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TEXAS UTILITIES GENERATING COMPANY

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JOHN W. BECK
VICE PRESIDENT

June 14, 1985

Mr. Hugh L. Thompson, Jr.
Director
Division of Licensing
U. S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUBJECT: COMANCHE PEAK STEAM ELECTRIC STATION (CPSES)
DOCKET NOS. 50-445 AND 50-446
NRC GENERIC LETTER 85-02

Dear Mr. Thompson:

Attached is the CPSES response to NRC Generic Letter 85-02, "Staff Recommended Actions Stemming from NRC Integrated Program for the Resolution of Unresolved Safety Issues Regarding Steam Generator Tube Integrity".

Sincerely,

John W. Beck

John W. Beck

RWH:grr
Attachment

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COMANCHE PEAK STEAM ELECTRIC STATION

RESPONSE TO NRC GENERIC LETTER 85-02
(ENCLOSURE 1)

1.a PREVENTATION AND DETECTION OF LOOSE PARTS (INSPECTIONS)

NRC Comment: Visual inspections should be performed on the steam generator secondary side in the vicinity of the tube sheet, both along the entire periphery of the tube bundle and along the tube line, for purposes of identifying loose parts or foreign objects on the tubesheet, and external damage to peripheral tubes just above the tubesheet. An appropriate optical device should be used (e.g., mini-TV camera, fiber optics). Loose parts or foreign objects which are found should be removed from the steam generators. Tubes observed to have visual damage should be eddy current inspected and plugged if found to be defective.

These visual inspections should be performed: (1) for all steam generators at each plant at the next planned outage for eddy current testing, (2) after any secondary side modifications, or repairs, to steam generator internals, and (3) where eddy current indications are found in the free span portion of peripheral tubes, unless it has been established that the indication did not result from damage by a loose part or foreign object.

For PWR OL applicants, such inspections should be part of the preservice inspection.

CPSES Response: The preservice inspection (PSI) of steam generators conducted by CPSES meets the staff recommendations for PWR OL applicants. All four steam generators were preservice inspected for loose parts through the four 2" I.D. inspection openings used for sludge lancing.

The PSI techniques utilized a 35mm camera in conjunction with a 9 ft. x 8 mm fiberscope. The accessible areas were searched through the fiberscope. Photographs were taken of foreign objects in the original position in which they were located on the tubesheet. No damaged tubes were identified and all foreign objects which were found as a result of this preservice inspection were removed from the steam generators.

In addition to the PSI for loose parts, CPSES elected to install a digital loose part locator (DLPL) to detect the presence of loose parts and foreign objects. The DLPL utilizes an array of 20 loose parts monitoring sensors installed in the nuclear steam system; 8 of which are installed in the steam generators.

NRC Comment: For steam generator models where certain segments of the peripheral region can be shown not to be accessible to an appropriate optical device, licensees and applicants should implement alternative actions to address these inaccessible areas, as appropriate.

CPSES Response: Both the D-4 and D-5 model steam generators designed by Westinghouse and installed in units 1 and 2 respectively, may be visually inspected in the peripheral region (annulus) above the tubesheet with fiberoptics, by entering through the sludge lance ports.

NRC Comment: Licensees should take appropriate precautions to minimize the potential for corrosion while the tube bundle is exposed to air. The presence of chemical species such as sulfur may aggravate this potential, and may make exposure to the atmosphere inadvisable until appropriate remedial measures are taken.

CPSES Response: It is not anticipated that the tube bundles will be exposed to air except when the 2" inspection ports are open for scheduled sludge lancing during each refueling. It is estimated that the sludge lancing activity will take approximately 41 hours total for all four generators; therefore, tube exposure to air will be kept to a minimum.

