Docket Nos. 50-498
and 50-499

MAY 30 1985

Mr. J. H. Goldberg
Vice President - Nuclear Engineering
and Construction
Houston Lighting and Power Company
Post Office Box 1700
Houston, Texas 77001

Dear Mr. Goldberg:

SUBJECT: SOUTH TEXAS PROJECT, UNITS 1 AND 2 - REQUEST FOR ADDITIONAL INFORMATION

The NRC staff has determined that additional information is required in three subject areas related to Equipment Qualifications. The areas are:

1. The Seismic Qualification Review Team (SQRT) audit.

2. The Pump and Valve Operability Review Team (PVORT) audit.

3. Items 4.1, 4.2.1 and 4.2.2 of Generic Letter 83-28.

Guidance on providing the required information on these subjects is contained in Enclosures 1 and 2. Enclosure 1 contains guidance on the SQRT and PVORT audits and Enclosure 2 on the Generic Letter 83-28 items.

Please let us know your schedule for responding to the above. If you have any questions, please contact Dr. Prasad Kadambi at (301) 492-7272.

Sincerely,

/S/

George W. Knighton, Chief
Licensing Branch No. 3
Division of Licensing

Enclosures:
As stated

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Guidance in Providing Information to Support the Review and Audit of the Seismic and Dynamic Qualification of Seismic Category I Mechanical and Electrical Equipment and the Pump and Valve Operability Qualification

To confirm the extent to which safety-related equipment meets the requirements of the General Design Criteria (GDC) of 10 CFR Part 50, the NRC staff, assisted by Technical Assistance Contractors, will conduct a plant site audit and review. It is our intent to conduct a plant specific on-site Pump and Valve Operability Review Team (PVORT) audit concurrent with the Seismic Qualification Review Team (SQRT) audit. We believe such scheduling should minimize manpower and scheduling conflicts for the applicant, the NRC staff, and our technical assistance contractors.

Since the site audit is performed on a sampling basis it is necessary to ensure that 85 to 90 percent of the safety related equipment are qualified and installed before the audit. In order that the staff is familiar with the seismic and dynamic qualification programs currently being conducted, it is requested that all test programs be identified by submitting a brief description of the program, items being tested, the vendor or the testing laboratory involved, and the dates and location of the tests. Information about the ongoing test programs should be submitted as soon as possible so that the NRC staff can review and witness relevant tests for selected items.

A list of all safety-related equipment should be provided so that an assessment of the equipment qualification status can be made by the staff. Equipment should be divided first by system then by component type. Attachment #1 shows a tabular format which should be followed to present the status summary of all safety-related equipment.

After the information on Attachment #1 is received, and it is determined that the equipment qualification is substantially complete, selections will be made of the equipment to be audited, and reviewed, by the SQRT and PVORT. Specific information on equipment selected for audit by each review team will be requested. The information that will be requested for those equipment selected by the SQRT is shown in Attachment #2. The information that will be requested for those equipment selected by PVORT is shown in Attachment #3. In addition, the applicant will be requested to provide a complete set of floor response spectra identifying their applicability to the equipment listed in Attachment #1.

For the equipment selected by the SQRT for audit, the combined Required Response Spectra (RRS) or the combined dynamic response will be reviewed. The SQRT will examine and compare the equipment on-site installation v/s the test configuration and mounting, and determine whether the test, or analysis which has been conducted conforms to the applicable standards and agrees with the RRS. In cases where the plant is a BWR facility, the equipment qualifying documentation must also provide evidence that the hydrodynamic loads in the (0 - 100) Hz frequency range have been accounted for.

For the equipment selected by the PVORT for audit, the applicant must provide evidence that appropriate manufacturers' tests have been conducted, reviewed, and approved, and that the equipment meets, or exceeds the design requirements. The applicant must also provide qualification test and or analysis results that provide assurance that the equipment will operate (function) during and following the Design Basis Events (DBE) and all appropriate combinations thereof.

The specific information requested in Attachments #2, and #3 should be provided to the NRC staff two weeks prior to the plant site visit. The applicant should make available at the plant site all the pertinent documents and reports of the qualification for the selected equipment. After the visit, the applicant should be prepared to submit certain selected documents and reports for further staff review. The purpose of the audits is to confirm the acceptability of the qualification procedures, and implementation of the procedures to all safety-related equipment based on the review of a few selected pieces. If a number of deficiencies are observed or significant generic concerns arise, the deficiencies should be removed for all equipment important to safety subject to confirmation by a follow-up audit of randomly selected items before the fuel loading date.

