDING.

/R4

2.0 PURPOSE:

2.1 This procedure provides requirements and guidelines for monitoring the effectiveness of Maintenance in accordance with 10 CFR 50.65.

3.0 REFERENCES:

- 3.1 10 CFR 50.65, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."
- 3.2 Regulatory Guide 1.160, "Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."
- 3.3 NUMARC 93-01, "Industry Guidance for Monitoring the Effectiveness of Maintenance at Nuclear Power Plants."
- 3.4 AP 0010432, "Nuclear Plant Work Orders"
- 3.5 ADM-17.03, "Operating Experience Feedback."
- 3.6 AP 0010431, "Preventive Maintenance Program."
- 3.7 SCEG-01, Nuclear Plant Reliability Data System (NPRDS).
- 3.8 AP 0010460, "Critical Maintenance Management."
- 3.9 QI 16-PR/PSL-3, "Corrective Action."
- 3.10 AP 0006130, "Condition Reports."
- 3.11 OP 0010124, "System Alteration Control."
- 3.12 OP 0010142, "Unit Reliability - Manipulation of Sensitive Systems."
- 3.13 OP 1/2-0410022, "Shutdown Cooling."
- 3.14 NEI 96-03, "Guidelines For Monitoring The Condition of Structures at Nuclear Power Plants," Rev. C, March 14, 1996.

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4.0 RESPONSIBILITIES:

4.1 The System and Component Engineering (SCE) Manager is responsible for overall implementation of this procedure and for maintaining an up-to-date list of SSCs within the scope of the Rule.

4.2 All Plant personnel are responsible for:

1. Reporting unsatisfactory performance of plant components via the Nuclear Plant Work Order system and/or Condition Report System.
2. Visual observations (monitoring) of structural conditions during performance of their plant responsibilities (refer to Appendix D), and day to day general walk around activities, and reporting potential structural degradation via plant guidelines, NPWOs, and/or the Condition Report system.

4.3 The Maintenance Rule Administrator (MRA) is responsible for:

1. Overall coordination of activities concerning the Rule.
2. Final determinations as to whether system, structure, and component (SSC) failures constitute maintenance preventable functional failures.
3. Dissemination of timely information regarding Performance Criteria and Functional Failures.
4. Coordination of Expert Panel review and approval activities.
5. Performance of Periodic Assessments.

4.4 System Owners are responsible for:

1. Identification of the functions, key components, programs in place, and Performance Criteria for SSCs (Systems, Structures and Components) within scope of the Rule.
2. Possessing knowledge of and experience concerning SSCs and their performance.
3. Monitoring SSCs for compliance to performance criteria.
4. Identifying potential maintenance preventable Functional Failures and bringing them to the attention of Management and the MRA via the Condition Report Process.

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4.0 RESPONSIBILITIES: (continued)

4.4 (continued)

5. Identifying when SSC performance criteria has been exceeded and/or repetitive MPFFs occur to facilitate prompt review by the MRA and expert panel.
6. Providing root cause determination for SSCs when performance criteria are not met, when functional failures occur, or when otherwise required.
7. Providing input on the establishment of goals and/or corrective actions for SSCs as conditions warrant.
8. Monitoring goals established for SSCs (Systems, Structures, and Components) in category (a)(1), as requested.
9. Providing input on whether the increase in risk from removing equipment from service for PMs is balanced by a gain in reliability.
10. Providing input on applicable risk/reliability considerations in the basis for changing PMs.
11. Maintaining Maintenance Rule system summaries up to date.
12. Incorporating industry operating experience as appropriate.

4.5 The Expert Panel is responsible for:

1. Review and approval of the following activities:
 - A. Systems, structures, and components within the scope of the rule
 - B. Assignment of risk significance
 - C. Performance Criteria
 - D. Performance Monitoring activities
 - E. Goal setting and monitoring actions
(i.e. dispositioning from (a)(2) to (a)(1))

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4.0 RESPONSIBILITIES: (continued)

4.5 (continued)

1. (continued)

G. Completion of corrective action (i.e. dispositioning from (a)(1) to (a)(2))

H. Periodic Assessments

4.6 The PSA (Probabilistic Safety Assessment) Engineer is responsible for providing risk evaluations as requested to include the following:

1. Initial determination of risk significance for SSCs (Systems, Structures and Components) in scope.
2. Evaluating risk when goals must be established.
3. Evaluating risk when removing equipment from service to perform preventive maintenance.
4. Evaluating whether the increase in risk from removing equipment from service for PMs is balanced by a gain in reliability.

5.0 DEFINITIONS:

5.1 The following definitions apply:

1. The Maintenance Rule (Rule) - 10 CFR 50.65, Monitoring the Effectiveness of Maintenance at Nuclear Power Plants, as shown in Appendix A.
2. SSCs - Structures, Systems, and Components that are within the scope of the rule. Section (b) of 10 CFR 50.65 provides the criteria for inclusion. A current list is shown in Appendix B.
3. Functional Failure - A failure of a system, structure, component, or train such that the system, structure or train is not capable of performing its intended function(s) (i.e., the function(s) that required the SSCs inclusion within the scope of the rule).

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5.0 DEFINITIONS: (continued)

1. (continued)

4. Maintenance Preventable Functional Failure - An unintended event or condition such that a SSC within the scope of the rule is not capable of performing its intended functions (i.e., the functions performed by the SSC that required its inclusion within the scope of the rule) and that should have been prevented by the performance of appropriate maintenance actions.
5. Repetitive Maintenance Preventable Functional Failure - A second Maintenance Preventable Functional Failure (same cause) that occurs following an initial Maintenance Preventable Functional Failure and implementation of corrective action, within two operating cycles.
6. Section (a)(1) - The section of 10 CFR 50.65 that requires goal setting and monitoring for SSCs. At St. Lucie this designation indicates performance needs improvement.
7. Section (a)(2) - The section of 10 CFR 50.65 that permits exemption from monitoring under section (a)(1). At St. Lucie this designation indicates performance is satisfactory.
8. Maintenance - The aggregate of those functions required to preserve or restore safety, reliability, and availability of plant structures, systems, and components. Maintenance includes not only activities traditionally associated with identifying and correcting actual or potential degraded conditions, i.e., repair, surveillance, diagnostic examinations, and preventive measures; but extends to all supporting functions for the conduct of these activities.
(Source: Federal Register Vol. 53, No. 56, Wednesday, March 23, 1988, Rules and Regulations/Page 9340).
9. Preventive Maintenance (PM) - The set of activities that includes all deliberate, preplanned maintenance, testing, or observation of SSCs. This includes preventive maintenance procedures, computerized PMs, surveillance testing, calibrations, overhauls, and condition monitoring such as log taking and inspection.

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5.0 DEFINITIONS: (continued)

1. (continued)

10. Performance Criteria (Criteria) - Performance Criteria are established for all SSCs to set a standard for adequate performance. Performance Criteria are reasonable objectives that permit a pre-analyzed level of failures and routine maintenance. Failure to meet Performance Criteria puts an SSC into (a)(1) and goal setting.
11. Unavailability - The amount of time, over a given reporting period, that a system or train is not operational when required: that is, either not in operation or not capable of being put into operation if demand requires it.
12. Reliability - A measure of the expectation that a SSC will perform its function upon demand at any future instant in time. The measure of reliability will be based on maintenance preventable functional failures.
13. Equivalent Availability Factor - The ratio of gross availability generation to gross maximum generation, expressed as a percent.
14. Goal Setting and Monitoring - When performance does not meet Performance Criteria, goals must be set. Goals may be more specific objectives to address the reason that performance is not acceptable. Goals may also be the same as the original Performance Criteria. The SSC is then monitored against the goal. Goals must be met to move a SSC back into (a)(2). If corrective actions are taken, they must be monitored for effectiveness prior to moving the SSC back into (a)(2).
15. Periodic Assessment - An overall evaluation to establish effectiveness of maintenance actions. Performance and criteria are compared and may be adjusted. This evaluation will review and trend the disposition of SSCs into (a)(1) and (a)(2) that may have occurred during the period covered by the report. It will also include any changes to the scope.
16. Expert Panel - A designated group of managers and department heads who are responsible for review and approval of the implementation of the Rule. This group is identified by title and will routinely assemble to review and approve Periodic Evaluations and other program attributes.

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5.0 DEFINITIONS: (continued)

1. (continued)

17. Working Group - A group formed for the initial implementation of the Rule. Members consisted of varying groups of engineers and supervisors from the three main maintenance disciplines, Technical Staff, an SRO from Operations, and a PSA engineer. The purpose of the Working Group was to create the System Summaries.
18. System Owners - Those persons designated as responsible and accountable for overall cognizance regarding assigned SSCs and for the performance of actions required to implement the Maintenance Rule.
19. System Summaries - A system Summary has been written for each system that is within the scope of the Rule. The System Summaries document the reason that applicable SSCs are in scope, the safety functions of the system, key components needed to perform the functions, and programs in place to ensure the components will function when required, and applicable performance criteria.
20. Industrywide Operating Experience - Information included in NRC, industry, and vendor equipment information that are applicable and available to the nuclear industry with the intent of minimizing adverse plant conditions or situations through shared experiences. This included NPRDS, INPO documents, NRC Notices, vendor recommendations and Nuclear Network information.
21. Qualified Inspector - A degreed engineer with five (5) years related civil/structural experience and/or a Professional Engineering License in Civil/Structural Engineering. In addition to the above requirements, the qualified inspector shall be sufficiently trained and experienced in the design, analysis and inspection of large structures associated with nuclear power plants.
22. Normally Inaccessible Areas
 - Portions of structures that are underwater
 - Areas of high radiation
 - Areas that would represent an extreme safety hazard without specialized equipment

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5.0 DEFINITIONS: (continued)

1. (continued)

23. Permanently Inaccessible Areas

- ▶ Portions of structures that are underground
- ▶ Portions of structures that are concealed by the presence of other permanent structures

6.0 RECORDS REQUIRED:

6.1 When completed, the following documentation associated with this procedure shall be maintained in the plant files in accordance with QI 17 PR/PSL-1, "Quality Assurance Records."

1. The following elements of Maintenance Rule implementation are documented via the Corrective Action Program (Condition Reports and PMAs) and are controlled as QA Records:
 - A. Cause Determinations
 - B. MPFFs
 - C. Corrective Actions
 - D. Goal Setting and Monitoring
2. Reports documenting evaluation of Maintenance Rule elements (in accordance with Section (a)(3) of the rule):
 - A. Maintenance Rule Quarterly Reports
 - B. Periodic Assessments

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7.0 INSTRUCTIONS:

7.1 Introduction

1. The Maintenance Rule, 10 CFR 50.65 (Appendix A), outlines a process by which SSCs that are important to nuclear safety are identified, categorized by risk significance, and monitored using performance criteria to ensure satisfactory performance. If SSC performance does not meet the specified criteria, the rule prescribes a process that provides heightened sensitivity towards the identification and correction of the problems responsible for the deficiencies.

7.2 Expert Panel

1. The System and Component Engineering Manager is the Chairman of the Expert Panel. The Maintenance Rule Administrator may act as alternate Chairman. The remainder of the Expert Panel shall consist of personnel from the following departments/disciplines:
 - A. System and Component Engineering
 - B. Probabilistic Safety Assessment
 - C. Maintenance
 - D. Operations
 - E. Outage Management
 - F. Site Engineering/Maintenance Specialists
2. Expert Panel members should have a working understanding of the Maintenance Rule, and should have a broad knowledge of plant operations, maintenance, and safety analysis. The System and Component Engineering Manager shall approve all members. A list of approved members will be maintained. The results of Expert Panel meetings shall be documented.
3. The minimum quorum for an Expert Panel meeting shall consist of the Chairman or alternate Chairman and three members. As a minimum, members representing SCE, PSA, and Operations shall be present. Consultants from other disciplines may be relied upon by the Expert Panel as needed.

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7.0 INSTRUCTIONS: (continued)

7.2 (continued)

4. The Expert Panel shall review and approve (as necessary) the following:
 - A. Determination of Maintenance Rule scope and SSC risk significance.
 - B. Performance criteria and changes to performance criteria.
 - C. Initial disposition category for Maintenance Rule SSCs and changes to SSC disposition category.
 - D. Goals developed for SSCs requiring goal setting and monitoring.
 - E. Cause determinations and corrective actions that are a result of an MPFF. (This review may be performed after approval of the Condition Report that documents the MPFF.)
 - F. Periodic Assessments.

