

**Florida  
Power**  
CORPORATION

May 18, 1990  
3F0596-03

Document Control Desk  
U. S. Nuclear Regulatory Commission  
Washington, DC 20555

Subject: Crystal River Unit 3  
Docket No. 50-302  
Operating License No. DPR-72  
Environmental Qualification Enhancement Program Status

Reference: Letter from Kenneth R. Wilson (FPC) to James M. Taylor  
(NRC), dated October 23, 1989

Dear Sir:

In the referenced letter (copy attached), FPC described the Environmental Qualification Enhancement Program in progress at Crystal River 3 (CR-3). Attachment A to that letter provided a schedule for completion of several activities related to FPC's program. Since that submittal, the schedule for completion of some of those activities has changed. A summary of those changes is as follows:

1. The schedule for completion of the field walkdowns has been extended approximately one month and will be completed by the beginning of July 1990.
2. The scheduled completion date for the Vendor Qualification Packages (VQP's) is now November 1990.
3. The schedule for completion of the Installation Drawings and the Equipment Qualification Master List (EQML) is now November 1990.
4. The reconciliation of the new EQML to the old had been scheduled to be complete before the end of January 1990. It is now scheduled to be completed before the end of the current refueling outage.

Enclosure 2 to this letter provides a detailed current status of the program.

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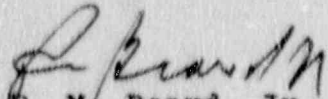
May 18, 1990

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Should there be any questions, please contact Rolf C. Widell,  
Director, Nuclear Operations Site Support, at (904) 563-4529.

Sincerely,



P. M. Beard, Jr.  
Senior Vice President  
Nuclear Operations

PMB:AEF:

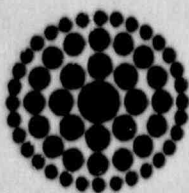
Enclosures

xc: Regional Administrator, Region II  
Senior Resident Inspector

**ENCLOSURE 1**



ENCLOSURE 1



**Florida  
Power**  
CORPORATION

October 23, 1989  
3F1089-18

Mr. James M. Taylor, Director  
Office of Enforcement  
U. S. Nuclear Regulatory Commission  
ATTN: Document Control Desk  
Washington, D. C. 20555

Subject: Crystal River Unit 3  
Docket No. 50-302  
Operating License No. DFR-72  
Environmental Qualification Enhancement Program

Dear Sir:

Enclosed please find a description of Florida Power Corporation's (FPC) Environmental Qualification Enhancement Program as identified in our letter dated October 17, 1989.

Should there be any questions, please contact this office.

Yours very truly,

*Ken Wilson*

Kenneth R. Wilson  
Manager, Nuclear Licensing

WLR:mag

Atts.

xc: Regional Administrator, Region II  
Senior Resident Inspector

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ENCLOSURE 1

ENVIRONMENTAL QUALIFICATION  
ENHANCEMENT PROGRAM

FLORIDA POWER CORPORATION  
CRYSTAL RIVER #3

OCTOBER 1989

### SUMMARY

Florida Power Corporation has initiated an EQ Enhancement Program for the purpose of identifying and implementing specific activities which will ensure the continued regulatory compliance over the life of the plant.

There are six key areas that are being addressed by the enhanced program.

- . Organization/Staffing
- . Procedures
- . Field Verification
- . Documentation
- . EQ Master List
- . Environment Parameters
- . Training

### ORGANIZATION/STAFFING

This activity includes new EQ positions. These positions were used to establish an on-site EQ engineering group. A single point of accountability within Nuclear Operations was also established.

### PROCEDURES

An upper tier procedure has established the total scope of responsibilities throughout Nuclear Operations. Other procedures are being developed/revised as necessary.

### FIELD VERIFICATION

A Field Verification Program will be conducted to re-establish and fully document the qualified base-line configuration of EQ equipment.

