

50-498/499 02

I-CCANP-96

7/18/85

Brown &amp; Root, Inc.

Pub

## INTEROFFICE MEMORANDUM

TO: - D. Prelewicz '85 OCT 10 AIO:3 DATE: May 8, 1981

FROM: J. A. Signorelli

SUBJECT: QUADREX STP Review

Per our telecon this morning, please advise on responses to the attached Nuclear Analysis questions as soon as possible. HL&P has been asked that B&R respond by noon today whether these items constitute a potentially reportable problem in accordance with 10CFR50.55(e).

*J. A. Signorelli*  
J. A. Signorelli

JAS/iyg

cc: J. N. Sorenson  
S. M. Mirsky  
W. Gallagher  
P. D. Arrowsmith  
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J. F. Pinto  
J. L. Hawks

## NUCLEAR REGULATORY COMMISSION

Becket No. STN50-4980L Official Exh. No. CCANP #96

In the matter of \_\_\_\_\_

Staff \_\_\_\_\_ IDENTIFIED ☒

Applicant \_\_\_\_\_ RECEIVED

Intervener ☒ \_\_\_\_\_ REJECTED

Cont'g Off'r \_\_\_\_\_

Contractor \_\_\_\_\_ DATE 7/18/85

Other \_\_\_\_\_ Witness \_\_\_\_\_

Reporter TATE

CCANP #96

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PDR ADDCK 05000498  
G PDR

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- (a) Nuclear Analysis did not control the use of temperature values issued for equipment design, nor is there any analytical basis for temperatures used outside of containment (see Question N-15). The use of saturation temperatures rather than actual temperatures inside containment is not conservative in all cases as there has been no analysis performed to support the implied assumption that equipment will not respond to actual temperatures. This approach is not in accordance with IEEE-323 which requires qualification to actual temperatures (see Question N-1).
- (b) There is an insufficient number of environmental analyses in place, and those analyses previously done contained many errors. The only environmental analysis performed by B&R contained a gross error (see Question N-13). Obvious errors were also discovered in an NUS analysis for inside containment (see Question N-1). The only NUS analysis currently valid is the containment environmental analysis for a LOCA (see Question N-1).

There is no currently valid mass energy release or environmental analysis for outside of containment (see Question N-3). The few analyses previously performed were not for currently postulated breaks and/or contained errors (see Questions N-3 and N-13). Brown and Root was uncertain of any need to perform analyses for the high energy lines in the MAB (see Question N-3). The failure to perform any valid environmental analyses outside of containment is untimely, and could possibly result in either retrofit in the MAB or incorrectly designed equipment in the IVC.

A review of work performed by or under the direction of the Nuclear Analysis Group indicates problems or the potential for problems in all areas analyzed, namely, environmental analysis, reactor-shield wall annulus pressurization analysis, verification of release of environmental data, essential cooling pond

analysis, and battery room hydrogen concentration. Except for a containment heat sink surface areas analysis, and an NUS LOCA environmental analysis (see Question N-1), there were no analyses found that were sufficient, correct and current. Other analyses were either obsolete, insufficient in basis, or contained errors (see Questions N-1, N-2, N-8, N-10, N-11, N-12, N-15, N-17, and N-25).

The following findings may have a serious impact on plant licensability or deserve licensing attention:

- (c) Nuclear Analysis has failed to scope, perform, or have analyses performed that should have been completed (including correction of reports containing obsolete or erroneous analysis) given the present state of STP design and construction.
- (d) An identification of Nuclear Analysis calculations needed to support other disciplines was not evident (see Question N-1).
- (e) The annulus pressurization analysis performed by NUS was well modeled but used an inappropriate computer program (RELAP3). They should have used COMPARE as they had done earlier for another plant. Brown and Root should have pursued re-analysis as the annulus pressurization analysis as an input to structural analyses. Both of these analyses require considerable elapsed time, as does NRC approval of the results. The failure to submit such an analysis in a timely manner could cause licensing delays or retrofits. B&R does not appear to be sufficiently concerned about the timeliness of analysis in relation to construction schedules or licensing (see Question N-2).
- (f) Awareness of the proper methodology for handling potential flow paths during environmental analysis was not evident (see Question N-8).

- (g) Awareness of the need to model makeup supplies of water for long term environmental analysis was not evident (see Question N-10).
- (h) Awareness of W trip logic for MSIVs appeared weak (see Question N-11).
- (i) Nuclear Analysis did not appear to be sufficiently knowledgeable in the area of valve performance and qualifications (see Question N-12).
- (j) Analysis for a double ended break rather than a crack break disagrees with a FSAR commitment (see Question N-13).
- (k) B&R does not appear to be sufficiently aware of high energy lines in the MAB (see Question N-13).
- (l) B&R stated that documents are not issued without verified analysis. However, SDD 4E010EQ004-A, "Qualification of Class 1E Equipment," was issued without any reasonable analytical basis (see Question N-15). Only a fortunate series of coincidences will prevent a situation in which some equipment is overdesigned and other equipment is underdesigned.
- (m) Differences in ECP initial temperature assumptions were observed between Nuclear Analysis and Heavy Civil (see Question N-17).
- (n) Assumptions regarding the availability of various heat sinks under varying plant conditions should be re-examined (see Question N-17).
- (o) The battery room hydrogen analysis did not address the true problem of hydrogen concentration near the top of the room. This analysis was not properly classified as safety related (see Question N-25).