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 KEISER,H.W. Pennsylvania Power & Light Co.
 RECIP.NAME RECIPIENT AFFILIATION
 BUTLER,W.R. Project Directorate I-2

SUBJECT: Forwards proposed Amends 146 & 100 to Licenses NPF-14 & NPF-22, respectively, revising pressure temp curves per 10CFR50, App G & Generic Ltr 88-11 & deleting specimen withdrawal schedule per Generic Ltr 91-01.

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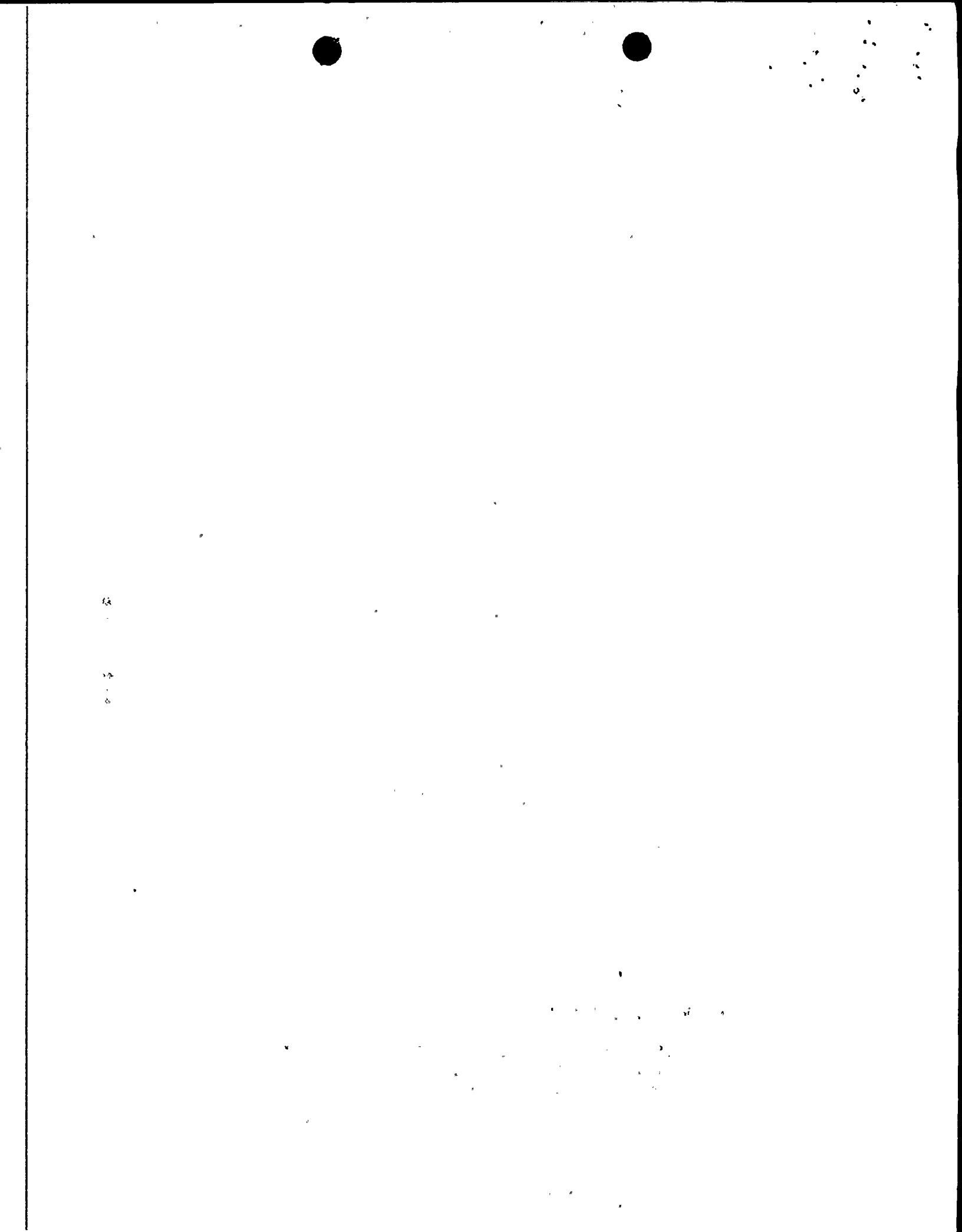
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APR 18 1991