### DOCUMENTATION

The existing Vendor Qualification Packages (VQP's) are to be reorganized and supplemented so they may be more easily understood and utilized by all organizations who participate in maintaining the qualification of equipment. The Vendor Qualification Packages will be further supplemented by the development of an EQ Maintenance Manual and a set of EQ installation detail drawings.

### EQ MASTER LIST

The EQ Master List and the Safety List will be reconciled into a single document, the Safety List. Unique identification numbers will be assigned to bulk commodity components used in EQ applications (grease, etc.). The selection of equipment included in the program will be formally documented using methodologies described in Regulatory Guide 1.89, Rev. 1, Appendix E.

ENVIRONMENTAL PARAMETERS

Florida Power will update the information used on the Environmental Zone Data Sheets. This includes a plant specific Beta dose calculation, a review of the MSLB analysis, and revision of the zone profiles necessary to support the Enhancement Program.

TRAINING

EQ training is being performed in two steps. Engineering provided an awareness training to Nuclear Operations. Detailed training will be added/revised to the present training programs taught by FPC's Training Department. The results of the enhancement will provide the technical input to the Training Department's Lesson Plans.

SCHEDULE

Attachment A is a schedule showing current key milestones.



### DETAILED DESCRIPTION OF THE EQ ENHANCEMENT PROGRAM

Florida Power has in place the elements of our EQ Enhancement Program. Key FPC individuals have been assigned to the project. FPC has been careful to use outside resources that have established EQ expertise and not involved in the original EQ Program.

A key to our existing program is the extensive EQ modifications performed in the 1985 installation of a large amount of new equipment known to be qualified due to its wide industry use. Therefore, the enhancement program is not expected to result in large plant modifications.

The following is a detailed discussion of the seven groups of recommended activities.

#### ORGANIZATION

The success of the EQ Program requires that activities and groups work together. Organizational changes were implemented to ensure the entire EQ process works in an efficient coordinated manner. Three significant changes were made:

- . Single Point Responsibility

The Director, Nuclear Operations Engineering and Projects, has been assigned the responsibility for CR-3's EQ Program. He has the ultimate responsibility for the implementation and administration of the Crystal River Unit 3 Environmental Qualification Program.

- . Environmental Qualification Engineering Group

Engineering has established a dedicated site engineering group. This group is responsible for maintaining the existing Engineering Environmental Qualification Program, provide input to the enhancement activities, receive the enhanced documentation, and maintain it. This group also has the responsibility for reviewing several documents.

- . Engineering Studies
- . Conceptual Designs
- . Specifications
- . EQ Related Modifications
- . Environmental and Seismic Qualification Program Manual
- . EQ Related Instruction Manuals
- . EQ Related Vendor Technical Manual
- . Vendor Qualification Packages



The group reports to the Manager, Site Nuclear Engineering and is comprised of:

- . Supervisor
  - . Senior I&C Engineer
  - . Senior Mechanical Engineer
  - . Senior Procurement Engineer
  - . Equipment Qualification Specialist
- . Established A Dedicated EQ Enhancement Project Organization

The Manager, Nuclear Elect/I&C Engineering has the overall responsibility for the Enhancement Program. Resources within our Configuration Management group, craft personnel, Site Engineering, Nuclear Operations Engineering, and site project management have been included in the project team. Expert outside resources are supplementing the FPC effort.

#### PROCEDURES

Various procedures must be written/revised to support the Enhancement Program and the new on-site EQ engineering group.

- . Procedure NOD-39 has been added to the Nuclear Operations Department Manual to establish the single point of accountability and interface activities in the organization (copy attached).
- . A Nuclear Engineering Procedure (NEP-232) has been issued to cover EQ walkdowns (copy attached).
- . Eleven Nuclear Engineering Procedures are being revised to support the recently established EQ engineering group and support the EQ Enhancement Program. These will be issued by October 31, 1989.
- . Various plant procedures are being reviewed to include the site EQ group. These will be revised by October 31, 1989.

#### FIELD VERIFICATION

FPC has put in place an organization to support the Field Verification. Support is being provided by the Impell Corporation. Their specific tasks are:

- . Review the existing FPC walkdown information to maximize the walkdown efficiency. This activity is complete.