1.b PREVENTION AND DETECTION OF LOOSE PARTS (QUALITY ASSURANCE)

NRC Comment: Quality Assurance/Quality Control procedures for steam generators should be reviewed and revised as necessary to ensure that an effective system exists to preclude introduction of foreign objects into either the primary or secondary side of the steam generator whenever it is opened (e.g., for maintenance, sludge lancing, repairs, inspection operations, modifications). As a minimum, such procedures should include: (1) detailed accountability procedures for all tools and equipment used during an operation, (2) appropriate controls on foreign objects such as eye glasses and film badges, (3) cleanliness requirements, and (4) accountablity procedures for components and parts removed from the internals of major components (e.g., reassembly of cut and removed components).

CPSES Response: When a pressure boundary is breached at CPSES, housekeeping/cleanliness control requirements are established commensurate with the system's importance to safety. Procedures implementing requirements for personnel, material and tool accountability for these designated areas are in force. Access and egress from zones requiring personnel and/or material and tool accountability is controlled and monitored by an individual assigned reponsibility for this function. In

addition, it is the responsibility of the QA section personnel to verify the housekeeping/cleanliness control requirements are being maintained according to established procedural requirements.

2.a INSERVICE INSPECTION PROGRAM (FULL LENGTH TUBE INSPECTIONS)

NRC Comment: The Standard Technical Specifications (STS) and Regulatory Guide 1.83, Part C.2.f, currently define a U-tube inspection as meaning an inspection of the steam generator tube from the point of entry on the hot-leg side completely around the U-bend to the top support of the cold-leg side. The staff recommends that tube inspections should include an inspection of the entire length of the tube (tube end to tube end) including the hot leg side, U-bend, and cold leg side.

This recommended action does not mean that the hot leg inspection sample and the cold leg inspection sample should necessarily involve the same tubes. That is, it does not preclude making separate entries from the hot and cold leg sides and selecting different tubes on the hot and cold leg sides to meet the minimum sampling requirements for inspection.

Consistent with the current STS requirement, supplemental sample inspections (after the initial 3% sample) under this staff recommended action may be limited to a partial length inspection provided the inspection includes those portions of the tube length where degradation was found during initial sampling.

CPSES Response: Preservice baseline inspection of the steam generator tubes was established by eddy current testing the full length of each tube.

Inservice eddy current tests will include an inspection of the entire length of the tube (tube end to tube end) including the hot leg side, U-bend and cold leg side consistent with the NRC staff's recommendation. The number and location of tubes selected will be consistent with the CPSES Technical Specifications. Tube selection will also take into account the modification made in the pre-heater region of the cold leg (i.e., 140 tubes were expanded in the baffle plates to reduce potential tube vibrations). The potential for tube degradation is higher in this region and will continue to be monitored during each scheduled inservice inspection.

The hot leg inspection sample and cold leg inspection sample will normally be associated with the same tubes. When tube location precludes the performance of "tube end to tube end" inspections, separate entries from the hot

and cold leg sides and selection of different tubes on the hot and cold leg sides to meet the minimum sampling requirements for inspection will be considered by engineering on a case by case basis.

2.b INSERVICE INSPECTION PROGRAM (INSPECTION INTERVAL)

NRC Comment: The maximum allowable time between eddy current inspections of an individual steam generator should be limited in a manner consistent with Section 4.4.5.3 of the Standard Technical Specifications, and in addition should not extend beyond 72 months.

CPSES Response: The CPSES Technical Specification limits for maximum allowable time between eddy current inspections of an individual steam generator are in agreement with the Westinghouse Standard Technical Specifications (NUREG-0452 Revision 4). CPSES recognizes Section 4.4.5.3 of the Standard Technical Specifications allows the time between eddy current inspections of an individual steam generator to be extended beyond 72 months. At present, CPSES is evaluating the inspection intervals between eddy current inspections of individual steam generators prescribed by the Standard Technical Specifications.

3.a SECONDARY WATER CHEMISTRY PROGRAM

NRC Comment: Licensees and applicants should have a secondary water chemistry program (SWCP) to minimize steam generator tube degradation.