7.3 **Scope Determination and Risk Significance**

1. All SSCs that meet at least one of the following criteria shall be included within the scope of the Maintenance rule and this procedure:
 - A. Safety-related SSCs that are relied upon to remain functional during and following design basis events to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, and the capability to prevent or mitigate the consequences of accidents that could result in potential offsite exposure comparable to the 10 CFR 100 guidelines.
 - B. Non safety-related SSCs that are relied upon to mitigate accidents or transients.
 - C. Non safety-related SSCs that are used in plant emergency operating procedures and provide a significant fraction of the ability to mitigate core damage or radiological release.

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7.0 INSTRUCTIONS: (continued)

7.3 (continued)

1. (continued)

D. Non safety-related SSCs whose failure could prevent safety-related SSCs from fulfilling their safety-related function.

E. Non-safety related SSCs whose failure could cause a reactor trip or actuation of a safety-related system.

2. For each SSC determined to be within the scope of the Maintenance Rule, the Expert Panel shall determine risk significance. In determining if a SSC is risk significant, the Expert Panel should consider the following:

A. If the Risk Reduction Worth for a SSC exceeds 0.5 percent of the overall core damage frequency, then the SSC should be considered risk significant.

B. If the SSC contributes to at least 99 percent of the cumulative Risk Reduction Importances, then the SSC should be considered risk significant.

C. If the Risk Achievement Worth for a SSC shows at least a doubling of the overall core damage frequency, then the SSC should be considered risk significant.

D. If the SSC appears in the cutsets that comprise 90 percent of the core damage frequency, then the SSC should be considered to be risk significant.

E. If the SSC is required to prevent containment failure or bypass that could result in an unacceptable release, then the SSC should be considered risk significant.

F. In considering risk significance, all modes of operation and all failure modes should be considered.

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7.0 INSTRUCTIONS: (continued)

7.3 (continued)

3. For each SSC determined to be within the scope of the Maintenance Rule, a System Summary shall be developed. The System Summaries shall document Maintenance Rule function(s), key components, relative risk significance and existing PM programs in place.
 - A. Functions describe the SSCs Maintenance Rule functions, provides a basis for evaluating failures, and demonstrates why the SSC is scoped within the Maintenance Rule.
 - B. Key Components are listed to indicate those components whose failures may prevent fulfillment of a Maintenance Rule function. This listing is intended to provide guidance on what components could impact Maintenance Rule functions and therefore is not inclusive of all system components.
 - C. PM programs are listed to show what preventive maintenance activities are performed to ensure continued SSC operability.
4. The basis for including SSCs within the scope of the Maintenance Rule, SSC System Summaries, and SSC risk significance determinations shall be reviewed and approved by the Expert Panel.

7.4 **Performance Criteria**

1. Performance criteria are used to determine whether SSC performance is maintained at an acceptable level.
2. Specific (SSC Level) Performance Criteria
 - A. Performance criteria shall be specified at the system, train or component level for risk significant and standby non-risk significant SSCs.

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7.0 INSTRUCTIONS: (continued)

7.4 (continued)

2. (continued)

- B. Performance criteria for risk significant SSCs and standby non-risk significant SSCs shall be specified in terms of Unavailability, Reliability, or Condition as appropriate.

1. Unavailability

- A. Unavailability measures the time that a system or train is unable to perform its intended function against the time it is needed. Out of service hours may be used.
- B. Unavailability shall include periods of both corrective and preventive maintenance if the system or train is required to be in service.
- C. For standby components that are found failed, unavailability starts at the time of discovery. Assumed unavailability (half the time since last known operable) shall not be used.
- D. Administrative unavailability will not adversely count against performance monitoring indicators.

EXAMPLE

For example, if scaffolding is built over a train, the train may be placed in the out of service log for administrative reasons. If the train is still capable of fulfilling its functions, it is considered available for Maintenance Rule.

- E. Unavailability performance criteria should be evaluated for PSA considerations as appropriate unavailability probabilities. The PSA assumes an unavailability probability for certain trains and components that, if exceeded, could potentially impact the estimated core damage frequency.

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7.0 INSTRUCTIONS: (continued)

7.4 (continued)

2. (continued)

B. (continued)

2. Reliability

- A. Reliability provides a measure of the expectation that an available SSC will perform its function upon demand at any future instant in time.
- B. Reliability may be monitored using performance criteria based on maintenance preventable functional failures.
- C. Reliability may be measured by performance of surveillances and calibrations.

3. Condition

- A. Condition typically includes vibration, flow, temperature, allowed leakage, and other similar parameters. Condition may be monitored by inspection data acquisition or by record/logkeeping activities.

3. Plant Level Performance Criteria

- A. For non-risk significant, non-standby SSCs, plant level performance criteria may be established and monitored.

1. Equivalent Availability Factor

- A. For SSCs in which a loss of structure, component, train, or system directly affects plant power output, Equivalent Availability Factor (EAF) may be used for Performance Criteria.
- B. The criteria is the Nuclear Division EAF goal per previous 12 months based on 836 MW.
- C. Downpowers as listed in the Outage Report shall be used in the determination of the EAF.

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7.0 INSTRUCTIONS: (continued)

7.4 (continued)

3. (continued)

A. (continued)

2. Unplanned reactor trips

- a. Automatic reactor trips
- b. Manual reactor trips

3. Unplanned Engineered Safety Feature (ESF) actuations
(Reportable per 10 CFR 50.72)

4. Unplanned "red" SSA during outages

5. Unplanned, reportable radiological releases (Reportable
per 10 CFR 20 and 10 CFR 50.72)

B. Non-risk significant, non-standby SSCs may also be monitored
against SSC level performance criteria.

C. Plant level performance criteria may also be applied to all
systems, including those which also have specific performance
criteria.

7.5 **Changes to Maintenance Rule Scope and Performance Criteria**

1. If changes to scope or performance criteria are necessary, a form
similar to Figure 1 shall be used.
2. The following process shall be used to complete the form:
 - A. List the SSC. Include system name, number, train, and
component tag ID if applicable.
 - B. Indicate whether or not the SSC is risk significant.

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7.0 INSTRUCTIONS: (continued)

7.5 (continued)

2. (continued)

C. Discuss the change and indicate if an addition or a deletion.

1. Cite specific criteria

2. Cite reason for change

D. Reference any documentation of change (PCM, drawing #, EOPs).

E. Discuss any change to system safety functions.

F. List the key components affected by the change.

G. List any changes to programs in place (changes to preventive maintenance and condition monitoring programs).

H. Discuss any change that impacts relative risk significance. The PSA Engineer or designee should be consulted when risk information is needed.

I. List any change to Performance Criteria and indicate any necessary additional bases.

J. If any of the above steps are not applicable, indicate the reason.

3. The change shall be recommended by the Maintenance Rule Administrator and/or other knowledgeable individual (i.e., JPN, PSA, PCM). The review shall be documented by the signature(s) of the applicable individual(s).

4. The change shall be reviewed and approved by the Expert Panel.

A. Approval of the Expert Panel shall be documented by the Expert Panel meeting date and signature of the chairman of the Expert Panel. The change is effective of the date of approval.

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7.0 INSTRUCTIONS: (continued)

7.6 (a)(2) Preventive Maintenance and Condition Monitoring

1. Under the provisions of the rule, goal setting and monitoring are not required where it can be demonstrated that the performance or condition of an SSC is being effectively controlled through the performance of appropriate preventive maintenance such that it remains capable of performing its intended (Maintenance Rule) functions.
2. Individual, specific preventive maintenance and condition monitoring activities are not a commitment under the Maintenance Rule; only that performance is controlled by effective preventive maintenance. PMs and condition monitoring activities may be added, deleted, or changed, as long as the performance or condition of an SSC is effectively controlled.
3. Condition monitoring may be accomplished as part of maintenance activities in many ways.
 - A. Individuals may report degradations or failures via the Nuclear Plant Work Order (NPWO) system.
 - B. Routine inspections and calibrations may be used to find degradations before failures are apparent. Discrepancies are reported in NPWOs.
 - C. Specific data collection and trending may be performed by a number of departments. Action levels may be informal. Individuals who recognize adverse trends may use the NPWO system, the Condition Report Process, internal memos or direct communication to bring the situation to the appropriate level of attention. Action levels may also be formal, documented in procedures, and include required corrective actions.
 - D. The extent of condition monitoring may vary from structure to structure, system to system and component to component, depending on importance to risk.

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7.0 INSTRUCTIONS: (continued)

7.6 (continued)

4. Performance monitoring shall be accomplished by tracking Specific (SSC Level) and/or Plant Level Performance Criteria and repetitive maintenance preventable functional failures. While goal setting and monitoring are only required when performance has been demonstrated to be unacceptable, the responsible system owner should monitor the performance of SSCs in order to identify adverse trends before they result in Performance Criteria not being met.
5. Performance indicators should be tracked by the responsible System Owner in a format similar to Figure 2.
6. Structural Condition Monitoring
 - A. Performance monitoring typically used for systems and components which rely on active indication such as flow or change of state are generally not applicable or sufficient for structures. Condition monitoring is generally more effective means of monitoring the performance of structures.
 - B. All structures within the program shall be monitored to identify degradation which could impair the performance of the structure.
 - C. Plant Level Condition monitoring of structures shall be accomplished using the following methods:
 1. Initial Baseline Condition Survey

Baseline surveys shall be performed by a qualified inspector to initially establish the specific extent and type of degradation existing in structures that are within the scope of the Maintenance Rule. Initial Baseline surveys as a minimum shall include:

 - a. Name of structure being assessed
 - b. Date of inspection
 - c. Name of the inspector(s)

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7.0 INSTRUCTIONS: (continued)

7.6 (continued)

6. (continued)

C. (continued)

1. (continued)

- d. An evaluation of the structure using the applicable inspection attributes listed on Figures 7 thru 10, as guidance
- e. The survey should identify:
 - 1. Deficient or unacceptable conditions
 - 2. Conditions that deviate from normal, but are considered acceptable (e.g., a rust stain on a concrete wall caused by corroded reinforcing bar that was repaired). This type of information reduces the time required to research this condition during future inspections.
 - 3. Areas that are inaccessible. Note the reason the area was inaccessible. Areas that are normally inaccessible shall be inspected at the first opportunity not to exceed five years from implementation of the Maintenance Rule (i.e, July 10, 2001).
- f. Other documentation as required to describe a discrepant or unacceptable condition (e.g. photographs, drawings, etc.).

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7.0 INSTRUCTIONS: (continued)

7.6 (continued)

6. (continued)

C. (continued)

2. Periodic Condition Survey

Periodic surveys shall follow the format of the initial baseline survey and be performed at repetitive intervals throughout the life of the plant. Their purpose is to determine the type and extent of structural degradation and to provide a basis for trending the changes from previous inspections. The baseline survey should be updated to include the information of the periodic surveys. The periodic condition survey should initially be performed at intervals not to exceed five years. The Maintenance Rule Administrator may shorten the inspection intervals if it is deemed necessary, based upon information such as the results of structural condition assessments, on-going general monitoring activities, unusual events, or industrywide operating experiences.

3. General Monitoring Activities

A. Several procedures and processes are already in place at PSL which monitor the condition of structures at PSL (See Appendix D). These existing programs are used collectively to identify potential and actual degradation of the conditions of structures that are part of the program. Structural monitoring guideline structural deficiency reports and methods identified in section 7.6.3 may be used for identifying potential areas of structural degradation.

B. A qualified inspector should preliminarily assess potential areas of structural degradation to identify the level of action that is required. Action levels are identified in section 7.6.3.C.

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7.0 INSTRUCTIONS: (continued)

7.6 (continued)

6. (continued)

C. (continued)

4. Unusual Events

A qualified inspector should perform a condition survey on all structures affected by an unusual event. The results of this survey should follow the format of the baseline survey and be documented in the periodic condition survey. Areas of potential structural degradation should be identified to the level of action that is required. Action levels are identified in section 7.6.3.C.

5. Industrywide Operating Experience

If review of industrywide operating experience as required in section 7.11.3.B.1, indicates that a structure of structures may be subject to potential visible degradation, a condition survey should be performed by a qualified inspector. This survey should be documented in the periodic condition survey. Areas of potential structural degradation should be identified to the level of action that is required. Action levels are identified in section 7.6.3.C.