- . Prepare an EQ walkdown issue document. This document defines the important criteria, by device, that the walkdowns must inspect to. Its basis is a review of Qualification Test Reports, Instruction Manuals, NRC Information Notices, and Vendor Bulletins, etc. This document is being prepared in sections and is approximately 75% complete at this time.
- . Prepare a procurement "Hit List". This is a list of materials/spare parts that need to be available to support the walkdowns. This is especially important to support the repair of any equipment found in an unqualified condition. This document has been issued and will be revised as necessary.
- . Prepare a "weep-hole" criteria for Crystal River Unit 3. This document defines the physical configuration requirements for "weep-holes". This document will be used by the walkdown team to establish the location of any weep holes, have them drilled, and verify their acceptance. The criteria is complete and issued. Any walkdowns completed before the issuance of the criteria will be revisited and brought into compliance.
- . Prepare walkdown packages in accordance with Nuclear Engineering Procedure NEP-232. These packages are developed to define what must be inspected by the walkdown team. Each end device has a package. All walkdown packages for inside the containment are complete and are being scheduled for Refuel 7; 75% of the packages for walkdowns outside the containment are complete. The remaining packages will be complete before they are needed.
- . Perform the actual walkdowns. The walkdowns are performed by a group consisting of: EQ Engineer from IMPELL, FPC engineering person, and a craft person. This is the minimum makeup of a walkdown team. The walkdown teams have received special training. A pilot walkdown was completed on August 1, 1989 to prove procedures, methodologies, and qualification of personnel. Walkdowns outside the containment will be complete before Refuel 7, unless access is restricted due to the plant operation, and walkdowns inside the containment will be done during Refuel 7. The walkdowns are on schedule.

DOCUMENTATION

Tenera Engineering Services has been hired to organize/prepare all documentation for the Enhancement Program. They will perform 100% technical review of the EQ information including: existing VQP's, Instruction Manuals, walkdown documentation, and test reports. There will be several deliverables from this task.

- . Vendor Qualification Packages (VQP's). New VQP's will be developed to ensure Crystal River Unit 3 is documented to be in compliance with our regulatory commitments. These VQP's will be developed by equipment type (e.g., Rosemont 1153 Series B Transmitters). The format of the VQP's is:

- . Cover Sheet
- . Revision Log
- . Open Items Log
- . Table of Contents
- . Summary of Qualification
- . SCEWS
- . Equipment Evaluation Checklist
- . Analyses
- . Environment Test Reports
- . Maintenance Data Sheets
- . Evaluation of Regulatory and Vendor Bulletins
- . Miscellaneous Documents

The above items will be contained in a binder(s) for easy retrievability. The walkdown documents will be filed separately in file drawers by equipment tag number. The draft VQP's are being prepared approximately 13 per month with completion of all VQP's in the draft stage by December 1989. Final VQP's will be issued after the walkdowns are incorporated. The scheduled completion is 60 days following Refuel 7.

- . EQ Maintenance Manual. Through the VQP's development activity, EQ maintenance required will be defined. This information will be formalized in an EQ Maintenance Manual. It is also recognized that each time some maintenance is performed on an EQ device, whether it is EQ maintenance or not, there is a potential for violating the qualification of a device. Therefore, the EQ Maintenance Manual dispositions all suggested maintenance activities in both the qualification documentation and Vendor Instruction Manual. This manual will be complete in December 1989 and will be issued in January 1990.
- . Installation Drawings. This is a series of drawings to be developed to graphically depict the minimum acceptance installation configuration required to maintain environmental qualification for each type of equipment (Attachment B). These will be complete in December 1989 and will be issued in January 1990.



EQ MASTER LIST

IMPELL Corporation has been hired to develop an EQ Master List completely independent of the existing Master List. The two lists will be reconciled.