Director of Nuclear Reactor Regulation
Attention: Dr. W. R. Butler, Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, DC 20555

SUSQUEHANNA STEAM ELECTRIC STATION
PROPOSED AMENDMENTS 146 TO LICENSE NO. NPF-14
AND 100 TO LICENSE NO. NPF-22: REVISION TO
P-T CURVES AND SPECIMEN WITHDRAWAL SCHEDULE
PLA-3567 FILES R41-2, A17-2

Docket Nos. 50-387
and 50-388

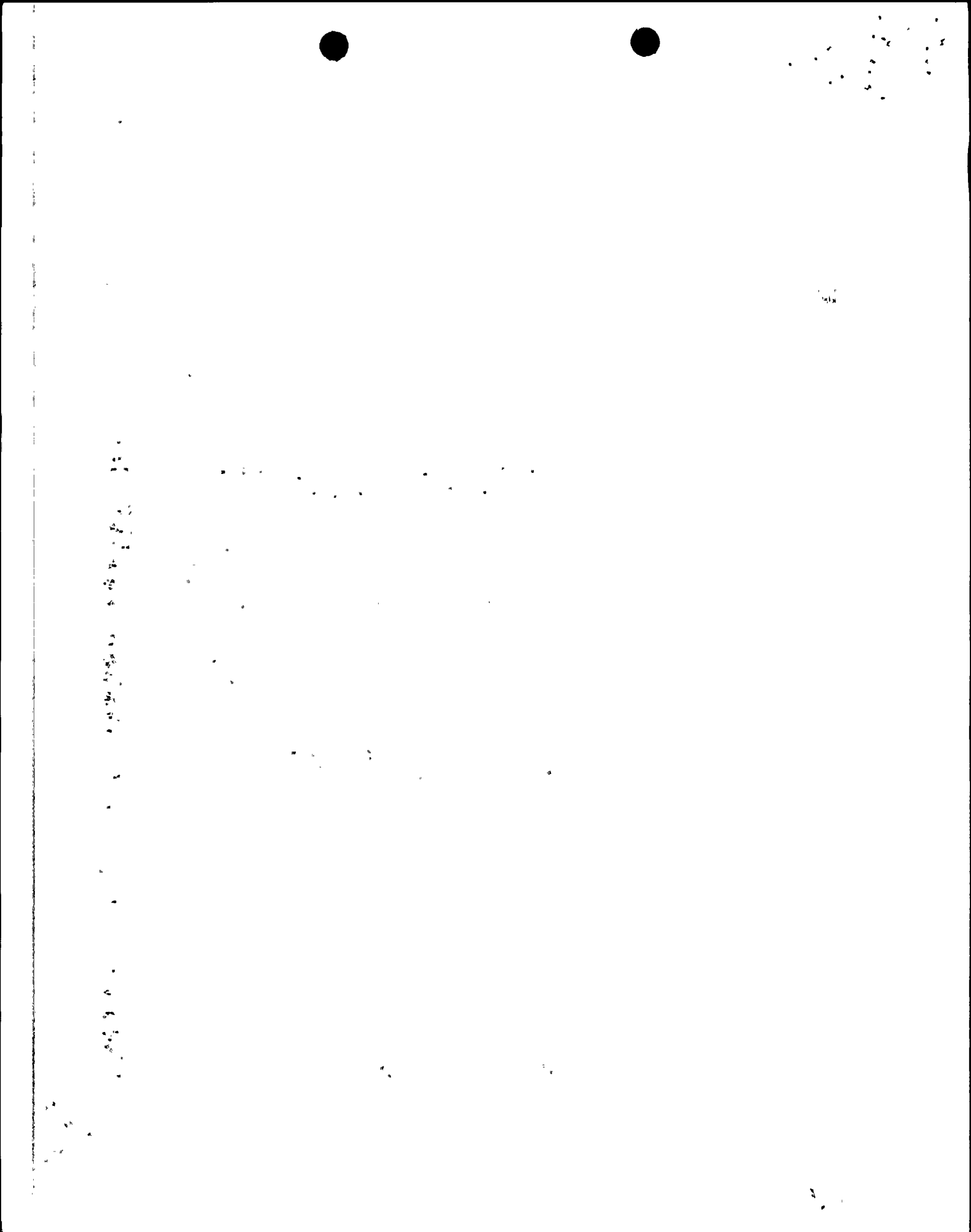
- References:
1. Generic Letter 88-11, "NRC Position on Radiation Embrittlement of Reactor Vessel Materials and Its Effects on Plant Operation"; dated 7/12/88
 2. Letter (PLA-3119), dated 12/12/88, "Response to Generic Letter 88-11" from H. W. Keiser (PP&L) to Dr. W. R. Butler (NRC)
 3. Letter, dated 12/01/89, "Generic Letter 88-11: NRC Position on Radiation Embrittlement of Reactor Vessel Materials and Its Effect on Plant Operations" from M. C. Thadani (NRC) to H. W. Keiser (PP&L)
 4. Generic Letter 91-01, "Removal of the Schedule for the Withdrawal of Reactor Vessel Material Specimens from Technical Specifications", dated 1/4/91

