GENERAL ⊛ ELECTRIC

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MFN 149-80

August 22, 1980

U.S. Nuclear Regulatory Commission
Office of Nuclear Reactor Regulation
Washington, DC   20555

Attention: Darrell G. Eisenhut, Director
                Division of Licensing

Gentlemen:

SUBJECT: GE COMMENTS ON THE FITZPATRICK RELOAD SAFETY EVALUATION
                REPORT

Reference: "Safety Evaluation by th Office of Nuclear Reactor
                Regulation Supporting Amendment No. 49 to License
                No. DPR-59, Power Authority of the State of New York,
                James A. FitzPatrick Nuclear Power Plant," Docket
                No. 50-333, July 11, 1980.

The purpose of this letter is to provide General Electric's assessment
of NRC statements in the referenced FitzPatrick Safety Evaluation Report
(SER) regarding the REDY code and GEXL correlation. In the SER, the NRC
questions the conservatism of using the REDY code and GEXL correlation
in the reload transient analysis, and suggests that a reanalysis or
minimum critical power ratio (MCPR) penalty may be required during the
cycle. As described in Attachment A, General Electric does not believe
this action is technically justifiable for FitzPatrick or any other
General Electric BWR reload, and is very concerned about the possible
consequences associated with its implementation. The requirement of a
reanalysis will impose a severe resource burden on General Electric and
will directly impact important safety programs. The application of a
MCPR penalty will needlessly remove operating margin and flexibility and
in some cases result in plant derates.

In summary, General Electric believes that plant operation under a REDY
code/GEXL correlation basis for FitzPatrick and other near-term reloads
with 8x8R fuel is safe, prudent, and entirely consistent with the re-
gulations. General Electric agrees that the NRC's use of the ODYN for
rapid pressurization transient analyses on future reloads is appropriate.
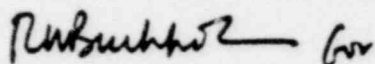
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However, GE urges that the transition to ODYN be smooth, in accordance
with requirements which do not unduly perturb the reload licensing cycle
time or penalize plant operation.

Very truly yours,

Glenn G. Sherwood, Manager
Safety and Licensing Operation

GGS:rf/660-1

cc: L.S. Gifford

Attachment A

References: 1)   "Safety Evaluation by the Office of Nuclear Reactor
                      Regulation Supporting Amendment No. 49 to License
                      No. DPR-59, Power Authority of the State of New
                      York, James A. FitzPatrick Nuclear Power Plant,"
                      Docket No. 50-333, July 11, 1980
               2)   General Electric letter MFN-416-77, E. D. Fuller to
                      D. F. Ross, "Technical Bases for General Electric's
                      Position on Transient Model Margins," October 27,
                      1977
               3)   NEDE-24011-P-A, "Generic Reload Fuel Application,"
                      Appendix C, August 1978
               4)   NEDE-24131, "Basis for 8x8 Retrofit Fuel Thermal
                      Analysis Application," October 5, 1978
               5)   "Safety Evaluation by the Office of Nuclear Reactor
                      Regulation Supporting Amendment No. 55 to Facility
                      License No. DPR-46, Nebraska Public Power District
                      Cooper Nuclear Station," Docket No. 50-298, April 27,
                      1979

REDY Code

Section 2.2.2.2 of the FitzPatrick SER (Reference 1) indicates that the
REDY code "is in some instances nonconservative for evaluation of core
responses to anticipated transients" and that "recalculation of some
limiting transients for Cycle 4 to avoid a CPR margin penalty," using
the ODYN code, may be required. General Electric believes the following
information should be considered and the additional calculations or CPR
penalties not be imposed.

    A.   REDY licensing basis WCPR calculations were shown to be com-
          parable to ODYN in an ODYN-REDY comparative study which was
          submitted to the NRC for review (Reference 2). Based on this
          study, the NRC staff stated "a degree of conservatism" exists
          when using REDY "to predict the consequences of licensing
          basis pressurization events, " and that REDY "overpredicts the
          peak transient pressure" on overpressurization events (Reference 3).
          While not a first principles, best estimate code, REDY still
          provides a conservative basis for plant operation which has
          been confirmed by hundreds of reactor years of safe, successful
          BWR operating experience. Conversion to ODYN is not expected
          to significantly change the operating limits, and hence the
          safety margins, of BWR plants.

    B.   Whether using ODYN or REDY, General Electric's licensing basis
          for abnormal transients establishes an operating limit which
          provides for an extremely large safety margin. First, it is
          based on a limiting event which is not expected to occur
          during the lifetime of the plant (turbine trip/load rejection
          without bypass). This event is generally much more severe
          than other abnormal transients. Second, it assumes, in general,
          worse-case equipment performance and operating conditions.

Third, it precludes operation below the GETAB "safety" limit, whereas experimental data have shown that operation below the "safety" limit during the short time interval of the rapid pressurization transients would not cause any fuel failure, and thus would not effect public safety.

C. Requiring recalculations using ODYN for FitzPatrick and other near-term reloads would significantly impact General Electric safety workload, diverting resources from other, more important issues. In addition, it is contrary to the General Electric/NRC agreement regarding implementation of ODYN, in which General Electric was assured that the REDY-to-ODYN transition would be orderly, with minimal perturbations to the analysis cycle. The staff indicated that ODYN analyses would not be required for those reloads initiated before the NRC had officially approved ODYN (that is, before issuance of the ODYN SER and the utility implementation directives).

GEXL Correlation

The second issue is related to the following statements in Section 2.2.2.2 of the SER regarding GEXL:

"The test data base supporting the applicability of the GEXL critical power correlation to the retrofit (8x8R) fuel design has never been submitted for staff review in accordance with established procedures. Although we have approved operation of several reactors for up to two cycles with 8x8R fuel, we now have concern regarding the safety limit MCPR predicted using GEXL for any fuel cycle with two water rod fuel included in the core. Our concern relates to a possible nonconservative bias, which has been observed in CPR test data for two water rod fuel with high pin-to-pin power peaking."

General Electric does not believe the statements in the SER are entirely correct for the following reasons:

A. The 8x8R GEXL correlation is a best-fit to experimental data. It was generated using the same methodology extensively reviewed and approved by the staff for the 7x7 and 8x8 correlations. Because General Electric used previously approved procedures to derive the 8x8R GEXL correlation, a formal submittal was not believed to be necessary. Rather, an information report describing the basis for the 8x8R GEXL correlation was provided (Reference 4) and subsequently referenced in the Reload Licensing Topical Report. Generic test data was also provided in response to NRC questions on Cooper Cycle 5. In response to these submittals, the NRC concluded that the 8x8R correlation was somewhat conservatively biased and predicted the test data with better precision than the 8x8 and 7x7 correlations (Reference 5).

B. General Electric has responded to all documented staff concerns regarding the basis for the GEXL 8x8R correlation. In addition to the Reference 4 information report, General Electric also provided answers to the staff's questions for the Hanford 2, Susquehanna, and Grand Gulf dockets, as well as several reload applications.

Please note that the NRC has just recently defined its concerns with the 8x8R GEXL correlation. In response, General Electric will be meeting with the staff in August for the purpose of discussing these concerns and achieving speedy resolution.

JFS:rf/656-8