Shutdown Logic Diagrams (SLD's) will be prepared for each design basis event postulated in accordance with 10CFR50.49. One SLD will be prepared for each event considered, depicting each system credited in the Safety Analysis and identifying the safety function(s) support by the system.

Impell will then develop Safety Function Diagrams (SFD's). Each system identified on the shutdown logic diagrams will be evaluated to determine the set of equipment which must function in order to fulfill the design basis safety functions considered in respective shutdown analyses.

The SFD are comprised of composite SFD's, detail SFD's, and an associated equipment data base.

- . SFD will identify system redundancies, interfacing system dependencies, and automatic functions relied upon for design basis event mitigation.
- . Composite SFD's will identify the actions required of all active components within a system, as well as the condition of significant passive components essential to the overall systems response to a postulated event.
- . A data base is also prepared for each component as appropriate:
  - . Component Tag Number
  - . Component Name
  - . Component Function/Safety Function
  - . Component Active/Passive Designator
  - . Power Supply
  - . Associated Relays
  - . Associated Limit Switches
  - . Associated Cables
  - . Component Location
  - . Associated Flow Paths
  - . Associated Components
  - . Component Operating Times
  - . Associated Splices, Junction Boxes, etc.

Analysis of the above three items will result in the new EQ Master List. As can be seen, this list will have a well-documented base that will be easy to use and provide consistent results.

The new Master List is scheduled to be complete and reconciled to the old list by the end of January 1990.

ENVIRONMENTAL PARAMETERS

Some specific environmental evaluations are being performed to strengthen the Equipment and Seismic Qualification Program Manual.

- . A general area Beta dose calculation specific to Crystal River Unit 3 is being performed. This activity has just started.
- . A technical review of the profile for the main steam line break inside containment will be done. The initial effort is done and is now being verified.
- . Update any zone profiles as necessary. None identified at this time.
- . A temperature monitoring program is being developed by our new EQ Site Engineering group. This will ensure temperature changes are recognized and incorporated in the qualification program.

TRAINING

Florida Power recognized the need to provide EQ awareness training to the technical staff in 1988. During the evaluation of our EQ Program completed in June 1989, it was recognized that more training was required than planned and to a larger group than just the technical organization. The Enhancement Program provided the awareness training and establishes the interface for comprehensive training by the Training Department.

The awareness training was performed in August 1989 with approximately 245 Nuclear Operations personnel present. The training was in three modules:

- . MODULE 1 - INTRODUCTION
  - a) Introduction
  - b) Definitions
  - c) E.Q. Regulations
  - d) E.Q. Program Implementation
  - e) Division of Responsibilities
  - f) Summary
- . MODULE 2 - TECHNICAL REQUIREMENTS
  - a) Introduction
  - b) Activities Which Necessitate Program Update
  - c) Modifications
  - d) Maintenance Feedback
  - e) Replacement Equipment
  - f) Noncompliances
  - g) Summary

## MODULE 3 - MAINTENANCE

- a) Introduction
- b) Responsibilities of Maintenance People
- c) Configuration
- d) Aging Degradation
- e) Limitation on Typical Equipment
  - Limitorque Operators
  - ASCO Solenoid Valves
  - NAMCO Limit Switches
  - Motors
  - Rosemount Transmitters
  - Terminations
- f) Summary

Each module is approximately one hour in duration. Video tapes have also been produced to allow those not present during the course to view.

The following groups were represented at the awareness training:

- . Engineering
- . Fuel & Safety Analysis
- . Configuration Management
- . Plant Technical Support
- . Plant Maintenance
- . Quality Programs
- . Purchasing & Contracts
- . Material Control
- . Records
- . Training
- . Compliance
- . Licensing

All technical people in Nuclear Engineering have received the training.

The Site Nuclear Services Supervisor EQ has the responsibility to provide input to the Training Department for EQ technical requirements. He also reviews the EQ Lesson Plans.