D. Baseline and Periodic Condition Survey Results Assessment

Based on the results of the Base or Periodic Condition Surveys a qualified inspector should perform an assessment of the results. Based on this assessment, each structure within the scope of the Maintenance Rule should be identified as one of the following:

1. Acceptable

Acceptable structures meet the performance criteria and are free of deficiencies or degradation which could lead to possible failure.

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7.0 INSTRUCTIONS: (continued)

7.6 (continued)

6. (continued)

D. (continued)

2. Acceptable with Deficiencies

Structures which are acceptable with deficiencies are those which meet the performance criteria, but are degraded or have deficiencies which could deteriorate to an unacceptable condition, if not analyzed or corrected prior to the next scheduled examination.

3. Unacceptable

Unacceptable structures do not meet the performance criteria. An unacceptable safety related structure should be classified as a functional failure according to the Maintenance Rule.

- E. A Condition Report for any condition identified during the baseline of periodic condition surveys that constitutes a MPFF or determined to be deficient or unacceptable as defined above shall be initiated. The condition report shall be traceable to the assessment documentation.

7.7 **Maintenance Preventable Functional Failures**

1. SSC Maintenance Rule functions are listed in the System Summaries.
2. A failure that affects a SSC Maintenance Rule function as listed in the System Summaries should be considered a functional failure.
3. A Maintenance Preventable Functional failure (MPFF) is an unintended event or condition such that a SSC within the scope of the rule is not capable of performing its intended (Maintenance Rule) function and that should have been prevented by the performance of appropriate maintenance actions.

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7.0 INSTRUCTIONS: (continued)

7.7 (continued)

4. Failure of any system's function will be evaluated at the train level when appropriate. This will ensure that for risk significant and non-risk standby systems, each MPFF will be identified at the train level, so that functional failures on one train are not masked by the continued operability of a redundant train.
5. A repetitive MPFF is a maintenance preventable functional failure that occurs more than once within two operating cycles.
6. A repetitive MPFF is the subsequent loss of function that is attributable to the same maintenance related cause that has previously occurred on the same component type.
 - A. A second or subsequent loss of function that results from a different maintenance related cause is not considered a repetitive MPFF.
 - B. If insufficient time exists between failures to identify and perform corrective actions, the failures are not repetitive.
7. A repetitive MPFF may occur on equipment in different trains, systems, or units.

7.8 Cause Determinations

1. A cause determination shall be performed for any of the following:
 - A. A goal not being met.
 - B. A performance criteria not being met.
 - C. A functional failure of a risk significant SSC, even if the goal or performance criteria is met.
 - D. A repetitive MPFF of any SSC within the scope of the Maintenance Rule, even if the goal or performance criteria is met.
2. All cause determinations shall be documented as Condition Reports in accordance with AP 0006130, "Condition Reports."

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7.0 INSTRUCTIONS: (continued)

7.8 (continued)

3. The cause determination should identify the cause of the failure or unacceptable performance, whether the failure was a MPFF, and whether or not it was repetitive. It should identify any corrective action to preclude recurrence, and make a determination as to whether or not the SSC should be dispositioned as (a)(1)(Section 7.9).
4. Cause determinations shall consider any generic implications for SSCs other than the one being evaluated. In addition, industry wide operating experience should be considered where appropriate.
5. The level of detail required for a cause determination varies according to the failure, the significance of the SSC, whether a MPFF is involved, or whether a performance criteria was exceeded. The cause determination may be a simple assessment of an obvious case, or may require a rigorous and formal root cause analysis.
6. If plant level performance criteria are exceeded, the cause determination should identify the SSC(s) which contributed the largest adverse impact.

7.9 (a)(1) Goal Setting and Monitoring (Dispositioning from (a)(2) to (a)(1))

1. SSCs are subject to goal setting and monitoring under section (a)(1) of the rule whenever:
 - A. Performance criteria are not met due to maintenance related causes.
 - B. Repetitive MPFFs occur.
 - C. A cause determination recommends goal setting and monitoring.
2. A form similar to Figure 4 should be used for initiating the Goal Setting and Monitoring process.

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7.0 INSTRUCTIONS: (continued)

7.9 (continued)

3. The form shall be completed by the responsible system owner in the following manner:
 - A. List the SSC affected.
 - B. List whether or not the SSC is risk significant.
 - C. Indicate whether performance criteria have been exceeded or a repetitive MPFF occurred. If both, select both. If a cause determination recommended (a)(1) status consideration due to a failure of a risk significant SSC, even if performance criteria were met, then provide explanation.
 - D. If performance criteria have been exceeded, describe the event(s). Include the unit, date, and time of the occurrence(s).
 - E. Explain which criterion was exceeded.
 - F. If a repetitive MPFF occurred, summarize the reason that the failures are considered repetitive. The Condition Reports that document the failures may be referenced or attached.
 - G. List sources of reference information. Examples are: NPWOs, LERs, IHEs, trending reports, operator logs, and Figure 2. Reference documents should be attached.
4. The responsible System Owner shall perform or assign the following steps. A form similar to Figure 4 should be used and linked with the Condition Report initiated in step 7.9.7.
 - A. Specifically identify that the SSC is being assigned (a)(1) status.
 - B. Determine the responsibility for root cause analysis. When complete, summarize, reference and attach the original document.
 - C. Determine corrective actions and responsibility.

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7.0 INSTRUCTIONS: (continued)

7.9 (continued)

4. (continued)

D. Set goals and determine the monitoring requirements and methods to verify goals are met.

1. Goals can be set at the structure, system, train, or component level as appropriate. The level at which a goal is set should be such that the goal brings about the necessary improvement in performance.

E. Include frequency and duration of monitoring and date of reassessment.

F. Include a discussion of the method by which goals were set to be commensurate with plant safety (PSA) or why this was not practical.

G. Include the method by which industry wide operating experience was taken into account or why this was not practical. Possible sources are: NPRDS, Nuclear Network, Vendor Bulletins, Operating Experience Program, NRC Notices, NSSS Owners Group Information, or direct contact with peer utilities or equipment vendors/manufacturers.

NOTE

A review of related Industrywide Operating Experience should be performed as a preliminary step in the establishment of corrective actions, goals and monitoring.

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7.0 INSTRUCTIONS: (continued)

7.9 (continued)

7. The MRA shall process the Goal Setting and Monitoring form and supporting information using the Condition Report procedure to ensure adequate management review and traceability.
8. The MRA shall arrange for Expert Panel review of the proposed goal setting and monitoring process.
9. If the Expert Panel review does not concur that the situation requires monitoring under section (a)(1) of the Rule, Figure 4 (or similar) and the Condition Report generated in 7.9.7 should be dispositioned with a basis for not requiring monitoring. If a Technical Assessment is deemed necessary to provide a basis for not placing a SSC into (a)(1) status, Figure 3 (or similar) may be used.
 - A. The reason should be transmitted to the MRA along with a copy of the Condition Report.
 - B. The Expert Panel may decide an SSC is of low risk significance and may be run to failure. Under these circumstances, a change to scoping may be warranted.
 - C. If the Expert Panel identifies a need for relaxation of the Performance Criteria, a change should be initiated.
 - D. Documentation of the change should provide the new criteria and use PSA and industry wide operating experience, as applicable, to justify the change.
 - E. A form similar to Figure 1, Changes to Scope or Performance Criteria, shall be used and sent to the MRA.
10. Monitoring should be performed for each corrective action to verify effectiveness. Monitoring may be as simple as post-maintenance testing of a replaced part. Monitoring may be as involved as daily condition monitoring on the affected component and all similar components until all can be replaced.

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7.0 INSTRUCTIONS: (continued)

7.9 (continued)

10. (continued)

A. If during monitoring, SSC performance does not meet a specified goal, or a failure of a risk significant SSC occurs (even if the goal or performance criteria is met), a cause determination shall be required and the goal setting and monitoring reevaluated.

11. Applicable goals must be met before an SSC can be returned to (a)(2) Effective Performance status.

NOTE

For standby equipment that has experienced functional failures during surveillances, the NRC has stated that successfully passing three routinely scheduled surveillances is adequate monitoring.

7.10 **Completion of Goal Setting and Monitoring (Dispositioning from a(1) to a(2))**

1. A goal may be determined to have been met, monitoring of SSC performance against specific goals may be discontinued, and the SSC may be returned to the provisions of (a)(2) if any of the following criteria are satisfied:
 - A. Performance is acceptable for three surveillance periods where the surveillance periodicity is equal to or less than a six month interval;
 - B. Performance is acceptable for two successive surveillances where the surveillance periodicity is greater than six months but no greater than two fuel cycles; or
 - C. An approved and documented technical assessment assures the cause is known and corrected and thus monitoring against goals is unnecessary.
2. When the responsible System Owner and the MRA agree that any of the above conditions have been satisfied, an SSC may be dispositioned from (a)(1) to (a)(2), using a form similar to Figure 5, Demonstration of (a)(2) Effective Performance.

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7.0 INSTRUCTIONS: (continued)

7.10 (continued)

3. The form shall be completed in the following manner by the responsible System Owner.
 - A. The initial reason for entering (a)(1) should be given.
 - B. A discussion of corrective actions and monitoring should be provided including the extent to which they were successful in achieving the goals.
 - C. Required changes made to PMs or condition monitoring activities should be summarized. This section should demonstrate how the PM program or condition monitoring effectively controls the performance of SSCs. These changes should be documented in the PM basis or an applicable procedure or guideline in accordance with the requirements governing those programs.
 - D. The Demonstration of (a)(2) Effective Performance form (Figure 5) shall be sent to the MRA. This form also must be used to close a PMAI resultant of the Condition Report initiated in section 7.9.7.
 - E. The Expert Panel shall concur that the SSC is ready to be moved into (a)(2) as indicated by signature of the Expert Panel Chairman.
 - F. If a periodic evaluation is due but some monitoring will continue into the next cycle, Figure 5 (or similar) should be completed. Corrective actions and monitoring should be designated as either completed or open. Those still open should have a new review date included.

7.11 Periodic Assessment

1. In accordance with Section (a)(3) of the Rule, performance and condition monitoring activities and associated goals and preventive maintenance shall be evaluated at least every refueling cycle provided that the interval between evaluations does not exceed 24 months.

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7.0 INSTRUCTIONS: (continued)

7.11 (continued)

2. The evaluations will be performed by the following methods:
 - A. System Owners shall monitor SSCs for compliance to performance criteria in accordance with this procedure. The results of SSC performance, SSCs considered for goal setting and monitoring per section (c)(1) of the rule, as well as SSC degradations, trends and pertinent industry wide operating experience should be reported to appropriate site personnel (typically System Owners, Expert Panel members, and Plant Management) as Maintenance Rule Quarterly Reports.
 - B. A higher-level, comprehensive periodic evaluation should be performed annually at mid-year following Maintenance Rule implementation dates. This evaluation will be identified as the Periodic Assessment.
3. The scope of the Periodic Assessment shall encompass (for the period covered by the report):
 - A. The review of goals and the results of monitoring activities established for SSCs being monitored under (a)(1) of the Maintenance Rule. This review should evaluate SSC performance against respective goals and should also evaluate each goal for its continued applicability.
 - B. The review of the results of monitoring activities as related to performance criteria for SSCs under (a)(2) of the Maintenance Rule. This review should determine if performance was acceptable on an overall basis. If performance was not acceptable, the cause should be determined and corrective action initiated.
 1. Industrywide operating experience, where appropriate, should be reviewed to identify potential problems that are applicable to the plant. Reviews should confirm that industry operating experience has been properly considered and evaluated with regard to existing maintenance and monitoring activities. Reviews should determine if industrywide operating experience indicates the need to change existing programs.

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7.0 INSTRUCTIONS: (continued)

7.11 (continued)

3. (continued)

C. The review of corrective actions taken as a result of ongoing maintenance activities or goal setting to ensure action was initiated when appropriate, and that action(s) taken resulted in improved performance of the SSC. Corrective actions that should be reviewed include the following:

1. Actions to ensure that SSC performance met goals established by requirements of (a)(1);
2. Actions taken as a result of cause determinations;
3. Status of problem resolution, if any, identified during the previous periodic assessment.

D. Review and trending of SSCs dispositioned from (a)(2) to (a)(1) and SSCs dispositioned from (a)(1) to (a)(2), and the review of the basis for these actions.

E. The identification of changes to maintenance activities that may result in improving the relationship between availability and reliability.