The site audits will also include a review of the extent to which the documentation of equipment qualification is complete. The acceptance criteria for requirements on records is provided in Section 3.10 of the Standard Review Plan Revision 2 (NUREG-800).

ATTACHMENT #1

- MASTER LISTING OF SEISMIC AND DYNAMIC QUALIFICATION SUMMARY AND STATUS OF SAFETY-RELATED EQUIPMENT

- ASSOCIATED EXPLANATORY NOTE

MASTER LISTING OF SEISMIC AND DYNAMIC QUALIFICATION SUMMARY AND STATUS OF SAFETY RELATED EQUIPMENT

PLANT NAME: DOCKET NO: UTILITY: A/E: NSSS:

FOR EQUIPMENT LISTED BELOW

THE SUPPLIER IS: A/E ☐, NSSS ☐, OTHER ☐. SAFTY SYSTEM & FUNCTION ARE:

IDENT NO.	EQUIPMENT				LOCATION		LOADS CONSIDERED			QUALIFICATION METHOD			LOWEST NATURAL FREQUENCY			STATUS		RRS	CODES AND STANDARDS
	TYPE AND DESCRIPTION	MANUFACTURER AND MODEL NO.	TEST REPORT NO.	QUANTITY	BUILDING AND ELEVATION	MOUNTING	SEISMIC	OTHER DYNAMIC	READ INPUT (ZPA)	ANALYSIS	TEST FREQUENCY	TEST DIRECTION	F/B (1/2)	S/S (1/2)	V (1/2)	QUALIFICATION	INSTALLATION	REF	

NOTES TO MASTER LISTING

(1) The information on Plant Name, Docket No., etc., are pertinent to the power station and will be the same for all sheets.

(2) The equipment is listed by supplier (circle one after "SUPPLIED BY:") and by system (indicate name and function of system after "SYSTEM AND FUNCTION:"). Typical safety systems, for example, are Engineered Safeguard Actuation, Reactor Protection, Containment Isolation, Steamline Isolation, Main Feedwater Shutdown and Isolation, Emergency Power, Emergency Core Cooling, Containment Heat Removal, Containment Fission Product Removal, Containment Combustible Gas Control, Auxiliary Feedwater, Containment Ventilation, Containment Radiation Monitoring, Control Room Habitability System, Ventilation for Areas Containing Safety Equipment, Component Cooling, Service Water, Emergency Systems to Achieve Safe Shutdown, Postaccident Sampling and Monitoring, Radiation Monitoring, Safety-Related Display Instrumentation. The supplier will usually be either A/E or NSSS. Use separate sheets for each system. Use additional sheets when a given system has more equipment than can be listed on one sheet.

(3) "IDENT. NO." is to be filled in by the organization preparing the list. Each equipment listed should have separate identification number. The following form is recommended:

(a) For A/E supplied equipment, the number may be "BOP-XXX." If more than one group is preparing forms, the number may be "BOP-M-XXX" (Mechanical) or "BOP-IC-XXX" (Instrumentation and Control).

(b) For NSSS supplied equipment, the number may be NSSS-M-XXX, NSSS-IC-X etc.

(c) The number written on each line (for each listed equipment) should be an ordered numeric listing for the above indicated-XXX (-001 through completion). These numbers need not follow in order for each system (-002 and -004 may be with one system, but -003 may be with another system).

(d) Inside the parenthesis should be the "BOP-M," "NSSS-IC," etc.

(4) The "TYPE" refers to its generic name, such as pressure transmitter, indicator, solenoid value, cabinet, etc. Equipment type should be described by indicating for example, motor driven pump, turbine driven pump, motor operated valve, air operated valve, 18" valve, etc. Following abbreviations can be used where appropriate.

Valves:
BV - Ball valve, BFV - Butterfly valve, CV - check valve, DV - Diaphragm valve, GV - Gate valve, GLV - Glove valve, SV - Safety Valve, RV - Relief Valve

Pumps:
CP - Centrifugal pump, PDP - Positive displacement pump, DDP - Deep draft pump, JP - Jet pump

(5) Quantity refers to the number of the same equipment used in the plant.