MISCELLANEOUS

There are several activities being implemented with the Enhancement Program not covered above:

- . The new VQP files being generated will include a microfilm copy in Records Management along with two controlled hard copies. One copy will be located at Crystal River and the other at General Office Complex in St. Petersburg.
- . EQ equipment is being tagged in the plant. Basically, the conduits feeding the equipment will have a colored identification strip placed on them.



. All modifications for Refuel 7 will be reviewed to ensure they have no impact to the EQ Program or the impact was properly considered and included in the modification.



### Estimate of Task Status Based on the Completion of Task Milestones

### FPC EQ ENHANCEMENT PROGRAM SCHEDULE

ENCLOSURE 1

JUL    AUG    SEP    OCT    NOV    DEC    JAN    FEB    MAR    APR    MAY    JUN    JUL    AUG

## REORGANIZATION

- Assignment of Single Point of Responsibility
- Development of EQ Engineering Group

### PROCEDURES:

- Development of Upper Tier Procedure
- Revision of Nuclear Engineer Procedures

## DOCUMENTATION

- VQP Reorganization
- EQ Maintenance Manual
- EQ Installation Detail Drawings

### FIELD VERIFICATION

- Review of Previous Walkdowns
- EQ Walkdown Issues Document
- Procurement "Hit List"
- Weep Hole Criteria
- Walkdown Package Development
- Actual Walkdowns

**EQML:**

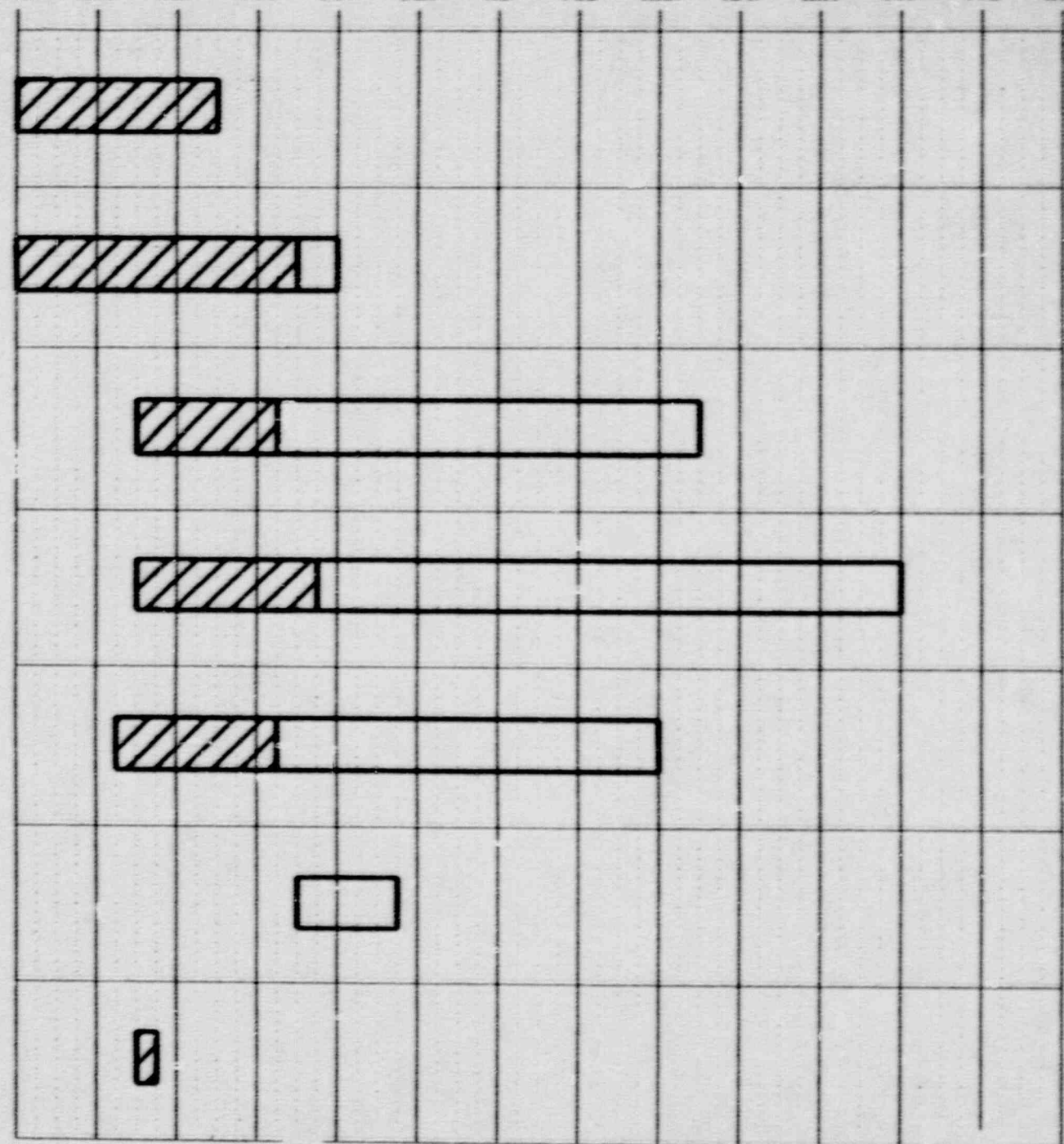
- Shutdown Logic Diagrams
- Safety Function Diagrams
- EQML