F. A review of repetitive MPFFs to evaluate the effectiveness of the corrective action program.

4. The Periodic Assessment should be conducted for both units concurrently. The following approach should be used to conduct the periodic assessment.

A. System Owners provide input to the Maintenance Rule Administrator on the goals, performance criteria, functional failures, corrective actions, performance, etc. associated with the system since the previous assessment.

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7.0 INSTRUCTIONS: (continued)

7.11 (continued)

4. (continued)

- B. The Maintenance Rule Administrator will consolidate inputs from System Owners, review corrective actions taken, assess SSC and overall Unit performance, assess the continued appropriateness of goals and performance criteria, discuss any necessary changes to scoping or risk significance, and (with assistance from PSA) address the balance between unavailability and reliability. The methodology used to consider, evaluate and apply, where appropriate, industrywide operating experience since the previous assessment will be assessed.
- C. The Maintenance Rule Administrator will prepare a Periodic Assessment report which discusses these topics, the effectiveness of corrective actions, any areas where improvement is needed, and provides conclusions which summarize the effectiveness of the maintenance programs which implement the rule.
- D. The Maintenance Rule Administrator will present the Periodic Assessment report to the Expert Panel for review and approval.

7.12 **Balancing Unavailability and Reliability**

- 1. Adjustments shall be made where necessary to ensure that the objective of preventing failures of SSCs through maintenance is appropriately balanced against the objective of minimizing unavailability of SSCs due to monitoring or preventive maintenance.
- 2. The objective of balancing unavailability and reliability is taken into account when Maintenance Rule Performance Criteria are established. PSA results are used to determine unavailability values which, if met, would ensure that certain threshold Core Damage Frequency values would not be exceeded. Maintenance Rule performance criteria values are established in accordance with PSA results. Additionally, performance history, preventive maintenance activities, and out of service time are taken into consideration when developing performance criteria. Therefore, a reasonable balance of unavailability and reliability is demonstrated when SSCs meet performance criteria.

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7.0 INSTRUCTIONS: (continued)

7.12 (continued)

3. Optimization of preventive maintenance may be achieved by any of the following:
 - A. Ensuring that appropriate preventive maintenance is performed to meet availability objectives as stated in plant risk analysis, FUSAR, or other reliability approaches to maintenance.
 - B. Allocating preventive maintenance to applicable tasks commensurate with anticipated performance improvement (e.g., pump vibration analysis instead of teardown).
 - C. Reviewing to determine that availability of SSCs has been acceptable.
 - D. Focusing maintenance resources on preventing those failure modes that affect a safety function.
 - E. Scheduling, as necessary, the amount, type, or frequency of preventive maintenance to appropriately limit the time out of service.

7.13 Evaluation of Systems to be Removed from Service

1. In performing monitoring and preventive maintenance activities, an assessment of the total plant equipment that is out of service should be taken into account to determine the overall effect on performance of safety functions.
2. The NPS/ANPS/NWE is responsible for authorizing work on operable systems and ensuring that the plant is in a safe condition.
 - A. The Nuclear Plant Supervisor or designee makes a qualitative assessment when he gives permission to start work on a Nuclear Plant Work Order and takes equipment out of service.
 - B. Only the NPS/ANPS/NWE may authorize removal of equipment. Removal means any act which precludes the system or component from performing its intended function.
 - C. Redundant equipment is required to be operable when removing Technical Specification equipment from service.

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7.0 INSTRUCTIONS: (continued)

7.13 (continued)

3. The Operations/Maintenance Coordinator coordinates trouble and breakdown work with Operations surveillances or Maintenance PMs to minimize equipment out of service time.
4. The PSA group has developed pre-evaluated maintenance risk assessments. Outage Management and Operations personnel should use these risk assessments to ensure that plant system trains or components taken out of service comply with PSA evaluated risk assessments. In the event that the pre-evaluated maintenance risk assessments do not provide risk assessment for a proposed plant configuration, a specific PSA assessment will be required prior to entering the proposed configuration.
5. Equipment required by a Technical Specification Limiting Condition for Operation may be voluntarily taken out of service for preventive maintenance if the increased safety risk during the period in which the equipment is unavailable due to maintenance is offset by the decreased safety risk attributable to the improved reliability of the equipment following maintenance. A specific or pre-evaluated risk assessment may be used to evaluate the safety impact. This process is governed by AP 0010460, "Critical Maintenance Management."
6. During maintenance testing and operation of sensitive systems it may become necessary to perform manipulations. Two related sensitive systems should not be worked at the same time.
7. The Shutdown Safety Equipment Assessment is used to show the relative risk of each safety function based on available equipment. Safety functions are those defined in Emergency Operating Procedures. This qualitative assessment is intended to heighten personnel awareness of unit conditions.
8. The procedure for shutdown cooling outlines plant equipment required to be operable and other work controls for this operational mode.

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APPENDIX A
THE MAINTENANCE RULE

(Page 1 of 2)

- § 50.65 Requirements for monitoring the effectiveness of maintenance at nuclear power plants.
- (a)(1) Each holder of an operating license under §§ 50.21(b) or 50.22 shall monitor the performance or condition of structures, systems, or components, against licensee established goals, in a manner sufficient to provide reasonable assurance that such structures, systems, and components, as defined in paragraph (b), are capable of fulfilling their intended functions. Such goals shall be established commensurate with safety and, where practical, take into account industrywide operating experience. When the performance or condition of a structure, system, or component does not meet established goals, appropriate corrective action shall be taken.
- (2) Monitoring as specified in paragraph (a)(1) of this section is not required where it has been demonstrated that the performance or condition of a structure, system, or component is effectively being controlled through the performance of appropriate preventive maintenance, such that the structure, system, or component remains capable of performing its intended function.
- (3) Performance and condition monitoring activities and associated goals and preventive maintenance activities shall be evaluated at least every refueling cycle provided the interval between evaluations does not exceed 24 months. The evaluation shall be conducted, taking into account, where practical, industrywide operating experience. Adjustments shall be made where necessary to ensure that the objective of preventing failures of structures, systems, and components through maintenance is appropriately balanced against the objective of minimizing unavailability of structures, systems, and components due to monitoring or preventive maintenance. In performing monitoring and preventive maintenance activities, an assessment of the total plant equipment that is out of service should be taken into account to determine the overall effect on performance of safety functions.
- (b) The scope of the monitoring program specified in paragraph (a)(1) of this section shall include safety-related and nonsafety related structures, systems, and components, as follows:

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APPENDIX A
THE MAINTENANCE RULE
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- (1) Safety-related structures, systems, and components that are relied upon to remain functional during and following design basis events to ensure the integrity of the reactor coolant pressure boundary, the capability to shut down the reactor and maintain it in a safe shutdown condition, and the capability to prevent or mitigate the consequence of accidents that could result in potential offsite exposure comparable to the 10 CFR part 100 guidelines.
- (2) Nonsafety related structures, systems, and components:
 - (i) That are relied upon to mitigate accidents or transients or are used in plant emergency operating procedures (EOPs); or
 - (ii) Whose failure could prevent safety-related structures, systems, and components from fulfilling their safety-related function; or
 - (iii) Whose failure could cause a reactor scram or actuation of a safety-related system.
- (c) The requirement of this section shall be implemented by each licensee no later than July 10, 1996.

Dated at Rockville, Maryland, this 28th day of June, 1991.

Signed, Samuel J. Chilk, Secretary of the Commission

* Later changed to once per refueling cycle but less than 24 months.

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APPENDIX B
SYSTEMS WITHIN THE SCOPE OF THE MAINTENANCE RULE
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RISK SIGNIFICANT SYSTEMS

System No.	Risk Signif.	System & Components	Performance Criteria		
			SSC Specific Availability or Condition	SSC Specific Train Level Reliability	Plant Level Criteria
1a	RS	Fuel and CEAs	INPO FRI	MPFF \leq 2	PLPC 1,2
1b	RS	Reactor Coolant System	PORVs A, B	MPFF \leq 2	PLPC 1-5
2	RS	CVCS	A, B, C, chg pps	MPFF \leq 2	PLPC 4
3a	RS	HPSI	A, B	MPFF \leq 2	PLPC 1,3,4
3b	RS	LPSI	A, B	MPFF \leq 2	PLPC 1,3,4
3c	RS	Safety Injection Tanks	A, B, C, D	MPFF \leq 2	PLPC 1,3
7	RS	Containment Spray	A, B	MPFF \leq 2	PLPC 1,3
8	RS	Main Steam	MSIV A, B	MPFF \leq 2	PLPC 1-3
9a	RS	Main Feedwater	MFIVs	MPFF \leq 2	PLPC 1-3
9b	RS	Auxiliary Feedwater	A, B, C	MPFF \leq 2	PLPC 1,3
9c	RS	AFAS	EAF**	MPFF \leq 2	PLPC 2,3
14	RS	CCW	A, B	MPFF \leq 2	PLPC 1,2,4
17b	RS	EDG Fuel Oil	A, B	MPFF \leq 2	PLPC 3,4
18b	RS	Instrument Air	C, D	MPFF \leq 2	PLPC 1,2
21a	RS	ICW	A, B	MPFF \leq 2	PLPC 1,4
25a	RS	HVAC-Risk Significant	OOS hrs/tan	MPFF \leq 2	PLPC 1
47a	RS	480 VAC swgr & bkrs	SSC loads	MPFF \leq 2	PLPC 1-4
48	RS	120/208 vac	SSC loads	MPFF \leq 2	PLPC 1,2
49	RS	120 Vital VAC inverters	MA, B, C, D	MPFF \leq 2	PLPC 1-4
50	RS	125 VDC & chargers	A, B	MPFF \leq 2	PLPC 1-4
52	RS	4.16kv swgr & bkrs	AB & SSC loads	MPFF \leq 2	PLPC 1-4
53	RS	Generation & Distribution	A & B S/U xfmr's	MPFF \leq 2	PLPC 1-4
59	RS	EDGs	A, B, triggers	MPFF \leq 2	PLPC 1,3,4
63	RS	RPS	EAF**	MPFF \leq 2	PLPC 2,3
68	RS	Containment Penetrations	ILRT & LLRT	MPFF \leq 2	PLPC 1,4
69	RS	ESFAS & Annunciators	EAF**	MPFF \leq 2	PLPC 2-4,6

PLANT LEVEL PERFORMANCE CRITERIA

- PLPC 1 - Unplanned unavailability less than or equal to 5% for each unit, last 12 months.
 - PLPC 2a - Unplanned automatic reactor trips less than or equal to 1 for the site for last 12 months.
 - PLPC 2b - Unplanned manual reactor trips less than or equal to 2 each unit for last 12 months.
 - PLPC 3 - Unplanned ESF Actuations less than or equal to 1 each unit for last 12 months.
 - PLPC 4 - Unplanned "Red" SSA during less than 1 each outage.
 - PLPC 5 - Unplanned, reportable radiological release less than or equal to 1 from the site during the last 12 months.
 - PLPC 6 - Unplanned, reportable loss of annunciation in the control room less than or equal to 1 last 12 months.
- Repetitive Maintenance Preventable Functional Failures less than 1 per 36 months applies to all SSCs and may occur between trains, units, or different systems involving similar components.

DEFINITIONS

- PLPC - Plant Level Performance Criteria.
- MPFF - Maintenance Preventable Functional Failure.
- RMPFF - Repetitive Maintenance Preventable Functional Failure.
- Availability - Tracked by OOS log hours in Modes 1-3 only, total over previous 18 months.
- Reliability - Tracked in ALL modes, MPFF \leq 2 on any single train in any 18 month period.
- Effectiveness of problem solving - RMPFF < 1 in any 36 month period.
- EAF** - Less than 1% unit unavailability loss/year attributable to a specific SSC.