(6) Under mounting condition indicate the following as applicable:

CF for concrete floor mounting
CW for concrete wall mounting
DM for direct mounting
HM for hanger mounting
RM for rack mounting
CM for cabinet mounting
EM for equipment mounting

Mounting details such as number of bolts, weld length, etc. need not be indicated here.

(7) The columns "SEISMIC" and "OTHER DYNAMIC" need only be checked (X) if applicable. In the case of BWRs indicate "H" under "OTHER DYNAMIC" column where qualification includes hydrodynamic loads.

(8) Under "REQ'D INPUT (ZPA)," the applicable "g" level should be provided.

(9) Under Qualification Method under analysis, indicate "S" for static, and "D" for dynamic; under test frequency, indicate "SF" for single, and "MF" for multiple; and under text direction, indicate "SD" for single, "MD" for multiple.

(10) Equipment status is to be addressed separately to qualification and to installation.

The applicable letter should be provided under the column headed "QUAL," according to the following code:

A The qualification and associated documentation are complete.

B The qualification testing is finished but associated documentation is not yet submitted or still in review.

C The qualification plan/procedure is documented, but testing has not yet begun.

D Equipment to be qualified.

E Equipment is judged not qualifiable and will be replaced with qualified equipment.

F For BWR plants only: Equipment is qualified for seismic loading only. Requalification will be performed to account for the suppression pool hydrodynamic loading effects.

The applicable letter should be provided under the column headed "INSTALLATION," according to the following code:

A Installation is completed. Equipment is ready for service.

B Equipment mounting/hookup is completed, but significant parts of the equipment are not yet installed.

C Equipment is located at its intended service location, but mounting and/or hookup is not completed.

D The equipment is not installed and is not available for inspection.

(11) The Required Response Spectra (RRS) package should be provided along with the Master Listing. Only response spectra applicable to the listed equipment should be included, each numbered for reference under the column headed "RRS REF." In many cases, several equipment will reference the same RRS.

(12) Codes and Standards

Applicable codes, standards and Regulatory Guides should be indicated here, for example, ASME Section III Class 2; IEEE-344, 1975, 323-1974, 382-1972; ANSI N278-1, Regulatory Guide 1.100, 1.148 etc.

Seismic and Dynamic Qualification Summary of Equipment

° To be completed to stand on its own (do not refer to any document)
° All questions are to be answered (if not applicable; mark "N/A")

I. Plant Name: _____

1. Utility: _____
2. Location: _____
3. Type: _____ 4. Capacity (MWe Net): _____
5. Containment Type: _____ 6. Cooling Source:
7. NRC Docket No.: _____ 8. CP Docket Date: _____
9. NSSS Vendor: _____ 10. A/E: _____

II. Component Name: _____

1. Scope: [ ] NSSS [ ] BOP
2. Vendor: _____ 3. Vendor Model No.: _____
4. Manufacturer: _____ 5. Manufacturer Model No.: _____
6. Purchase Spec. No.: ____ 7. Total No. in Safety Systems: _____
8. Location (Choose the worst one with respect to seismic)
   a. Building: _____ b. Elevation and Area: _____
   c. Environment: [ ] Harsh [ ] Mild
9. Field Mounting:
   a. [ ] Floor [ ] Wall [ ] Pipe [ ] Panel
      [ ] Other (describe) _____
   b. [ ] Bolted; description: _____
      (no. size, grade, etc.)
      [ ] Welded; description: _____
      (size, length, electrode type, etc.)
      [ ] Other; description: _____
   c. Mounting restriction from the manufacturer, if any: (horizontal vertical, etc.)_____
10. Functional Description of the Equipment:
   a. System in which located: _____
      (for item 8 in II, above)
   b. Type: [ ] Active [ ] Passive
   c. Equipment required for: [ ] Hot standby [ ] Cold shutdown
      [ ] Both [ ] Neither
   d. Intended safety function: _____
      _____

e. Direct consequences of its failure (brief description of the effect on the system): _____

_____

f. Redundancies, if any: _____

III. Equipment Qualification Method:

[ ] Test [ ] Analysis

[ ] Combination of test & analysis [ ] Other (describe) _____

IV. Loads and Load Combinations:

1. Loads:

a. [ ] Seismic b. [ ] Hydrodynamic

c. [ ] Flow induced vib. d. [ ] Normal operation vib.

