

EXPIRES 04/30/98

LICENSEE EVENT REPORT (LER)

(See reverse for required number of
digits/characters for each block)ESTIMATED BURDEN PER RESPONSE TO COMPLY WITH THIS
MANDATORY INFORMATION COLLECTION REQUEST: 50.0 HRS.
REPORTED LESSONS LEARNED ARE INCORPORATED INTO THE
LICENSING PROCESS AND FED BACK TO INDUSTRY. FORWARD
COMMENTS REGARDING BURDEN ESTIMATE TO THE INFORMATION
AND RECORDS MANAGEMENT BRANCH (T-6 F33), U.S. NUCLEAR
REGULATORY COMMISSION, WASHINGTON, DC 20555-0001, AND TO
THE PAPERWORK REDUCTION PROJECT

FACILITY NAME (1)

South Texas, Unit 1

DOCKET NUMBER (2)

05000 498

PAGE (3)

PAGE 1 OF 3

TITLE (4)

Condition outside the plant's design basis

| EVENT DATE (5) | | | LER NUMBER (6) | | | REPORT DATE (7) | | | OTHER FACILITIES INVOLVED (8) | |
|-----------------------|-----|------|---|----------------------|--------------------|-------------------|-----|------|-------------------------------|--|
| MONTH | DAY | YEAR | YEAR | SEQUENTIAL NUMBER | REVISION NUMBER | MONTH | DAY | YEAR | FACILITY NAME | DOCKET NUMBER |
| 02 | 03 | 98 | 98 | -- 002 | - 00 | 03 | 05 | 98 | SOUTH TEXAS, UNIT 2 | 05000 |
| | | | | | | | | | FACILITY NAME | DOCKET NUMBER |
| | | | | | | | | | | 05000 |
| OPERATING MODE (9) | | | THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check one or more) (11) | | | | | | | |
| 1 | | | 20.2201(b) | | | 20.2203(a)(2)(v) | | | 50.73(a)(2)(i) | 50.73(a)(2)(viii) |
| POWER LEVEL (10) | | | 20.2203(a)(1) | | | 20.2203(a)(3)(i) | | | X 50.73(a)(2)(ii) | 50.73(a)(2)(x) |
| 100 | | | 20.2203(a)(2)(i) | | | 20.2203(a)(3)(ii) | | | 50.73(a)(2)(iii) | 73.71 |
| | | | 20.2203(a)(2)(ii) | | | 20.2203(a)(4) | | | 50.73(a)(2)(iv) | OTHER |
| | | | 20.2203(a)(2)(iii) | | | 50.36(c)(1) | | | 50.73(a)(2)(v) | Specify in Abstract below or in NRC Form 366A |
| | | | 20.2203(a)(2)(iv) | | | 50.36(c)(2) | | | 50.73(a)(2)(vii) | |

LICENSEE CONTACT FOR THIS LER (12)

NAME

Scott M. Head - Licensing Supervisor

TELEPHONE NUMBER (Include Area Code)

(512) 972-7136

COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT (13)

| CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS | CAUSE | SYSTEM | COMPONENT | MANUFACTURER | REPORTABLE TO NPRDS |
|-------|--------|-----------|--------------|------------------------|-------|--------|-----------|--------------|------------------------|
| | | | | | | | | | |
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| | | | | | | | | | |

SUPPLEMENTAL REPORT EXPECTED (14)

EXPECTED
SUBMISSION
DATE (15)

MONTH DAY YEAR

YES

(If yes, complete EXPECTED SUBMISSION DATE).

X

NO

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines) (16)

On February 3, 1998, Units 1 and 2 were in Mode 1 at 100% power. During a review of Emergency Operating Procedure (EOP) calculations for the replacement steam generators, it was found that the steam generator narrow range level EOP just-in-narrow-range setpoint was different than the setpoint for the current steam generators. The design basis for determining the setpoint is to ensure that the top of the steam generator tube bundle is covered before auxiliary feedwater flow can be throttled down under accident conditions. It was determined that the setpoint for the South Texas Project current steam generators did not account for the elevation difference between the top of the tube bundle and the lower narrow range level indication tap location. The cause of this occurrence was the original calculation to determine Emergency Operating Procedure steam generator just-in-narrow-range level setpoint incorrectly assumed the height of the lower narrow range level instrument tap was at the same height as the top of the tube bundle. Corrective actions included revising the Emergency Operating Procedure steam generator narrow range level setpoint document, revising the QDPS and ERFDADS just-in-narrow-range level setpoint and revising the affected Emergency Operating Procedures.