Dear Dr. Butler:

The purpose of this letter is to propose changes to the Susquehanna SES Unit 1 and Unit 2 Technical Specifications to revise the pressure-temperature curves for compliance with 10CFR50, Appendix G as requested in Generic Letter 88-11 and to delete the specimen withdrawal schedule as allowed by Generic Letter 91-01.

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DESCRIPTION OF CHANGE

The proposed changes effect Technical Specification Section 3/4.4.6, "Pressure/Temperature Limits" and Bases Section 3/4.4.6, "Pressure/Temperature Limits". The changes are illustrated on the attached marked-up pages.

SAFETY ANALYSIS

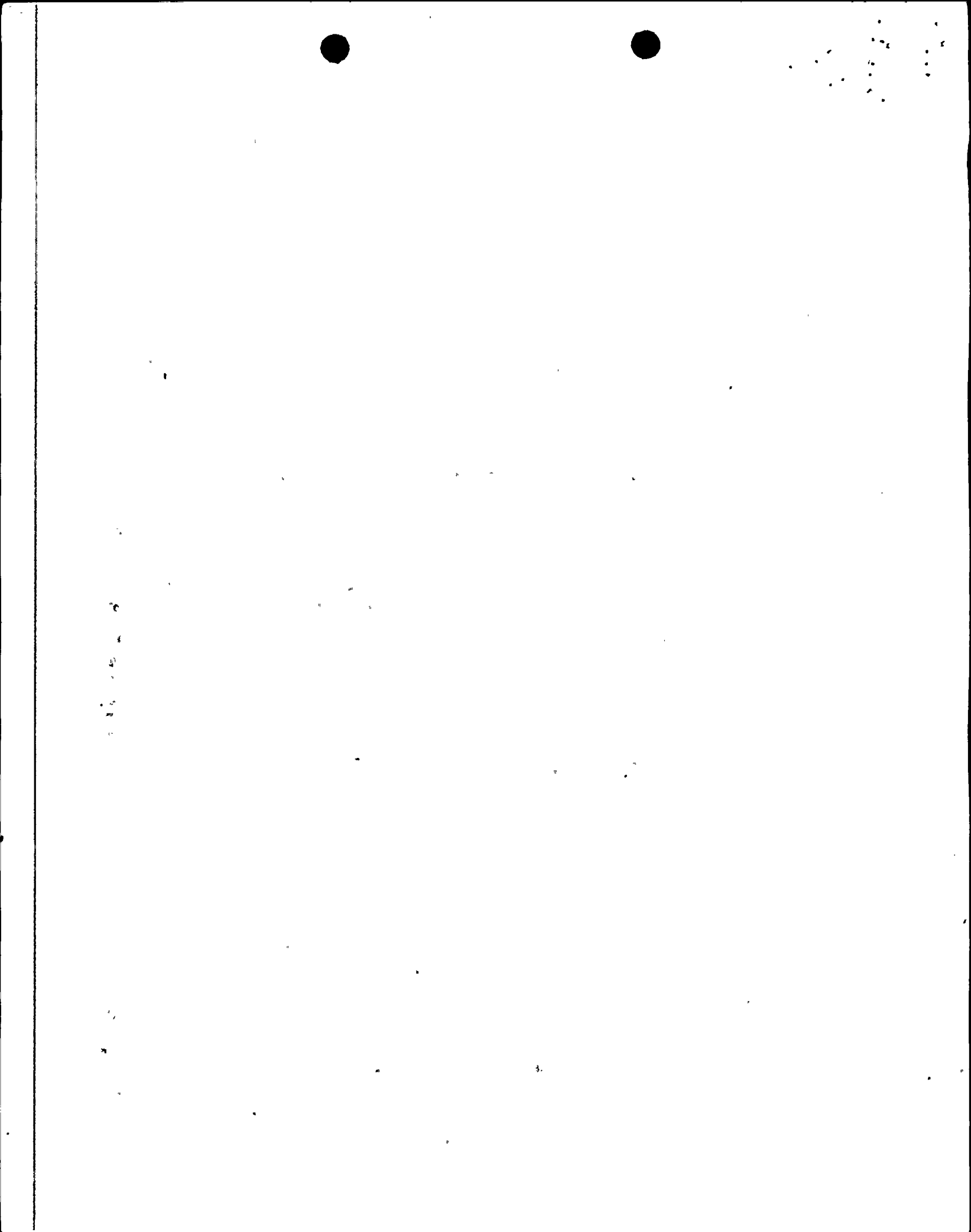
A. Background

The pressure-temperature (P-T) curves in the Technical Specifications are established to the requirements of 10CFR50, Appendix G to assure that brittle fracture of the reactor vessel is prevented. Part of the analysis involved in developing the P-T curves is to account for irradiation embrittlement effects in the core region, or beltline. In the past, Regulatory Guide 1.99, Revision 1 has been used to predict the shift in nil-ductility referenced temperature (RT_{NDT}) as a function of fluence in the beltline region. Regulatory Guide 1.99, Revision 1 was developed assuming that copper (Cu) and phosphorous (P) were the key chemical elements influencing embrittlement.

Regulatory Guide 1.99, Revision 2 was issued in May 1988. Revision 2 of Regulatory Guide 1.99 represents the results of statistical evaluation of commercial reactor surveillance test data accumulated through about 1984. The basic elements of the regulatory guide, a chemistry factor and a fluence factor remained the same from Revision 1 to Revision 2. However, each factor is significantly different. The chemistry factor (CF) has been changed from an equation based on Cu and P in Revision 1 to tables of CF values based on Cu and nickel (Ni), with separate tables for plates and for welds. The fluence factor has been modified in Revision 2 to a somewhat more complex form. The overall effect of the changes from Revision 1 to Revision 2 has generally been to increase RT_{NDT} shift predictions for relatively low fluences (below 10^{19} n/cm²) and to decrease RT_{NDT} shift predictions for higher fluences.

Generic Letter 88-11 requested an evaluation of the impact of Revision 2 on the existing P-T curves.