e. [ ] Other dynamic loads: (specify) _____

2. Combination technique: _____

3. Required acceleration in each direction:

a. [ ] ZPA [ ] Other;specify: _____

b. OBE: s/s _____; f/b: _____; v: _____

SSE: s/s _____; f/b: _____; v: _____

V. Qualification by Test (complete this section for each report including partial test):

1. Test report: (Company) _____

a. Title: _____

_____

no.: _____; revision: _____; date: _____

b. Reviewed by: _____

2. Qualification report: (Company) _____

a. Title: _____

_____

no.: _____; revision; _____; date: _____

b. Reviewed by: _____

3. Laboratory mounting:

a. Describe [from shaker table to the equipment; include orientation, bolt (size, no., gr., etc.), weld (type, size, length, electrode type, etc.)]: _____

_____

b. If different from field mounting include equivalency justification:

_____

_____

4. Resonance search: [ ] yes [ ] no

a. Technique: _____

b. Excitation magnitude & frequency interval (or sweep rate): _____

_____

c. Resonances found: (up to: _____)

s/s: _____; f/b: _____; v: _____

5. Test Description:

a. Input:

(a) [ ] single axis; [ ] biaxial; [ ] pseudo biaxial;
[ ] tri-axial [ ] random; [ ] sine beat;
[ ] other: _____
[ ] phase coherent; [ ] phase incoherent

(b) Frequency range: _____

(c) Input level (g-level & frequency)

OBE: s/s: _____; f/b: _____; v: _____

SSE: s/s: _____; f/b: _____; v: _____

(d) Number of tests performed: OBE:___; SSE:___; other:_____

(e) Sequential test, including fatigue & vibration aging conducted: [ ] yes [ ] no

Justification, if not performed: _____

_____

b. Output:

(a) TRS generated: [ ] yes [ ] no

(b) Percent damping in TRS generation: _____

(c) Percent damping used in RRS: _____

(d) Margin included in RRS: _____

[ ] by test lab. [ ] by others: (specify) _____

(e) Attach sets of TRS and RRS comparison plots (if not provided, explain): _____

_____

c. Results:

(a) Basis of qualification:

[ ] structural integrity verified; [ ] operability verified

(b) Failures detected during qualification tests: _____

_____

_____

(c) Anomalies (with disposition) if any: _____

_____

_____

(d) Modifications made (in the equipment or mounting) during the qualification phase; describe, if any: _____

_____

_____

(e) How (modifications) implemented in the field: _____

_____

_____

d. Other tests performed (such as fragility test; include results)

_____

VI. Qualification by Analysis (complete this section for each report)

1. Analysis Report: (Company) _____

a. Title: _____

_____

no.: _____; revision: _____; date: _____

b. Reviewed by: _____

2. Qualification Report: (Company) _____

a. Title: _____

_____

no.: _____; revision: _____; date: _____

3. Failure modes: _____

_____

4. Method of Analysis:

[ ] static [ ] static coefficient [ ] dynamic

[ ] time history [ ] response spectrum

5. Natural frequencies (up to cut off frequency of: _____):

s/s: _____; f/b: _____; v: _____

6. Model type:

[ ] 1D; [ ] 2D; [ ] 3D

[ ] finite element: (kinds of elements used) _____

[ ] other: (specify) _____

7. Support & Boundary conditions in the model:

_____

_____

8. Computer codes used: _____

Method of verification: _____

9. Damping: OBE: _____; SSE: _____; Basis: _____

10. Fatigue & aging consideration: [ ] yes [ ] no

11. Responses:

a. Method of combination: [ ] ABS; [ ] SRSS;

[ ] algebraic, [ ] other, specify: _____

b. For critical elements:

Identification	Location	Loads	Total Calculated Stresses	Allowable Stresses	Source of Allowables

Identification	Location	Loads	Total Defl.	Allow. Defl.	Source of Allow. Defl.