The specific plant program should incorporate the secondary water chemistry guidelines in SGOG Special Report EPRI-NP-2704, "PWR Secondary Water Chemistry Guidelines", October 1982, and should address measures taken to minimize steam generator corrosion, including materials selection, chemistry limits, and control methods.

CPSES Response: The CPSES program incorporates the secondary water chemistry guidelines specified by the Steam Generators Owner Group in Special Report EPRI-NP-2704, "PWR Secondary Water Chemistry Guidelines", Revision 1, June 1984. The program addresses the chemistry control measures taken to establish limits for those parameters or control agents which are or could be detrimental to the construction materials used in the steam generators and balance of steam cycle components.

NRC Comment: In addition, the specific plant procedures should include progressively more stringent corrective actions for out-of-specification water chemistry conditions. These

corrective actions should include power reductions and shutdowns, as appropriate when excessively corrosive conditions exist.

CPSES Response: The CPSES procedures are in agreement with the NRC comments, providing progressively more stringent actions for out-of-specification water chemistry conditions. Included in these actions are the appropriate power reductions and shutdowns commensurate with the conditions.

NRC Comment: Specific functional individuals should be identified as having the responsibility/authority to interpret plant water chemistry information and initiate appropriate plant actions to adjust chemistry, as necessary.

CPSES Response: The CPSES procedures identify the personnel responsible for the interpretation of data as well as the personnel with authority to initiate corrective action.

3.b CONDENSER INSERVICE INSPECTION PROGRAM

NRC Comment: Licensees should implement a condenser inservice inspection program. The program should be defined in plant specific safety-related procedures and include:

1. Procedures to implement a condenser inservice inspection program that will be initiated if condenser leakage is of such a magnitude that a power reduction corrective action is required more than once per three month period;

CPSES Response: The incidence of condenser leakage is trended in accordance with CPSES procedures. In the event that excessive tube leakage is identified, an engineering evaluation is done to provide recommended corrective actions.

NRC Comment: 2. Identification and location of leakage source(s), either water or air;

CPSES Response: CPSES procedures are in place that provide instructions to identify the chemistry control parameters and limits that are adversely affected by air or water in-leakage. Once in-leakage is determined, CPSES procedures provide direction to locate the source of in-leakage.

NRC Comment: 3. Methods of repair of leakage;

CPSES Response: Methods of repair of leakage are determined from manufacturer recommendations and/or good mechanical practice and are implemented by work requests and work orders.

NRC Comment: 4. Methodology for determining the cause(s) of leakage;

CPSES Response: Appropriate plant individuals are identified in the CPSES procedures with responsibility for reviewing data and determining the cause(s) of in-leakage.

NRC Comment: 5. A preventative maintenance program.

CPSES Response: Present Preventative Maintenance (PM) guidelines reflect that CPSES will schedule (1) shell examinations of all waterboxes every outage, (2) eddy current examination of 10% of tubes in each waterbox every other outage, and (3) eddy current examination of 100% of tubes in one waterbox every other outage. Such PM activities are implemented in accordance with Preventative Maintenance Program procedures.

A design modification is being implemented to replace the main condenser copper-nickel tubes with titanium modules. The purpose of this modification is to reduce the copper content in the entire secondary system. The change out is scheduled to be complete by the end of the first refueling outage. Subsequent to the modification, the condenser PM program will be evaluated to determine its applicability to the new design condenser due to the material upgrade involved.

4. PRIMARY TO SECONDARY LEAKAGE LIMIT

NRC Comment: All PWRs that have Technical Specification limits for primary to secondary leakage rates which are less restrictive than the Standard Technical Specifications (STS) limits should implement the STS limits.

CPSES Response: The CPSES Technical Specification limits for primary to secondary leakage rates are in agreement with the Westinghouse Standard Technical Specifications (NUREG-0452 Revision 4).