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APPENDIX B
SYSTEMS WITHIN THE SCOPE OF THE MAINTENANCE RULE
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NON RISK SIGNIFICANT SYSTEMS

System No.	Risk Signif.	System & Components	Performance Criteria		
			SSC Specific Availability or Condition	SSC Specific Train Level Reliability	Plant Level Criteria
4	NRS-SB	Fuel Pool	Inspections	MPFF≤2	PLPC 4,5
6	NRS-SB	Waste Management		MPFF≤2	PLPC 5
23a	NRS-SB	SGBD Rad Monitoring		MPFF≤2	PLPC 5
25b	NRS-SB	HVAC - Non Risk		MPFF≤2	PLPC 1,2
25n	NRS-SB	ECCS Drains		MPFF≤2	PLPC 5
26	NRS-SB	Radiation Monitoring		MPFF≤2	PLPC 3,5
27a	NRS-SB	Hydrogen Analyzer		MPFF≤2	PLPC 1
27b	NRS-SB	Hydrogen Recombiners		MPFF≤2	PLPC 1
37	NRS-SB	Ultimate Heat Sink Valves		MPFF≤2	PLPC 1
60	NRS-SB	Station Grounding		MPFF≤2	PLPC 1,3
62	NRS-SB	Reactor Regulating		MPFF≤2	PLPC 1-3
64	NRS-SB	Nuclear Instrumentation		MPFF≤2	PLPC 1-3
70	NRS-SB	QSPDS		MPFF≤2	PLPC 1
73	NRS-SB	Structures		MPFF≤0	PLPC 1
75	NRS-SB	Cathodic Protection		MPFF≤2	PLPC 1
10	NRS	Extraction Steam			PLPC 1-2
11	NRS	Heater Drains and Vents			PLPC 1-2
12a	NRS	Condensate			PLPC 1,2
13	NRS	Turbine Cooling Water			PLPC 1-2
17a	NRS	Turbine Lube Oil			PLPC 1,2
19	NRS	Condensate Polishing			PLPC 1,2
21b	NRS	Circulating Water			PLPC 1,2
22	NRS	Turbine			PLPC 1,2
46	NRS	6.9 kv swgr & bkrs			PLPC 1,2
47b	NRS	480 VAC swgr & bkrs			PLPC 1-2,4
66	NRS	CEDM			PLPC 1,2
67	NRS	Fuel Handling			PLPC 1
74	NRS	Polar Crane			PLPC 1

PLANT LEVEL PERFORMANCE CRITERIA

- PLPC 1 - Unplanned unavailability less than or equal to 5% for each unit, last 12 months.
 - PLPC 2a - Unplanned automatic reactor trips less than or equal to 1 for the site for last 12 months.
 - PLPC 2b - Unplanned manual reactor trips less than or equal to 2 each unit for last 12 months.
 - PLPC 3 - Unplanned ESF Actuations less than or equal to 1 each unit for last 12 months.
 - PLPC 4 - Unplanned "Red" SSA during less than 1 each outage.
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DEFINITIONS

- PLPC - Plant Level Performance Criteria.
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- Reliability - Tracked in ALL modes, MPFF ≤2 on any single train in any 18 month period.
- Effectiveness of problem solving - RMPFF < 1 in any 36 month period.
- EAF** - Less than 1% unit unavailability loss/year attributable to a specific SSC.
- NRS - Non Risk Significant
- SB - Standby Systems

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APPENDIX C
STRUCTURES INCLUDED IN PSL MAINTENANCE RULE
MONITORING PROGRAM

Reactor Building: Shield Building
Containment Vessel
Interior Structure

Reactor Auxiliary Building

Fuel Handling Building

Steam Trestle

Diesel Generator Building

Intake Structure

Component Cooling Area Structures, including pipe trenches

Ultimate Heat Sink Dam

Refueling Water Tank & Foundation

Condensate Storage Tank

Condensate Storage Tank Shielding

Diesel Oil Storage Tank

Diesel Oil Storage Tank Pumphouses

Turbine Building

Flood Protection Stop Logs (Unit 2 RAB and South door on East wall)

Main Transformer Barrier Walls & Foundations

Start-Up Transformers Barrier Walls & Foundations

Auxiliary Transformers Foundations

Cooling Canals: Intake Head Wall
Intake Pipe Line
Intake Velocity Cap
Seal Well Structure
Discharge Head Wall
Discharge Piping

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APPENDIX D

EXISTING PROGRAMS FOR SURVEYING STRUCTURAL PERFORMANCE

General Monitoring Requirements for All Structures

The following procedures have been revised to address general monitoring requirements of structures and supports as required for implementation of the Maintenance Rule:

- AP 00750 - Duties and Responsibilities of the System Engineer**
Engineers are responsible for monitoring and evaluating their system's equipment and components. This requires maintaining detailed knowledge of as-built design, review of operating and maintenance records, frequent walkdowns and discussions with operating and maintenance personnel. Structures are system 73.
- ADM-08.02 - Conduct of Maintenance**
Maintenance functional unit is responsible for surveillance, preventive, predictive, planned and corrective maintenance, and implementation of modifications for plant structures, to assure optimum plant performance.
- AP 0010120 - Conduct of Operations**
Operations is responsible for the day to day operation of the plant to ensure safe, efficient and reliable operation. This requires daily detailed surveillance of the plant operation to identify system deficiencies and initiate corrective actions.

QI - 13.2, "Housekeeping and Cleanliness Control Methods"

TS 10.2, "Quality Control Surveillance"

Safety Department Surveillance in Accordance with OSHA Requirements

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FIGURE 1

Changes to Scope or Performance Criteria	
SSC # and Title:	Unit: 1 - 2 (circle) ◊ Risk Sig. : ◊ Non Risk Sig.
This change is: ◊ an addition ◊ a deletion	
Description of Change:	
References (attach):	
Impact of change on functions:	
Change to key components:	
Changes to Preventive Maintenance and Condition Monitoring Programs:	
Impact of Change on Risk Significance:	
Change to Performance Criteria:	
System Owner: _____	Date: ____/____/____
MRA Recommended: _____	Date: ____/____/____
Approved: _____	Date: ____/____/____
Expert Panel Chairman	

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FIGURE 2

SSC PERFORMANCE INDICATOR

SSC: 3b - LPSI

Updated: 24 April, 1996

UNIT: 1

Performance Monitoring Period: 36 months

Performance Criteria:

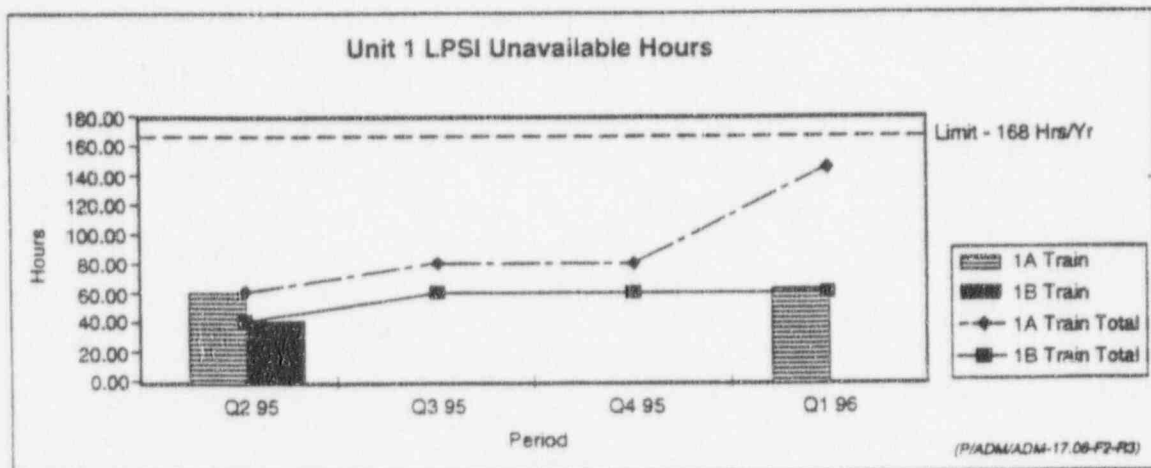
Unavailability: U1 & U2 less than 168 hrs/yr per train OOS (4 Qtr. rolling total).

Reliability: Less than or equal to 2 MPFFs per train per 18 month period.

PLPC 3: Unplanned ESF Actuations less than or equal to 1 each Unit.

PLPC 4: Zero (0) unplanned "red" SSA during outages.

UNAVAILABILITY



Reliability: List all failures (indicate train for risk sig. SSCs), corrective actions and MPFFs:

9/27/94 - LPSI - 1B Breaker 20406 failed, adjusted breaker.

5/4/95 - V3206 Breaker 41277 failed, new line starter installed.

PLANT LEVEL PERFORMANCE:

Report PLPC. If PLPC exceeded, determine if SSC was cause.

PLPC 3: No unplanned ESF Actuations.

PLPC 4: No unplanned "red" SSA during outages.

Trends:

Q1 96 OOS Hrs. attributed to ECCS suction header leak repair (not a MPFF).

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FIGURE 3
GUIDELINES FOR TECHNICAL ASSESSMENT FORMAT ON NOT
PLACING A SSC IN (a)(1) IF PERFORMANCE CRITERIA IS NOT MET

These guidelines are intended to aid the System Owner in providing the basis for not placing an SSC in a(1) classification when its performance criteria are not satisfied.

- I Describe the conditions and event sequence regarding the MPFF.
 - II Describe the root cause and contributing factors.
 - III Describe the corrective actions taken.
- (A copy of the LER or SCE Problem Report may be referenced and attached for I, II and III.)
- IV Explain why the MPFF is not repetitive.
 - V Explain the impact of the MPFF on PSA.
 - VI Assess the applicability of the MPFF to the other unit.
 - VII Explain how the multiple barriers put into effect will preclude a repetitive MPFF.

Prepared by: _____ Date: ____/____/____

Reviewed by: _____ Date: ____/____/____

A draft of the Technical Assessment shall be provided to the Maintenance Rule Administrator for scheduling of a review by the Expert Panel. The SSC owner will sponsor the assessment at the panel. A final assessment will be issued after approval by the panel.

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FIGURE 4
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Goal Setting and Monitoring		
Unit: 1 2	Date:	Risk Significant: <input type="checkbox"/> Yes <input type="checkbox"/> No
SSC:		
Reason for goal Setting:		
<input type="checkbox"/> Performance Criteria Not Met Which Criteria were not met? Description of Events:		
<input type="checkbox"/> Repetitive MPFF (attach Figure 3 for each failure) Explain how failures are repetitive. Were previous corrective actions inadequate?		
References (attach):		
Does this SSC require (a)(1) status? <input type="checkbox"/> Yes <input type="checkbox"/> No		
		_____ System Owner
Yes - signature of Expert Panel Member		_____ Maintenance Rule Administrator
No - signature and reason why not		_____ Expert Panel Chairman

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FIGURE 4
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Goal Setting and Monitoring			
Root Cause Analysis:		Assigned To:	
Corrective Actions and Responsibilities:		Assigned to:	
1.			
2.			
3.			
4.			
Goal Setting and Monitoring: For each corrective action, there should be a goal to be attained that shows the action was correct, monitoring for a follow-up period to verify success, and a discussion to show how PSA and industrywide operating experience were used in the process.			
Goal	Monitoring method & frequency	Date	PSA/Industry Exp
1.	1.		
2.	2.		
3.	3.		
4.	4.		