VII. Surveillance and Maintenance Program:

1. Qualified life: _____
(based on weakest link or appendage in the equip.)

2. Basis: _____

3. Procedure of assuring operability of the equipment under seismic and dynamic condition throughout the plant life: _____

_____

PUMP AND VALVE
OPERABILITY ASSURANCE REVIEW

I. PLANT INFORMATION

1. Name: _____ Unit No. ___ 2. Docket No.: _____

3. Utility: _____

4. NSSS: _____ [] PWR [] BWR

5. A/E: _____

II. GENERAL COMPONENT* INFORMATION

1. Supplier: [] NSSS [] BOP

2. Location: a. Building/Room _____

   b. Elevation _____

   c. System _____

3. Component number on in-house drawings: _____

4. If component is a [] Pump complete II.5.

   If component is a [] Valve complete II.6.

5. General Pump Data

a. Pump		b. Prime-mover	
Name	_____	Name	_____
Mfg.	_____	Mfg.	_____
Model	_____	Model	_____
S/N	_____	S/N	_____
Type	_____	Type	_____

_____

* The component, whether pump or valve, is considered to be an assembly composed of the body, internals, prime-mover (or actuator) and functional accessories.

a. Pump (continued)

Size _____

Weight _____

Mounting Method _____

Required B.H.P. _____

Parameter	Design	Operating
Press	_____	_____
Temp	_____	_____
Flow	_____	_____
Head	_____	_____

Required NPSH at maximum flow _____

Available NPSH _____

Operating Speed _____

Critical Speed _____

List functional accessories:* _____

_____

_____

List control signal inputs: _____

_____

_____

_____

b. Prime-mover (continued)

Size _____

Weight _____

Mounting Method _____

H.P. _____

Power requirements: (include normal, maximum and minimum).

Electrical _____

_____

_____

Other _____

_____

If MOTOR list:

Duty cycle _____

Stall current _____

Class of insulation _____

_____

* Functional accessories are those sub-components not supplied by the manufacturer that are requir[illegible] to make the pump assembly operational, (e.g., coupling, lubricating [illegible]il system, etc.)

6. General Valve Data

a. Valve

Name _____

Mfg. _____

Model _____

S/N _____

Type _____

Size _____

Weight _____

Mounting Method _____

Required Torque _____

Parameter	Design	Operating
Press	_____	_____
Temp	_____	_____
Flow	_____	_____
Max $\overline{\Delta P}$ across valve		_____
Closing time @ max $\overline{\Delta P}$		_____
Opening time @ max $\overline{\Delta P}$		_____
Power requirements for functional accessories, (if any)		_____
_____		_____

b. Actuator (if not an integral unit)

Name _____

Mfg. _____

Model _____

S/N _____

Type _____

Size _____

Weight _____

Mounting Method _____

Torque _____

Power requirements: (include normal, maximum and minimum).

Electrical _____

_____

_____

_____

Other: [] Pneumatic [] Hydraulic

_____

_____

_____

_____

List control signal inputs: _____

_____

_____

List functional accessories:* _____

_____

III. FUNCTION

1. Briefly describe components normal and safety functions: _____

_____

_____

_____

_____

2. The components normal state is: [] Operating [] Standby

3. Safety function:

a. [] Emergency reactor shutdown

b. [] Containment heat removal

c. [] Containment isolation

d. [] Reactor heat removal

e. [] Reactor core cooling

f. [] Prevent significant release of radioactive material to environment

g. [] Does the component function to mitigate the consequences of one or more of the following events? [] Yes [] No
If "Yes", identify.

[] LOCA [] HELB [] MSLB

[] Other _____

4. Safety requirements:

[] Intermittent Operation [] During postulated event

[] Continuous Operation [] Following postulated event

If component operation is required following an event, give approximate length of time component must remain operational.

_____ (e.g., hours, days, etc.)

_____

* Functional accessories are those sub-components not supplied by the manufacturer that are required to make the valve assembly operational, (e.g., limit switches).

5. For VALVES:

does the component [] Fail open [] Fail closed [] Fail as is

Is this the fail safe position? [] Yes [] No

Is the valve used for throttling purposes? [] Yes [] No

Is the valve part of the reactor coolant pressure boundary?
[] Yes [] No

Does the valve have a specific limit for leakage? [] Yes [] No

If "Yes" give limit: _____

IV. QUALIFICATION

1. Reference by specific number those applicable sections of the design codes and standards applicable to the component: _____

_____

_____

2. Reference those qualification standards, used as a guide to qualify the component: _____

_____

_____

3. Identify those parts of the above qualification standards deleted or modified in the qualification program.

Deleted: Modified:

_____ _____

_____ _____

_____ _____

4. Have acceptance criterias been established and documented in the test plan(s) for the component? [] Yes [] No

5. What is the expected failure mode that would keep the pump or valve assembly from performing its safety function? _____

_____

6. Are the margins* identified in the qualification documentation?
[] Yes [] No

---

d. Margin is the difference between design basis parameters and the test parameters used for equipment qualification.