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| | | 98 | -- | 002 -- 00 | |

TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

DESCRIPTION OF EVENT:

On February 3, 1998, Units 1 and 2 were in Mode 1 at 100% power. During a review of Emergency Operating Procedure (EOP) calculations for the replacement steam generators, it was found that the steam generator narrow range level EOP just-in-narrow-range setpoint was different than the setpoint for the current steam generators. The design basis for determining the setpoints is to ensure that the top of the steam generator tube bundle is covered before auxiliary feedwater flow can be throttled down under accident conditions. It was determined that the setpoint for the South Texas Project current steam generators did not account for the elevation difference between the top of the tube bundle and the lower narrow range level indication tap location.

Emergency Operating Procedure actions for the South Texas Project current steam generators had been based on an incorrect assumption that the lower narrow range level tap elevation was at the same elevation as the top of the tube bundle. A review of the existing Model E steam generator physical dimensions determined that the top of the tube bundle was actually within 8.3% of the span of the narrow range level indication. The steam generator lower narrow range level elevation tap was found to be approximately 15 inches below the top of the tube bundle.

During the original calculation performed by Westinghouse in 1986 to determine the narrow range level indication corresponding to the top of the steam generator tube bundle, a value of 5% narrow range was determined. Revisions to this calculation until review for the Replacement Steam Generator Project, essentially left this determination at 5%. The 5% indicated narrow range determination incorrectly assumed the lower narrow range tap was at the same height as the top of the steam generator tube bundle and accounted for indication uncertainties due to reference leg heatup and instrumentation errors. The adverse containment conditions narrow range level setpoint used in the Emergency Operating Procedures was similarly affected by the incorrect assumption. Other design documents affected by the Emergency Operating Procedure setpoint calculations included design documents for the Qualified Data Processing System (QDPS) and the Emergency Response Facility Data Acquisition Display System (ERFDADS).

Westinghouse wrote a nonconformance report when it was discovered the Emergency Operating Procedure calculation was in error. The correct steam generator narrow range level setpoint corresponding to the top of the tube bundles, when considering measurement error, was determined to be 14% under normal containment conditions and 34% under adverse containment conditions. South Texas Project subsequently put temporary measures in effect to implement the revised Emergency Operating Procedure setpoint until permanent corrective actions could be completed. As a result of the calculation error found in the steam generator just-in-narrow-range level setpoint, Westinghouse reviewed 26 other Emergency Operating Procedure setpoint calculations affecting the South Texas Project. No other calculation errors were found.

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TEXT (If more space is required, use additional copies of NRC Form 366A) (17)

CAUSE OF EVENT:

The cause of this occurrence was the original calculation to determine Emergency Operating Procedure steam generator just-in-narrow-range level setpoint incorrectly assumed the height of the lower narrow range level instrument tap was at the same height as the top of the tube bundle. Since this calculation was performed several years ago, it could not be determined why steam generator design information was incorrectly considered.

ANALYSIS OF EVENT:

A condition that results in a nuclear power plant being outside the design basis of the plant is reportable pursuant to 10CFR50.73 (a)(2)(ii)(B). The steam generator just-in-narrow-range level setpoint is used in the Emergency Operating Procedures as an Operator Action Point. The Emergency Operating Procedures direct the operator to ensure the top of the steam generator tube bundle is covered. This ensures reactor coolant system heat is adequately removed by heat transfer to the steam generators for design basis events. In the event of a steam generator tube rupture, this ensures that sufficient water level is available for iodine scrubbing. The steam generator just-in-narrow-range level setpoint is used as an Operator Action Point to confirm adequate level for steam generator being a heat sink and allows the operator to throttle down on auxiliary feedwater flow. Consequently, the original 5% just-in-narrow-range value could have allowed the operator to consider a generator to be a heat sink when adequate level was not present. This could have delayed the entry into some Functional Restoration Procedures for mitigation of beyond design basis events involving loss of heat sink, or allowed the operator to prematurely begin to throttle auxiliary feedwater to a steam generator. In practice during simulator exercises, steam generator level is normally maintained at a level higher than the just in narrow range level setpoint. There were no adverse safety or radiological consequences from this event

CORRECTIVE ACTION:

1. The Emergency Operating Procedure steam generator narrow range level setpoint document was revised.
2. QDPS and ERFDADS just-in-narrow-range level setpoint was revised.
3. Affected Emergency Operating Procedures were revised.

ADDITIONAL INFORMATION:

There have been no previous Licensee Event Reports submitted in the last three years by the South Texas Project to the Nuclear Regulatory Commission regarding conditions outside the design basis affecting Emergency Operating Procedures.