Prepared by: _____ System Owner _____ Date _____

Review and Concurrence: _____ Maintenance Rule Administrator _____ Date _____

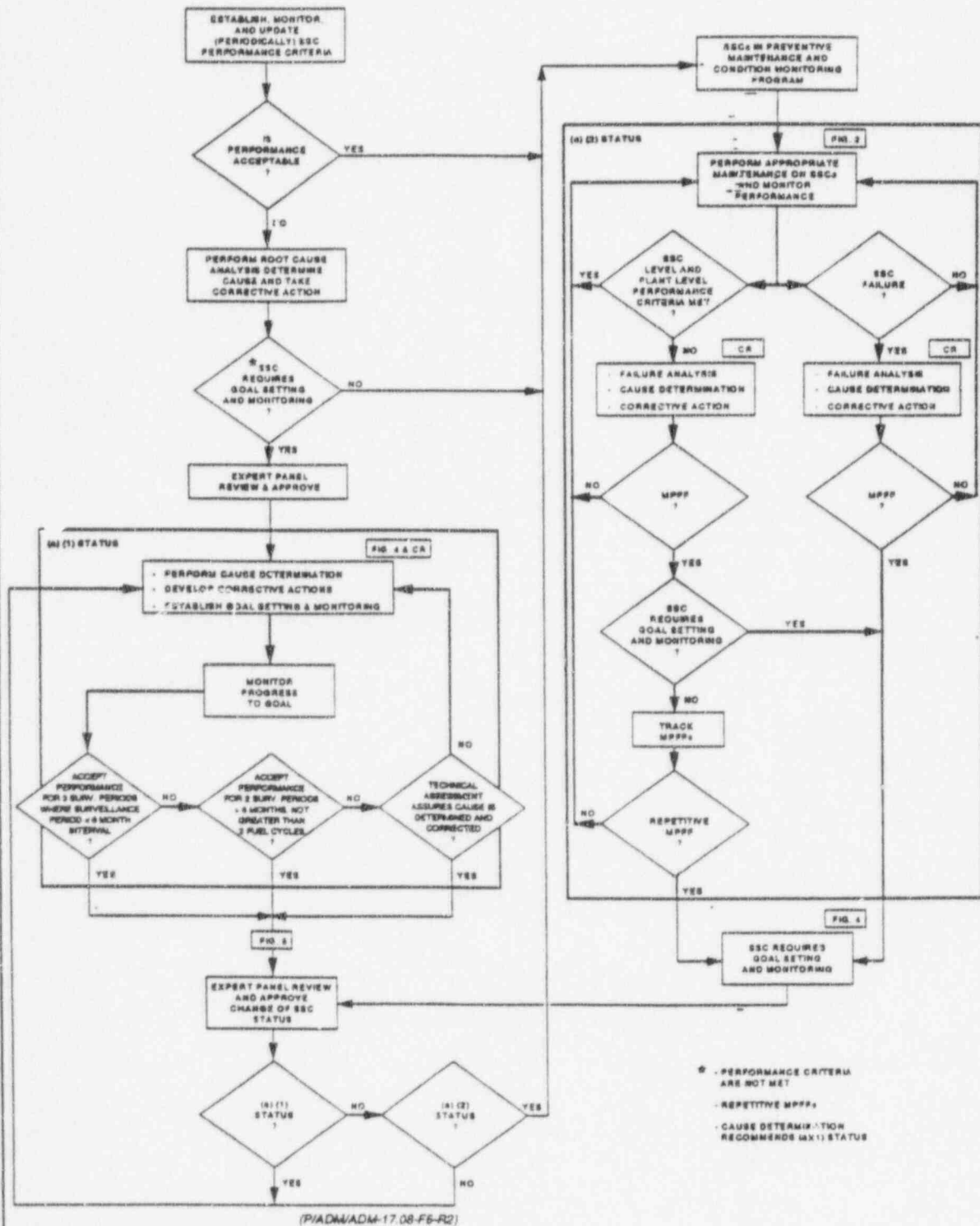
Review and Approved: _____ Expert Panel Chairman _____ Date _____

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FIGURE 5

Demonstration of (a)(2) Effective Performance		
Unit: 1 2	Date:	Risk Significant: <input type="checkbox"/> Yes <input type="checkbox"/> No
SSC:		
Initial reason for entering (a)(1) goal setting and monitoring		Date:
<p>For each corrective action and goal:</p> <p>Did the corrective action meet the goal?</p> <p>Was monitoring successful?</p> <p>Were any changes made to the PM or condition monitoring program? Summarize.</p> <p>Expert Panel Review</p> <p>_____ All corrective actions were performed and were successful in achieving goals. The SSC may be returned to (a)(2) status.</p> <p>_____ SSC must remain in (a)(1) status for the following reason(s):</p>		
Prepared by:	_____	_____
	System Owner	Date
Review and Concurrence:	_____	_____
	Maintenance Rule Administrator	Date
Approved by:	_____	_____
	Expert Panel Chairman	Date

FIGURE 6



* - PERFORMANCE CRITERIA
ARE NOT MET
- REPETITIVE MPFFs
- CAUSE DETERMINATION
RECOMMENDS (A) (1) STATUS

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FIGURE 7
REINFORCED CONCRETE SURVEY CHECKLIST
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Person(s) Performing Survey _____ Date of Survey ____/____/____

1. _____

2. _____

Structure of Structural Component Being Surveyed _____

Zone # _____

Review For Indication of Potential Degradation:

Any visible cracks wider than 3" YES / NO
Notes: _____

Evidence of spalling, scaling, stratification YES / NO
Notes: _____

Evidence of water infiltration YES / NO
Notes: _____

Exposed rebar YES / NO
Notes: _____

Evidence of the presence of any rebar corrosion YES / NO
Notes: _____

Rust bleeding, staining, or discoloration YES / NO
Notes: _____

Evidence of corroded or loose inserts YES / NO
Notes: _____

Spalls or pop-outs which exceed a depth of 1" or exposes rebar YES / NO
Notes: _____

Spalling or scaling which also exhibits delamination (hollow sounding) YES / NO
Notes: _____

Peeling, discolored, or deteriorated coatings YES / NO
Notes: _____

Evidence of concrete erosion or chemical attack YES / NO
Notes: _____

Other _____

Attach additional sheets for documentation of potentially degraded items. Documentation should include location, sketches, and or pictures (indicate direction of view), suspected root cause or actions required to identify root cause. Refer to attached sheets in notes above, as applicable.

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FIGURE 7
REINFORCED CONCRETE SURVEY CHECKLIST
(Page 2 of 4)

Concrete Surveillance Terminology

BLEEDING CHANNELS

Passageways left by escape of excess water during drying and settlement.

CHEMICAL DETERIORATION

Deterioration of concrete due to chemical attack.

CHLORIDE ATTACK

Chlorides and nitrates of ammonium, magnesium, aluminum and iron attack concrete. Sodium chloride is harmless to concrete, but is a major contributor to corrosion of rebar.

CRACKING

Separation of concrete into parts characterized by length, width and depth and whether the crack is active or passive. Passive cracks may be caused by construction errors, shrinkage, variations in internal temperature, or shock waves. Active cracks may be caused by variations in atmosphere or internal temperature, absorption of moisture, reinforcement corrosion, chemical reactions, settlement, or various loading conditions.

DELAMINATION

A horizontal spitting cracking or separation of concrete member in a plane roughly parallel to and generally near the surface; found most frequently in deck slabs and caused by corrosion of rebar; similar to spalling or scaling, or peeling except that delamination affects large area and is not readily apparent without sounding.

DETERIORATION

Impairment of usefulness of concrete

DISCOLORATION

Departure of color from that which is normal or desired; usually caused by stains or chemical changes

DISINTEGRATION

Deterioration into small fragments or particles due to factors such as chemical attack, weathering and erosion.

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FIGURE 7
REINFORCED CONCRETE SURVEY CHECKLIST

(Page 3 of 4)

Concrete Surveillance Terminology
(continued)

DISTORTION

Warping or deforming of concrete due to factors such as overloading, poor design, ground movement, and expansion.

EFFLORESCENCE

Deposit of water soluble chemicals, usually white on concrete surface.

EROSION

Progressive surface disintegration of concrete by the abrasive or cavitation action of gases, fluids or solids in motion.

HONEYCOMB

Voids left in concrete due to lack of adequate vibration, inappropriately low slump, or congestion of the embedded steel.

POPOUTS

The breaking away of small portions of a concrete surface due to internal pressure which leaves a shallow, typically conical depression. Popouts may be caused by rebar corrosion or cement aggregate reactions.

SCALING

Local flaking or peeling away of the near-surface portion of hardened concrete or mortar.

SPALLING

Detachment of fragments usually in the shape of flakes, from a concrete mass. Variations in internal temperature, corrosion of rebar, chemical reactions, weathering and poor design can cause active spalling. Shock waves or a single incident of varying internal temperature can cause passive spalling. Passive spalls may simply be repaired but active spalls are warnings of a greater problem.

STRATIFICATION

The segregation of overwet or over vibrated concrete into horizontal layers with increasingly lighter material toward the top.

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FIGURE 7
REINFORCED CONCRETE SURVEY CHECKLIST

(Page 4 of 4)

Concrete Surveillance Terminology
(continued)

STRUCTURAL PERFORMANCE

Excessive cracking or other indications of structural distress due to excessive applied loads, or deformations due to damage from fire or other external means.

UNIFORMITY OF CONCRETE

Degree of consistency of the properties of the concrete from one part of the structure to another.

UNSOUND CONCRETE

Concrete which has undergone deterioration or disintegration during service exposure.

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FIGURE 8
MASONRY SURVEY CHECKLIST

(Page 1 of 5)

Person(s) Performing Survey _____ Date of Survey ____/____/____

1. _____
2. _____

Structure of Structural Component Being Surveyed _____

Zone # _____

Review For Indication of Potential Degradation:

Any visible cracks wider than 1/16" YES / NO

Notes: _____

Evidence of distortion including bowing, bulging, sagging and warpage ... YES / NO

Notes: _____

Evidence of water infiltration YES / NO

Notes: _____

Exposed joint reinforcement YES / NO

Notes: _____

Evidence of the presence of any reinforcement corrosion YES / NO

Notes: _____

Rust bleeding, staining, or discoloration YES / NO

Notes: _____

Evidence of corroded or loose top of wall restraints YES / NO

Notes: _____

Spalls, pitting or detachments YES / NO

Notes: _____

Missing or degraded mortar YES / NO

Notes: _____

Peeling, discolored, or deteriorated coatings YES / NO

Notes: _____

Evidence of masonry/mortar erosion or chemical attack YES / NO

Notes: _____

Other _____

Attach additional sheets for documentation of potentially degraded items. Documentation should include location, sketches, and/or pictures (indicate direction of view), suspected root cause or actions required to identify root cause. Refer to attached sheets in notes above, as applicable.

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FIGURE 8
MASONRY SURVEY CHECKLIST
(Page 2 of 5)

Masonry Surveillance Terminology

AIR INLEAKAGE

The volume of air per minute at a measure temperature and pressure that flows perpendicularly through a masonry assemblage. Air movement is a significant factor affecting condensation.

ALIGNMENT

The theoretical, definitive lines that establish the position of construction of a masonry assemblage.

BED JOINT LEVELNESS

The levelness or deviation from a horizontal plane of the layer of mortar on which masonry units are set.

BED WIDTH VARIATION

The variation in thickness of the layer of mortar on which masonry units are set.

BOWING

An outward swelling, or protuberance of a portion of a masonry assemblage.

BULGING

An outward swelling, bowing, or protuberance of a portion of a masonry assemblage from a vertical plane.

CHIPPING

A condition of small pieces or larger fragments of masonry units separating from the unit resulting from excessive stress.

CONDITION OF LINTELS (SHELF ANGLES)

Vertical, horizontal, or rotating movement of the structural members supporting masonry assemblages including the connections and connectors of the supporting members.

CRACKING

Narrow fissures from 0.01mm or larger in width in masonry

CRAZING

The formation of a pattern of tiny cracks or crackles in the glaze of glazed masonry units.

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FIGURE 8
MASONRY SURVEY CHECKLIST
(Page 3 of 5)

Masonry Surveillance Terminology
(Continued)

CRUMBLING

A condition indicative of a certain brittleness or tendency of the masonry to break up or dissolve.

DEFLECTION/SETTLEMENT

Vertical movement of the structure supporting a masonry assemblage. Differential movement is included as well as total movement.

DETACHMENT

The result of a complete break (or failure of an original construction joint) in a masonry unit in which the detached portion of masonry survives intact.

DISPLACEMENT

Horizontal translation of all or of a portion of a masonry assemblage.

DISTORTION

A change in shape of a masonry assemblage. Distortion can include bowing, bulging, sagging, and warpage.

EROSION

Wearing away of the surface, edges, corners or carved details of masonry slowly and usually by the mutual action of wind or windblown particles and water.

EXPOSURE OF JOINT REINFORCEMENT

Visible exposure of reinforcing steel bars, masonry ties, anchors, and joint reinforcement providing an opportunity for rapid corrosion of the reinforcement.

FRIABLE

Mortar or grout that is easily crumbled or pulverized and easily reduced to powder.

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FIGURE 8
MASONRY SURVEY CHECKLIST
(Page 4 of 5)

Masonry Surveillance Terminology
(Continued)

PEELING

A slipping away of the glaze surface or coating of masonry due to lack of adhesion or improper application of a surface treatment.

PITTING

The development of small cavities in a masonry surface.

PLUMBNESS

Deviation of a surface of a masonry assemblage from the vertical. Masonry can be out of plumb and still exhibit no signs of bowing, bulging, sagging, warping, or other distortions.

SAGGING

A vertical movement of a masonry assemblage characterized by wavy horizontal lines in the surface often accompanied by other modes of distortion.

SANDINESS

The presence of sand on the exposed surfaces of mortar and grout indicative of cement deficiency or excessive acid washing by cleaning or rain.