If component is a PUMP, complete IV.7.

If component is a VALVE, complete IV.8.

7. Pump operability has been demonstrated by: [] Analysis
[] Test [] Combination

Identify PUMP tests performed:

a. [] Shell hydrostatic (ASME Section III)

b. [] Bearing temperature evaluations

c. [] Seismic loading

d. [] Vibration levels

e. [] Exploratory vibration (Fundamental freq._____)

f. [] Seal leakage @ hydro press

g. [] Aging: [] Thermal [] Mechanical

h. [] Flow performance
Are curves provided [] Yes [] No

i. [] Pipe reaction end loads (nozzle loads)

j. [] Others _____

k. [] Extreme environment:
[] Humidity
[] Chemical
[] Radiation

8. Valve operability has been demonstrated by: [] Analysis
[] Test [] Combination

Identify VALVE tests performed:

a. [] Shell hydrostatic (ASME Section III)

b. [] Cold cyclic List times:
Open _____
Closed _____

c. [] Seismic loading

d. [] Hot cyclic List times:
Open _____
Closed _____

e. [] Exploratory vibration (Fundamental freq._____)

f. [] Main seat leakage

g. [] Aging: [] Thermal [] Mechanical

h. [] Back seat leakage

i. [] Pipe reaction end loading

j. [] Disc hydrostatic

k. [] Extreme environment
[] Humidity
[] Chemical
[] Radiation

l. [] Flow interruption capability

m. [] Flow characteristics
Are curves provided?
[] Yes [] No

n. [] Others _____

9. As a result of any of the tests (or analysis), were any deviations from design requirements identified? [] Yes [] No
If "Yes", briefly describe any changes made in tests (or analysis) or to the component to correct the deviation.

_____

_____

_____

10. Was the test component precisely identical (as to model, size, etc.) to the in-plant component? [] Yes [] No If "No", is installed component [] oversized or [] undersized?

11. If type test was used to qualify the component, does the type test meet the requirements of IEEE 323-1974, Section 5.?
[] Yes [] No

12. Is component orientation sensitive? [] Yes [] No [] Unknown
If "Yes", does installed orientation coincide with test orientation? [] Yes [] No

13. Is the component mounted in the same manner in-plant as it was during testing (i.e., welded, same number and size bolts, etc.)
[] Yes [] No [] Unknown

14. Were the qualification tests performed in sequence and on only one component? [] Yes [] No

    If "Yes" identify sequence, (e.g., radiation, seismic, cyclic, thermal, etc.): _____

    _____

15. If "aging"* was performed, identify the significant aging mechanisms: _____

    _____

    _____

16. Identify loads imposed (assumed) on the component for the qualification tests (analysis) performed:

    a. [] Plants (shutdown loads) b. [] Extreme environment

    c. [] Seismic load d. [] Others _____

    _____

17. Have component design specifications been reviewed in-house to assure they envelope all expected operating, transient, and accident conditions? [] Yes [] No

18. Does the component utilize any unique or special materials? (Examples are special gaskets or packing, limitations on nonferrous materials, or special coatings or surfaces.) [] Yes [] No

    If "Yes", identify: _____

    _____

19. Does component require any special maintenance procedures or practices, (including shorter periods between maintenance). [] Yes [] No

    If "Yes", identify: _____

    _____

20. Is the qualified life for the component less than 40 years? [] Yes [] No If "Yes", what is the qualified life? _____

---

* As outlined in Section 4.4.1 of IEEE-627 1980.

21. Information Concerning Qualification Documents for the Component

Report Number	Report Title	Date	Company/Organization Preparing Report	Company/Organization Reviewing Report

ENCLOSURE 2

SOUTH TEXAS PROJECT, UNITS 1 AND 2
REQUEST FOR ADDITIONAL INFORMATION
GL 83-28, ITEMS 4.1, 4.2.1 AND 4.2.2

INTRODUCTION

Houston Lighting & Power Company, the applicant for South Texas Project, Units 1 and 2, submitted their response to Generic Letter 83-28 on November 3, 1983. The response has been reviewed with respect to Items 4.1, 4.2.1 and 4.2.2 of the Generic Letter. The applicant's response does not permit an evaluation of the adequacy of the periodic maintenance and trending programs for the breakers. The following information is required to evaluate compliance with Items 4.1, 4.2.1 and 4.2.2.

