

November 22, 2000

Mr. William T. Cottle
President and Chief Executive Officer
STP Nuclear Operating Company
South Texas Project Electric
Generating Station
P. O. Box 289
Wadsworth, TX 77483

SUBJECT: SOUTH TEXAS PROJECT, UNIT 2 - REQUEST FOR ADDITIONAL
INFORMATION RE: LICENSE AMENDMENT REQUEST ASSOCIATED WITH
MODIFYING ALTERNATE REPAIR CRITERIA OF STEAM GENERATOR
TUBES AT CERTAIN INTERSECTIONS OF TUBES AND TUBE SUPPORT
PLATES (TAC NO. MA8271)

Dear Mr. Cottle:

The staff met with the representatives from the STP Nuclear Operating Company (STPNOC) on November 17, 2000, regarding the STPNOC's license amendment request to change the Technical Specifications for South Texas Project, Unit 2, to modify requirements associated with the alternate repair criteria of steam generator tubes at certain intersections of tubes and tube support plates. The amendment proposed revising the current alternate repair criteria of 1.0 volt to 3.0 volts.

The meeting focused on the technical issues raised in our previous request for additional information dated October 31, 2000. Based on our review of the additional information that was provided during the meeting together with your February 21, 2000, submittal, enclosed we are providing our initial assessment of the subject license amendment request. A full meeting summary will be issued in the very near future.

Please let me know if you have any questions regarding the enclosed staff assessments or if you desire a meeting with the staff to discuss these question.

Sincerely,

/RA/

Tae Kim, Senior Project Manager, Section 1
Project Directorate IV & Decommissioning
Division of Licensing Project Management
Office of Nuclear Reactor Regulation

Docket No. 50-499

Enclosure: Staff Assessment

cc w/encl: See next page

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South Texas, Units 1 & 2

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February 2000

NRR STAFF ASSESSMENT

SOUTH TEXAS PROJECT- UNIT 2

The capability of RELAP-5 to address thermal/hydraulic problems for which it was designed and verified (benchmarked) is not in question provided the code is correctly applied. Correct application encompasses several considerations, some of which are identified below:

1. The application of RELAP-5 in this particular case requires verification by comparison of the version of RELAP-5 used for the analysis to applicable separate effects and scaled integral experimental data. Key phenomena that potentially affect the results must be identified and RELAP-5 must be assessed for these phenomena. Appropriate code options (such as two-phase flow model, critical flow model, choice of thermodynamic equilibrium versus non-equilibrium, drag model) and nodalization must be selected and justified. Applicable data are limited for this application. Component characterization data such as for the steam line flow restrictor, steam/water separators, and steam dryers should be used in the verification. Data from MB-2, containment systems experiments, Marviken critical flow data, GE level swell, LOBI-MOD2 steam line breaks, and perhaps other facilities are useful for needed benchmarking. Any changes between the test facility and the application must be carefully assessed with respect to scaling concerns and from the viewpoint that, since RELAP-5 is a one-dimensional code, application to multi-dimensional situations must be performed with extreme care.
2. Sensitivity studies must be performed to assess the effect of time steps, nodalization selection versus steam generator geometry, code option selection, and initial condition assumptions. They must be of sufficient depth to ensure freedom from numeric instabilities. The consistency of the nodalization for representative test models must be established with respect to the plant steam generator model. Variation of the steam line break size range must establish that bounds for the pressure loadings have been obtained. Analyses based upon blocking the bottom of the downcomer in combination with a sensitivity study of the influence of the preheater region on the regions of concern would provide bounding insights. Nodalization studies and parametric studies must provide insight into suitable one-dimensional behavior in the vicinity of the tube support plates of interest. Modeling the lower plates is of particular concern including the plate immediately above the dividing partition between hot side tubes and cold leg tubes, the influence of axial flow passages between the hot and cold leg tubes, and potential "feedback" from the U-bend region above the plates. Reduction of flow resistance through components on one or both sides of a tube support plate of interest should provide a conservative result with respect to pressure difference across that plate.
3. The latest code version should be used to take advantage of error corrections and improved code flexibility unless use of an older version is justified.
4. Code selections, input data, modeling assumptions, and results must be fully presented and anomalies must be addressed to establish a complete understanding of the application of the code and the calculated results. Results must be provided in sufficient detail in the time region of interest so that an independent verification can be conducted. In addition to the pressure differential across each tube support plate, such parameters

as break critical flow rate, break flow quality, quality into and out of each node, temperatures, pressures, mass flow rates, and flow regimes must be provided for all locations.

5. There is considerable uncertainty regarding propagation of short-term transient effects which may translate into relative plate-to-tube movement. The ability of RELAP-5 to predict pressures consistent with such effects must be fully addressed or their absence must be conclusively established. Finer nodalization must be evaluated to demonstrate convergence. Where analysis weaknesses have been identified, or where conservatism have been assumed, the calculations must be established as bounding the responses of concern.
6. Uncertainty studies must be performed to obtain insight into calculation accuracy. Such variables as flow coefficient and appropriate variables identified above must be included.