SPALLING

A condition of masonry in which the outer layer or layers of masonry units begins to break off (unevenly) or peel away in parallel layers from the larger block of masonry.

STAINING

A discoloration of masonry arising from foreign materials.

TIES AND ANCHORS

Units installed in mortar joints to prevent separation of masonry assemblages at control joints, corners, and wall intersections. Units may be metal tie bars, metal lath, metal strips, wire mesh, or hardware cloth.

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FIGURE 8
MASONRY SURVEY CHECKLIST
(Page 5 of 5)

Masonry Surveillance Terminology
(Continued)

VOIDS

In mortar or grout, the air spaces between and within pieces of aggregate or between units and mortar.

WARPING

The curvature of a masonry assemblage measured as a deviation from a true plane along the edges or the diagonals of the assemblage.

WEATHERING

Natural disintegration and erosion of masonry caused by wind and rain, resulting in granular and rounded surfaces.

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FIGURE 9
STRUCTURAL STEEL SURVEY CHECKLIST
(Page 1 of 3)

Person(s) Performing Survey _____ Date of Survey ____/____/____

1. _____
2. _____

Structure or Structural Component Being Surveyed _____

Zone # _____

Review For Indication of Potential Degradation:

Any flaking rust YES / NO

Notes: _____

Widespread corrosion resulting in section loss of 1/32" in depth of structural elements (i.e. surface rust is not considered reportable but should be considered for future coating issues) YES / NO

Notes: _____

Beam/Column deflection YES / NO

Notes: _____

Pitting or gouges which exceed a depth of 1/32" YES / NO

Notes: _____

Loose or missing anchors/fasteners YES / NO

Notes: _____

Missing or degraded grout under base plates YES / NO

Notes: _____

Evidence of cracking (fatigue or fracture) YES / NO

Notes: _____

Peeling, discolored, or deteriorated coatings YES / NO

Notes: _____

Unsatisfactory condition of connections (i.e. condition, corrosion, deformation, tightness, location, profile, uniformity, cross section) YES / NO

Notes: _____

Other _____

Attach additional sheets for documentation of potentially degraded items. Documentation should include location, sketches, and/or pictures (indicate direction of view), suspected root cause or actions required to identify root cause. Refer to attached sheets in notes above, as applicable.

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FIGURE 9
STRUCTURAL STEEL SURVEY CHECKLIST
(Page 2 of 3)

Structural Steel Surveillance Terminology

BRACING OF COMPRESSION ELEMENTS AND MEMBERS

Lack of necessary bracing can result in loss of stability, strength and stiffness of main load carrying elements.

CONDITION

The physical state as determined by observations and with possible use of simple physical assistance such as cleaning, scraping, and sounding; can be used to establish existence of many physical conditions.

CROSS SECTIONAL PROPERTIES

Actual or nominal dimensions and other geometric properties of structural shapes and members.

DEFORMATIONS (structural steel)

Deformation of members in a metal structure caused by fabrication or erection, out of plane plumbness, lack of fit or slip at connections, settlement or failure of supports, overstressing, inadequate, mechanical properties of materials used, inadequate bracing, change in temperature, removed members or missing connectors, and torsional effects unaccounted for in design.

DEFORMATIONS (connections)

Elongation, bending, or twisting of bolts, rods, and studs over and above the elastic limit.

DIRECT CHEMICAL ATTACK

Deterioration of metals by attack of chemical solutions with either low or high acidity.

ELECTROLYTIC OR ELECTROCHEMICAL CORROSION (corrosion/rust)

Oxidation of metal due to chemical reaction between metal and oxygen and the environment; most common cause of deterioration of unprotected iron and steel products.

FATIGUE CRACKING

Cracks that develop in ductile materials when the material is subjected to cyclic stresses. These cracks initially propagate slowly and if detected in time, can be treated by taking remedial action. If the cracks are allowed to propagate unrestricted, they frequently initiate brittle fracture.

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FIGURE 9
STRUCTURAL STEEL SURVEY CHECKLIST
(Page 3 of 3)

Structural Steel Surveillance Terminology
(continued)

FIRE PROTECTION

Strength and stiffness of metals deteriorate significantly when subjected to elevated temperatures.

FRACTURE CRACKING

Brittle cracks that take place with little or no preceding plastic deformation. These types of cracks are often triggered by impact or sudden increase in load.

GEOMETRY OF STRUCTURE

Actual or nominal dimensions defining geometry of structure.

IN-SITU STRESSES

The actual stresses that exist in a member representing the sum of manufacturing, fabrication and erection residual stresses and the stresses resulting from in-situ loads and deformations.

LAMINAR TEARING

A planar separation that develops within thick plates near certain large welds as high weld shrinkage develops stresses across the plate thickness.

OVERALL OR LOCAL BUCKLING

Metal members are relatively slender and usually have thin elements making them susceptible to overall or local buckling.

OVERSTRESSING

Subjecting metals to stresses in excess of their allowable stresses.

NON-BINDING CONDITION

Bolts or rods that are not fully restrained from movement by tight fitting nuts.

TIGHTNESS

The physical condition of bolts, rods, wire strand, and wire rope that indicates the connector fits snugly and generally under some positive compressive force.

UNIFORMITY

A measure of the consistency of weld profile, weld size, weld dimensions, weld cross-sectional properties and conditions.

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FIGURE 10
ROOFING SURVEY CHECKLIST

(Page 1 of 3)

Person(s) Performing Survey

Date of Survey ____/____/____

1. _____
2. _____

Structure or Structural Component Being Surveyed _____

Zone # _____

Review For Indication of Potential Degradation:

Does roof support system show signs of deflection, bulging, or degradation YES / NO

Notes: _____

Are there signs of flashing degradation YES / NO

Notes: _____

Evidence of water infiltration YES / NO

Notes: _____

Does barrier material look uniform without cracks or holes that would affect barrier integrity YES / NO

Notes: _____

Is there missing or degraded expansion joint material YES / NO

Notes: _____

Do any penetrations such as drains or vents appear to be deteriorated ... YES / NO

Notes: _____

Evidence of previous roof repairs YES / NO

Notes: _____

Peeling, discolored, or deteriorated coatings YES / NO

Notes: _____

Evidence of deterioration at interface with roof mounted equipment support or penetrations YES / NO

Notes: _____

Are gutters and down spouts securely attached and undamaged YES / NO

Notes: _____

Other _____

Attach additional sheets for documentation of potentially degraded items. Documentation should include location, sketches, and/or pictures (indicate direction of view), suspected root cause or actions required to identify root cause. Refer to attached sheets in notes above, as applicable.

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FIGURE 10
ROOFING SURVEY CHECKLIST
(Page 2 of 3)

Roofing Surveillance Terminology

ANCHOR SHEET

The first sheet applied to a roof deck by nailing, stapling or mopping; often called a "base sheet."

BASE SHEET

One or more layers of organic, inorganic, or glass-fibered felt over which additional roofing materials are applied.

BUILT-UP ROOFING COVER

Two or more layers of roofing material as underlayment and surfaced with gravel or slang aggregate, or a cap sheet of smooth or mineral surfaced roofing.

CAP SHEET

Roofing made of organic or inorganic fibers, saturated and coated both sides with a bituminous compound, surfaced with mineral granules, mica, talc, ilminite or other inorganic fibers, or similar materials.

COMPOSITION ROOFING

Any asphaltic, prepared roofing material.

CONDITION OF ROOFING

The degree of the loss of integrity of the material used as roof covering to make itself waterproof.

PREPARED ROOF COVERING

Any manufactured roofing material as distinguished from built-up roof covering.

ROOF COATING

Include all roofing membrane which are in a liquid or wet state when applied by spray, brush, roller, squeegee, or other methods, and which, when cured or dried, form a mechanically stable coating that functions as a roofing covering.

ROOF COVERING, GENERAL

Includes any and all systems, coverings, coatings membranes, or combinations thereof which are applied on or over a roof structure primarily to protect a building and its contents against the intrusion of wind, rain, and weather elements.

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FIGURE 10
ROOFING SURVEY CHECKLIST

(Page 3 of 3)

Roofing Surveillance Terminology
(continued)

ROOFING MEMBRANE

Denotes that portion of the roof covering which is intended primarily to provide weather protection and includes single ply and roof coatings.

ROOF PAINT

Any and all paint, paint-type, or maintenance type products applied primarily to change the color, appearance, reflectivity or other cosmetic aspects of the roof, but which have little or no measurable bearing on the functioning of the roof covering.

ROOFING SQUARE

100 square feet of roofing surface.

ROOFING SYSTEM

Any combination of two or more components composing a roof covering including, but not limited to, built-up roofing, single ply foam insulation with compatible coating, metal or plastic panels, roofing-insulation combinations.

SPOT CEMENTING

A discontinuous application of hot asphalt, cold liquid asphaltic compound, hot coal tar pitch or other adhesive.

UNDERLAYMENT

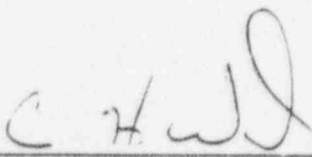
One or more layers of felt applied as required for a base, over which prepared roofing is applied.

PMAI 96-05-023
ATTACHMENT 4
11 PAGES
(INCLUDING THIS SHEET)

St. Lucie Plant
Systems and Components Engineering Department
Guideline No. SCEG-003
Revision 0

**GUIDELINE FOR THE CONDITION SURVEY
OF STRUCTURES AND SUPPORTS
BY PLANT PERSONNEL**

Revision 0
Approved by: _____



Systems and Components Engineering Department Head

Date 7 / 7 / 96

Revision: _____ Reviewed by: _____

Date / /

Approved by: _____

Systems and Components Engineering Department Head

Date / /

SYSTEMS AND COMPONENTS ENGINEERING
GUIDELINE NO. SCEG-003, REVISION 0
GUIDELINE FOR THE CONDITION SURVEY
OF STRUCTURES AND SUPPORTS BY PLANT PERSONNEL

1.0 TITLE

GUIDELINE FOR THE CONDITION SURVEY OF STRUCTURES AND
SUPPORTS BY PLANT PERSONNEL

2.0 SCOPE

2.1 Purpose

This purpose of this document is to provide general guidelines for assessing and reporting the conditions of structures and supports for the implementation of the Maintenance Rule as it applies to structures.

2.2 Discussion

These guidelines are intended for use by plant personnel during general day-to-day walkaround monitoring activities to assist in identifying potential structure and support deficiencies. The monitoring activities are intended to be general in nature and are intended to detect gross areas of cracking, spalling, gouging, corrosion, weld degradation, etc.

2.3 Definitions

1. Structure - Any building, structure, or part of a structure that is identified in Reference 3.1 as being within the scope of 10 CFR 50.65, The Maintenance Rule.
2. Support - Any support or hanger associated with a system that is identified in Reference 3.1 as being within the scope of 10 CFR 50.65, The Maintenance Rule.
3. Condition - The physical state as determined by observation and possible use of simple physical assistance, such as cleaning, scraping, and sounding.

3.0 PRECAUTIONS/LIMITATIONS

This guideline is intended to assist plant personnel in identifying potential areas of degradation to personnel trained in evaluation of the condition of structures and supports that will ensure appropriate inspections and corrective actions are taken. It is not intended to replace or prevent the reporting of degraded items via existing plant processes, such as the Condition Report or Plant Work Orders.

4.0 RESPONSIBILITIES

Per the references in Section 5.0 of this guideline, the plant maintenance, operations and engineering personnel are required to monitor the condition of structures and supports during performance of their general day-to-day monitoring activities and identify potential deficiencies for assessment and corrective actions.

5.0 REFERENCES

- 5.1 ADM-17.08, "Implementation of 10 CFR 50.65, The Maintenance Rule"
- 5.2 AP 0005750, "Duties and Responsibilities of the System Engineer"
- 5.3 ADM-08.02, "Conduct of Maintenance"
- 5.4 AP 0010722, "Plant Management Inspection"
- 5.5 AP 0010120, "Conduct of Operations"

6.0 RECORDS REQUIRED

- 6.1 Structure or Support Deficiency Report - A structure or support deficiency report shall be submitted to identify potential areas of degradation.

7.0 INSTRUCTIONS

7.1 Identification of Potential Structure and Support Deficiencies

The following visual indications can identify potential areas of structure degradation.