5. COOLANT IODINE ACTIVITY LIMIT

NRC Comment: PWRs that have Technical Specification limits and surveillance for coolant iodine activity that are less restrictive than the Standard Technical Specifications (STS) should implement the STS limits. Those plant identified above that also have low head high pressure safety injection pumps should either: (1) implement iodine limits which are 20% of the STS values, or (2) implement reactor coolant pump trip criteria which will ensure that if offsite power is retained, no loss of forced reactor coolant system flow will occur for steam generator tube rupture events up to and including the design basis

double-ended break of a single steam generator tube, and implement iodine limits consistent with the STS.

CPSES Response: The CPSES Technical Specification limits and surveillance for coolant iodine activity are in agreement with the Westinghouse Standard Technical Specifications (NUREG-0452 Revision 4).

6. SAFETY INJECTION SIGNAL RESET

NRC Comment: The control logic associated with the safety injection pump suction flow path should be reviewed and modified as necessary, by licensees, to minimize the loss of safety function associated with safety injection reset during an SGTR event. Automatic switchover of safety injection pump suction from the boric acid storage tanks (BAST) to the refueling water storage tanks should be evaluated with respect to whether the switchover should be made on the basis of low BAST level alone without consideration of the condition of the SI signal.

CPSES Response: The CPSES Safety injection (SI) pumps take suction directly from the Refueling Water Storage Tank, in the presence of a Safety Injection signal. There is no suction path between the SI pumps and the Boric Acid Storage Tanks; consequently, there is no need for changes to the control logic associated with the SI pumps.

COMANCHE PEAK STEAM ELECTRIC STATION
RESPONSE TO GENERIC LETTER 85-02
(ENCLOSURE 2)

REQUEST FOR INFORMATION CONCERNING CATEGORY C-2 STEAM GENERATOR TUBE INSPECTIONS

NRC QUESTION: The enclosed draft NUREG-0844 Section 2.2.1.2 describes certain limitations which the staff believes to be inherent in the present Technical Specification steam generator ISI requirements pertaining to Category C-2 inspection results. Licensees and applicants are requested to provide a description of their current policy and actions relative to this issue and any recommendations they have concerning how existing Technical Specification steam generator ISI requirements pertaining to Category C-2 inspection results could be improved to better ensure that adequate inspections will be performed. This description should include a response to the following questions:

1. What factors do, or would, the licensee or applicant consider in determining (a) whether additional tubes should be inspected beyond what is required by the Technical Specifications, (b) whether all steam generators should be included in the inspection program, and (c) when the steam generators should be reinspected?

2. To what extent do these factors include consideration of the degradation mechanism itself and its potential for causing a tube to be vulnerable to rupture during severe transients or postulated accident before rupture or leakage of that tube occurs during normal operation?

CPSES Response: Being an applicant for an operating license, CPSES has not performed steam generator inservice inspections; however, the necessary programs, procedures and instructions are in place, and, therefore, form the basis for determining current policy relative to this issue. It should be noted that evolution of the current policy described in this response may occur based upon further evaluation, implementation feedback and additional input from applicable sources.

If defective tubes are found, a failure analysis and disposition of the nonconforming condition would lead CPSES plant personnel to consideration of the following factors to determine whether actions such as those described in question No. 1 are required:

1. Past inspection results and failures (history trending)

2. Industry experience

3. Cause of failure (degradation method)

Performance of a failure analysis requires determination of appropriate action required to prevent a recurrence of the same failure (termination of the ability of a tube to perform its intended function due to degradation). As a result, evaluation of the potential future effects of the degradation mechanism would encompass an evaluation of the current condition of the other uninspected tubes (refer to NRC question No. 2 above).

Currently, CPSES feels that the present Technical Specification steam generator ISI requirements pertaining to Category C-2 inspection results for the first sample inspection should be used. If the required second sample also yields a Category C-2 inspection result, then additional action should be considered.