### ENVIRONMENTAL PARAMETERS:

- Plant Specific Beta Dose Calculation
- Inside Containment MSLB Evaluation
- Revision of EQ Zone Profiles
- Temperature Monitoring Program

## TRAINING

- Awareness Training



**ENCLOSURE 2**



ENCLOSURE 2  
ENVIRONMENTAL QUALIFICATION ENHANCEMENT PROGRAM STATUS  
MAY, 1990

INTRODUCTION

Florida Power Corporation (FPC) initiated an Environmental Qualification Enhancement Program to identify and implement specific activities which will ensure continuous regulatory compliance over the life of the plant.

There are seven key areas that are addressed by the enhanced program.

- o Organization/Staffing
- o Procedures
- o Environmental Parameters
- o Field Verification
- o Documentation
- o EQ Master List (EQML)
- o Training

ORGANIZATION/STAFFING

This activity developed new EQ positions which were used to establish an on-site EQ engineering group. This group will support all Crystal River 3 (CR-3) EQ activities and maintain the program upon completion of the enhancement program. A single point of accountability within Nuclear Operations was also established.

PROCEDURES

An upper tier procedure has been established to define the total scope of responsibilities throughout Nuclear Operations. Engineering procedures have been developed/revised as necessary.

ENVIRONMENTAL PARAMETERS

FPC has updated the information used on the Environmental Zone Data Sheets. This included a plant specific Beta dose calculation, a review of the main steam line break analysis, and revision of the zone profiles. The Environmental and Seismic Program Manual will be revised during the remaining portion of the enhancement program.

A temperature monitoring program is being implemented to ensure temperature changes are recognized and incorporated in the qualification program.

FIELD VERIFICATION

A Field Verification Program is being conducted to re-establish and fully document the qualified base-line configuration of the EQ

equipment. The field walkdowns inside the Reactor Building will be completed before the end of Refuel 7. The walkdowns outside the Reactor Building which began in September 1989 were temporarily suspended shortly before the beginning of the refueling outage due to conflicts with other pre-outage work in progress. These walkdowns will be completed approximately 50 days following the completion of the refueling outage. The finalization of the walkdown documentation will be completed no later than 90 days after restart from the refueling outage. This would be September 17, 1990 by the current outage schedule.

Discrepancies identified during the walkdowns are being evaluated by the on-site EQ engineering group to determine if the equipment in the plant is qualified. Discrepancies identified which represent conditions contrary to the requirements of 10 CFR 50.49 will be resolved, prior to restart from the current refueling outage. Discrepancies will be resolved by qualification as is, repair, or replacement, or development and submittal of appropriate justification for operation. The specific equipment involved will be identified to the NRC in a supplement to LER 89-016.