Generic Letter 91-01 provides guidance for the preparation of a request for a license amendment to remove from the Technical Specifications (TS) the schedule for the withdrawal of reactor vessel material surveillance specimens. The control of changes to this schedule by way of a license amendment to modify the TS duplicates the requirements of Section II.B.3 of Appendix H to Part 50 of Title 10 of the Code of Federal Regulations (10 CFR). These requirements address the submittal of a proposed withdrawal schedule, as specified in 10 CFR 50.4, and NRC approval before its implementation.



B. Evaluation

In response to Generic Letter 88-11, Pennsylvania Power & Light Company (PP&L) had General Electric Company (GE) calculate the P-T curves for Susquehanna SES Units 1 and 2 using the equations presented in Regulatory Guide 1.99, Revision 2. GE performed the required calculations using the materials data available for all of the vessel plates and attachments.

The P-T curves for Unit 2 remained the same, while the curves changed for Unit 1 as a result of using the highest non-beltline RT_{NOT} expected. The 40°F RT_{NOT} for the feedwater nozzle produces the most restrictive P-T curve for both reactors; and therefore, the curves are now identical. The changes in the RT_{NOT} of the beltline materials, as a result of Regulatory Guide 1.99 Revision 2, do not produce values which would produce P-T curves more restrictive than the non-beltline curves, even after 32 Effective Full Power Years (EFPY) of operation.

This analysis was submitted to the NRC in PLA-3119 dated December 12, 1988. The NRC approved the analysis in a letter dated December 1, 1989.

For Generic Letter 91-01, the limiting conditions for operation (LCO) for the reactor coolant system include operating limits on pressure and temperature that are defined in figures that provide an acceptable region for operation during heatup, cooldown, criticality, and inservice leak and hydrostatic testing. An associated surveillance requirement addresses the frequency of verifying that operation is within the specified limits during these operating conditions. In addition, a separate surveillance includes the requirement that reactor vessel material surveillance specimens be removed and examined to determine changes in material properties, as required by 10 CFR Part 50, Appendix H, and in accordance with the schedule in Table 4.4.6.1.3-1. The reference to this table along with the table providing the schedule for the withdrawal of reactor vessel material surveillance specimens may be removed from this surveillance requirement. This surveillance requirement also specify that the results of these examinations shall be used to update the Figure 3.4.6.1-1 for the pressure and temperature operating limits. This requirement exists and it shall be retained.

The removal from the Technical Specification of the schedule for the withdrawal of reactor vessel material surveillance specimens will not result in any loss of regulatory control because changes to this schedule are controlled by the requirements of Appendix H to 10 CFR Part 50. In addition, to ensure that the surveillance specimens are withdrawn at the proper time, the surveillance requirements in the Technical Specifications on pressure and temperature limits indicate that the specimens shall be removed and examined to determine changes in their material properties, as required by Appendix H.



100-100

NO SIGNIFICANT HAZARDS CONSIDERATION

- I. The proposed change does not involve a significant increase in the probability or consequence of an accident previously evaluated.

The proposed changes are administrative in nature. The analysis and revisions to the pressure-temperature curves were reviewed and accepted previously. This change incorporates into the Technical Specifications the previously approved curves.

The removal of the specimen withdrawal schedule from the Technical Specifications is administrative in nature since changes to this schedule are controlled by the requirements of 10CFR50, Appendix H and the specimen withdrawal schedule table in the Technical Specifications is a duplicate of the Appendix H requirements.

- II. The proposed change does not create the possibility of a new or different kind of accident from any previously evaluated.

See Item I above.

- III. The proposed change does not involve a significant reduction in a margin of safety.

See Item I above.

We request that these amendments be approved by August 2, 1991 in order to support Susquehanna SES Unit 1 Sixth Refueling and Inspection Outage. Any questions regarding this submittal should be directed to Mr. C. T. Coddington at (215) 774-7915.

Very truly yours,



H. W. Keiser

cc: ~~NRC Document Control Desk (original)~~
NRC Region I
Mr. G. S. Barber, NRC Sr. Resident Inspector
Mr. J. J. Raleigh, NRC Project Manager
Mr. T. M. Gerusky, PA DER