1. Concrete Surface

- ▶ Water in leakage
- ▶ Chemical leaching
- ▶ Peeling paint or discoloration
- ▶ Exposed rebar
- ▶ Any crack 1/16" or greater in width
- ▶ Extensive rustbleeding
- ▶ Any crack which exhibits significant rust bleeding
- ▶ Predominant, visible crack patterns
- ▶ Any spall which also exhibits delamination (hollow sounding)
- ▶ Spalls which exceed a depth of 1 inch or exposes rebar

2. Masonry

- ▶ Cracks in joints
- ▶ Deteriorated penetrations
- ▶ Missing or broken blocks

3. Steel Surface/Weld

- ▶ Flaking rust
- ▶ Widespread rust resulting in section loss of more than 1/32" in depth of structural elements (i.e., surface rust is not considered reportable, but should be considered for future coatings issues)
- ▶ Beam/column deflection
- ▶ Loose or missing anchors/fasteners
- ▶ Missing or degraded grout under base plates
- ▶ Twisted beams
- ▶ Pitting or gouges which exceed a depth of 1/32
- ▶ All cracks or visible indications on welds or structural elements

7.1 4. Roof Systems

- ▶ Structural integrity of support system
- ▶ Deteriorated penetrations (i.e., drains, vents, etc.)
- ▶ Barrier integrity
- ▶ Signs of water infiltration
- ▶ Cracks
- ▶ Flashing degradation
- ▶ Expansion joint condition

5. Backfill Condition Around Structure

- ▶ Erosion
- ▶ Settlement
- ▶ Slope integrity
- ▶ Seepage
- ▶ Drainage systems

The following visual indications can identify potential support degradations.

6. Supports

- ▶ Deformation or structural degradation of fasteners, springs, clamps, or other support beams
- ▶ Missing, detached, or loosened support items
- ▶ Arc strikes, weld spatter, paint, scoring, roughness, or general corrosion on close tolerance machined or sliding surfaces
- ▶ Improper hot or cold positions of spring supports and constant load supports as indicated on the related support drawing
- ▶ Misalignment of supports
- ▶ Pitting or gouges which exceed a depth of 1/32
- ▶ All cracks or visible indications on welds or structural elements
- ▶ Flaking rust

7.2 Instructions for Identification of Potential Deficiencies

1. Potentially degraded structure or support conditions noted during performance of responsibilities should be documented via a Structural or Support Deficiency Report attached to this guideline.
2. After completing the Deficiency Report, plant personnel shall route report to the Civil/Structural Engineer responsible for Maintenance Rule initial assessment of structures and supports.
3. The Responsible Civil/Structural Engineer shall do a preliminary assessment of the degradation in accordance with Reference 3.1, "Implementation of 10 CFR 50.65, The Maintenance Rule," and verify that all required corrective actions are initiated and completed.

STRUCTURE DEFICIENCY REPORT

This sheet is part of a guideline to be used by plant personnel to assist in identifying potential areas of structural/building degradation. Based on initial assessment of this report by a civil/structural engineer, a corrective action, such as a Condition Report or a PWO, shall be initiated for degraded conditions.

UNIT _____ BUILDING/STRUCTURE _____ ELEV. _____

MATERIAL DEFICIENCY

Concrete

- | | |
|--|--|
| <input type="checkbox"/> Water Inleakage | <input type="checkbox"/> Rustbleeding, staining or discoloration |
| <input type="checkbox"/> Chemical leaching/erosion | <input type="checkbox"/> Predominant, visible crack patterns |
| <input type="checkbox"/> Exposed rebar | <input type="checkbox"/> A crack 1/16" or wider |
| <input type="checkbox"/> A spall which exceeds 1" in depth | <input type="checkbox"/> A spall which exhibits delamination (hollow sounding) |

Masonry Wall

- | | |
|--|---|
| <input type="checkbox"/> Missing or broken blocks | <input type="checkbox"/> Rustbleeding, staining or discoloration |
| <input type="checkbox"/> A crack 1/16" or wider | <input type="checkbox"/> Missing mortar/exposed joint reinforcement |
| <input type="checkbox"/> Rusted/loose top of wall restraints | |

Structural Steel

- | | |
|--|---|
| <input type="checkbox"/> Flaking rust | <input type="checkbox"/> Pitting or gouges which exceed 1/32" |
| <input type="checkbox"/> Missing grout under base plates | <input type="checkbox"/> Beam/Column deflection |
| <input type="checkbox"/> All cracks or visible indications on welds or structural elements | <input type="checkbox"/> Twisted beams |

Roof System

- | | |
|---|--|
| <input type="checkbox"/> Evidence of water infiltration | <input type="checkbox"/> Damaged barrier material |
| <input type="checkbox"/> Missing expansion joint material | <input type="checkbox"/> Damaged roof support system |
| <input type="checkbox"/> Damaged gutters and/or down spouts | |

Backfill Condition Around a Structure/Building

- | | |
|---|--|
| <input type="checkbox"/> Erosion/washout | <input type="checkbox"/> Slope integrity |
| <input type="checkbox"/> Settlement | <input type="checkbox"/> Seepage |
| <input type="checkbox"/> Drainage systems | |

Coatings of Buildings or Structures

- | | |
|---|---|
| <input type="checkbox"/> Peeling paint or discoloration | <input type="checkbox"/> Wide-spread rust |
|---|---|

Other/Comments: _____

Attach additional sheets for documentation of potentially degraded items.

Documentation should include location, sketches, and/or pictures (indicate direction of view), suspected root cause. Refer to attached sheets in notes above, as applicable.

Number of attached sheets _____

Reported by _____ Ext. _____ Dept. _____ Date _____

SUPPORT DEFICIENCY REPORT

This sheet is part of a guideline to be used by plant personnel to assist in identifying potential areas of support degradation. Based on initial assessment of this report by civil/structural engineering, a corrective action, such as a Condition Report or a PWO, shall be initiated for degraded conditions.

SYSTEM NO. _____ SUPPORT MARK NO. _____

UNIT _____ BUILDING/STRUCTURE _____ ELEV. _____

- ☐ Deformation or structural degradations of fasteners, springs, clamps, or other support items.
- ☐ Missing, detached, or loosened support items.
- ☐ Arc strikes, weld spatter, paint, scoring, roughness, or general corrosion on close tolerance machined or sliding surfaces.
- ☐ Improper hot or cold positions of spring supports and constant load supports as indicated on the related support drawings.
- ☐ Misalignment of supports.
- ☐ Improper clearances of guides and stops.
- ☐ Flaking rust.
- ☐ Missing grout under base plates.
- ☐ All cracks or visible indications on welds or structural elements.
- ☐ Pitting or gouges which exceed 1/32".
- ☐ Peeling paint or discoloration.
- ☐ Wide-spread rust.

Other/Comments: _____

Attach additional sheets for documentation of potentially degraded items.

Documentation should include location, sketches, and/or pictures (indicate direction of view), suspected root cause. Refer to attached sheets in notes above, as applicable.

Number of attached sheets _____

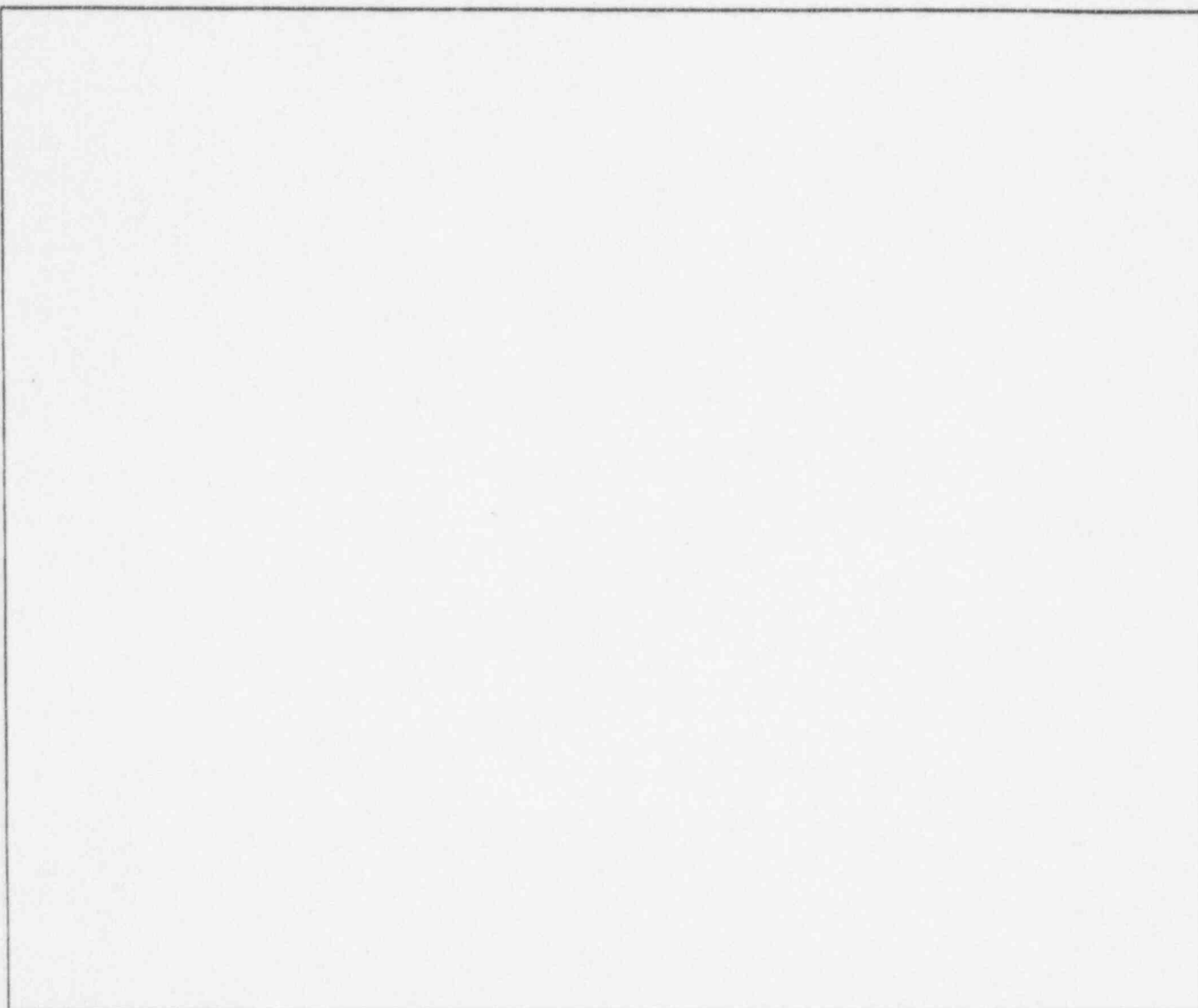
Reported by _____ Ext. _____ Dept. _____ Date _____

**STRUCTURES/SUPPORT DEFICIENCY
REPORT ATTACHMENT**

PG #

BUILDING/STRUCTURES/SUPPORT

U1 / U2 / COMMON

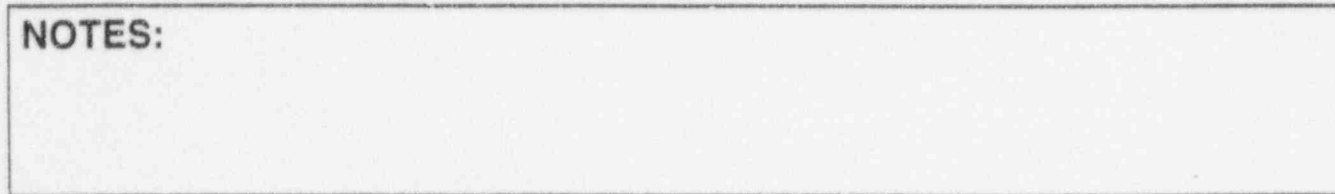


PLAN / ELEV

DIRECTION LOOKING

SKETCH OF REPORTED AREA

NOTES:





ST. LUCIE PLANT
SYSTEMS & COMPONENTS ENGINEERING GUIDELINES

Rev. 2

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Date 07/05/96

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DOCUMENT NO.	<u>TITLE</u>	<u>REV. NO.</u>	<u>APPROVAL DATE</u>
SCEG-001	Nuclear Plant Reliability Data System (NPRDS)	1	03/20/96
SCEG-002	Maintenance Root Cause Tracking, Potential Repetitive Failures and Component Failure Analysis	1	03/20/96
SCEG-003	Guideline for the Condition Survey of Structures and Supports by Plant Personnel	0	07/05/96