#### DOCUMENTATION

The existing Vendor Qualification Packages (VQP's) are being reorganized and supplemented so they are more easily understood and can be utilized by all organizations who participate in maintaining the qualification of equipment. The enhanced VQP's will be completed before the end of November, 1990. Additional VQP's are being written as a result of qualifiable, but previously undocumented, equipment identified during the walkdown. The Vendor Qualification Packages are being further supplemented by EQ installation detail drawings. In addition, an EQ Maintenance Manual has been written to specify a set of maintenance activities which will ensure the operability of electrical equipment required to be environmentally qualified by 10 CFR 50.49. Maintenance activities which are necessary to support the qualification status of the equipment are designated as "Required" and are incorporated into the plant preventive maintenance program. In addition to these required activities, the manual also describes a set of "Suggested" maintenance activities which are considered to be good maintenance practices but are not necessary to support the qualification status of the equipment. This document provides increased confidence that required maintenance actions will be incorporated in plant procedures. In the past this information was available for procedure development, only in the individual VQP's.

#### EQ MASTER LIST

The Equipment Qualification Master List (EQML) has been independently regenerated. Shutdown Logic Diagrams (SLD's) have been prepared for each design basis event postulated in accordance

with 10 CFR 50.49. Each SLD identifies the systems needed to fulfill the three safety functions identified in 10 CFR 50.49(b)(1). Safety Function Diagrams (SFD's) were also developed. Each system identified on the SLD's was evaluated to determine the equipment which must function to fulfill the design basis safety function. The list of equipment generated from this effort was then evaluated to verify the need to include it in the EQ program. Changes resulting from the current refueling outage are being incorporated into the SLD's and SFD's. The final diagrams will be delivered to FPC by October 1, 1990 and the final EQML will be delivered by November 1, 1990, after the outage modifications are incorporated into the program. The new EQML will become part of the Configuration Management Information System (CMIS) by December 31, 1990.

The preliminary EQML generated using this methodology is being compared against the existing EQML. This comparison has identified some equipment which should have been on the present list but was not. The differences will be reconciled and any newly identified equipment requiring qualification will be walked down, and repaired or replaced, if necessary, prior to restart from the current refueling outage. The specific equipment involved will be identified to the NRC in a supplement to LER 89-016.

#### TRAINING

EQ training is being performed in two phases. In the first phase Nuclear Engineering provided an awareness training to Nuclear Operations. In the second phase, detailed training is being added to the present training programs taught by the Nuclear Training Department. The results of the enhancement program are provided for technical input to the Training Department's Lesson Plans.

#### SCHEDULE

Attachment A is a schedule for the existing EQ program scope showing current key milestones.

#### MODIFIED RADIATION THRESHOLD CRITERION

FPC will further enhance the EQ program by voluntarily adopting a more conservative, radiation threshold criterion. This will result in additional equipment being added to the EQML and is referred to below as "the expanded scope of EQ". This expanded scope is being scheduled separately from the enhancements to the existing scope of EQ equipment. This change in definition of a harsh environment will provide additional assurance that the required equipment will remain operable under accident conditions.

Some walkdowns have been completed for the expanded scope of EQ equipment requiring an outage. The remainder will be completed during the next refueling outage. Walkdowns for expanded scope



equipment which is accessible during operation will be completed following restart from the current refueling outage. The discrepancies which are identified will be documented and any modifications necessary will be completed prior to restart from the next refueling outage.

The equipment being added to the EQML due to the changes in the radiation threshold criterion will be identified on a separate list and formally added to the EQ program scope at the end of the next refueling outage.

#### MISCELLANEOUS

Environmentally qualified end devices are being identified in the plant with a colored strip placed on the attached conduit. All EQ equipment will be labeled in this manner prior to completion of the enhancement program.

All modifications being installed during this refueling outage have been reviewed to ensure they have no impact on the EQ Program or the impact was properly considered and included in the modification.

# FPC EQ ENHANCEMENT PROGRAM SCHEDULE FOR CURRENT EQ PROGRAM SCOPE