I. Item 4.1 - Reactor Trip System Reliability (Vendor-Related Modifications).

The applicant stated that he will respond to this Item by January 1985. The NRC has not received this response as of April 1985. The applicant is to submit to the NRC either:

1. A statement confirming that all vendor-recommended DS-416 modifications have been or will be implemented;

or

2. A written evaluation of the technical reasons for any vendor recommended modification not implemented.

II. Item 4.2.1 - Periodic Maintenance Program for Reactor Trip Breakers.

II.1 Criteria for Evaluating Compliance with Item 4.2.1

The South Texas Project, Units 1 and 2, Reactor Trip Systems utilize Westinghouse DS-416 circuit breakers. The primary criteria for an acceptable maintenance program for the DS-416 Reactor Trip Breaker (RTB) are contained in Westinghouse Maintenance Manual for the DS-416 Reactor Trip Circuit Breaker, Revision 0, October 1984. The NRC staff, Equipment Qualification Branch, has reviewed this document and endorsed the maintenance program described in it. More specifically, the criteria used to evaluate compliance include those items in this document that relate to the safety function of the breaker, supplemented by those measures that must be taken to accumulate data for trending.

II.2 Issues Relating to Item 4.2.1

The applicant response states that he will respond to Item 4.2 by June 1985.

South Texas Project, Units 1 and 2, periodic maintenance program for the reactor trip breakers should include, on a six-month basis (or when 500 breaker operations have been counted, whichever comes first):

1. General inspection to include checking of breaker's cleanliness, all bolts and nuts, pole bases, arc chutes, insulating link, wiring and auxiliary switches;

2. The retaining rings inspection, including those on the undervoltage trip attachment (UVTA) and shunt trip attachment (STA);

3. Arcing and main contacts inspection as specified by the Westinghouse Maintenance Manual;

4. UVTA check as specified by the Westinghouse Maintenance Manual, including replacement of UVTA if dropout voltage is greater than 60% or less than 30% of rated UVTA coil voltage;

5. STA check as specified by the Westinghouse Maintenance Manual;

6. Lubrication as specified by the Westinghouse Maintenance Manual;

7. Functional check of the breaker's operation prior to returning it to service.

South Texas Project, Units 1 and 2, Periodic Maintenance Program for the reactor trip breakers should include, on a refueling interval basis (or when 500 breaker operations have been counted, whichever comes first):

1. Pre-cleaning insulation resistance measurement and recording;

2. RTB dusting and cleaning;

3. Post-cleaning insulation resistance measurement and recording, as specified by the Westinghouse Maintenance Manual;

4. Inspection of main and secondary disconnecting contacts, bolt tightness, secondary wiring, mechanical parts, cell switches, instruments, relays and other panel mounted devices;

5. UVTA trip force and breaker load check as specified by the Westinghouse Maintenance Manual;

6. Measurement and recording RTB response time for the undervoltage trip;

7. Functional test of the breaker prior to returning to service as specified by the Westinghouse Maintenance Manual.

The maintenance procedure should include a caution to the maintenance personnel against undocumented adjustments or modifications to RTBs.

The applicant is to confirm that the periodic maintenance program will include these fourteen items at the specified intervals or commit to their inclusion.

III. Item 4.2.2 - Trending of Reactor Trip Breaker Parameters to Forecast Degradation of Operability.

III.1 Criteria for Evaluating Compliance with Item 4.2.2

Four parameters have been identified as trendable and are included in the criteria for evaluation. These are (a) undervoltage trip attachment dropout voltage, (b) trip force, (c) breaker response time for undervoltage trip, and (d) breaker insulation resistance.

III.2 Issues Relating to Item 4.2.2

The applicant is to commit to inclusion of trip force, breaker response time and dropout voltage for undervoltage trip and breaker insulation resistance as trending parameters. The applicant should also identify the organization which will perform trend analysis, how often the analysis will be performed, and how the information derived from the analysis will be used to affect periodic maintenance.

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