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MILLER,C.L. Project Directorate I-2

SUBJECT: Requests waiver to support preparation of formal Tech Spec amend to operate for cycle w/B RWCU high flow isolation trip channel inoperable.

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NOV 24 1992

Director of Nuclear Reactor Regulation
Attention: Mr. C. L. Miller, Project Director
Project Directorate I-2
Division of Reactor Projects
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

SUSQUEHANNA STEAM ELECTRIC STATION
NOVEMBER 24, 1992 WAIVER REQUEST FOR
INOPERABLE RWCU ISOLATION CHANNEL
PLA-3879 FILES A17-2/R41-2 Docket No. 50-388

References:
1. *Letter, PLA-3874, H. W. Keiser to T. T. Martin, "Request for Waiver of Compliance," dated November 17, 1992.*
2. *Letter, C. W. Hehl to H. W. Keiser, "Temporary Waiver of Compliance Related to the RWCU System Isolation Actuation Instrumentation," dated November 18, 1992.*
3. *Letter, PLA-3876, H. W. Keiser to C. L. Miller, "Extension of Waiver Request for Inoperable RWCU Isolation Channel," dated November 20, 1992.*

Dear Mr. Miller:

The purpose of this letter is to request a waiver to support preparation of a formal Technical Specification Amendment request to operate for one cycle with the 'B' RWCU High Flow isolation trip channel inoperable.

Justification for this waiver has been revised from that provided in Reference 3. Supplemental justification will be provided with the proposed Technical Specification Amendment, which is in process and will be submitted by 11/30/92.

DESCRIPTION OF CONDITION

A schematic of the RWCU system is attached for information. On 11/15/92, operators noted a significant decrease in the reading of the 'B' High Flow channel during the routine surveillance channel check. Although the associated instrument (PDIS-G33-2N044B) met the channel check acceptance criteria, an investigation was initiated. At 1120 on 11/17/92, the channel was taken out of service to determine the cause of this reading decrease and the appropriate LCO was entered. At 1310, the channel was confirmed to be inoperable, and it was concluded that the

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instrument could not be repaired in the time allotted by the Technical Specifications; therefore, operations shutdown and isolated the RWCU system. At 1930 hours on 11/17/92, the NRC granted a 72-hour waiver. RWCU was restored to service on 11/18/92. Additional attempts to restore the inoperable channel since that time have been unsuccessful. Observation of pertinent plant indications demonstrates no detectable leakage from the RWCU system.

REQUIREMENTS FOR WHICH WAIVER IS REQUESTED

Technical Specification 3.3.2, Action b, footnote *, requires that Action 23 of Table 3.3.2-1 be followed for the circumstances outlined above. This action requires the RWCU system to be isolated. PP&L is requesting that the requirement to follow Action 23 to be waived to support preparation and subsequent NRC review of a Technical Specification Amendment Request to operate for the duration of Unit 2 Cycle 6 with the 'B' RWCU high flow isolation trip channel inoperable. This Amendment will be forwarded no later than 11/30/92.

CIRCUMSTANCES REQUIRING PROMPT ACTION

This request provides information to correct and supplement Reference 3 based on new information. For the reasons described below, PP&L believes that it is safe and within the bounds of existing analyses to operate the Susquehanna units with the 'B' trip channel inoperable (the 'A' RWCU high flow isolation trip channel is OPERABLE). The RWCU system will be required to be isolated if agreement is not reached based on the new information. If action is not taken, Susquehanna Unit 2 will have to be shut down in accordance with administrative controls when reactor water conductivity reaches .5 micromhos/$_{cm}$. If this request is not approved, PP&L requests that shutdown be allowed to occur with the RWCU system in service in order to avoid the detrimental effects on SSES water chemistry.

SAFETY SIGNIFICANCE AND CONSEQUENCES OF PROPOSED REQUEST

Since the submittal of Reference 3, PP&L has performed a more detailed evaluation of the adequacy of leak detection for the entire length of RWCU piping outside primary containment. The results are summarized below:

HV-G33-F004 Valve to FE-G33-2N035 : (Rooms II-501/502/503)	
1)	RWCU Flow - High
2)	RWCU Area Temperature - High
3)	RWCU Area Ventilation Differential Temperature - High
4)	Reactor Vessel Low-Low Water Lever (Level 2)
FE-G33-2N035 to Filter Demineralizer Trains : (Rooms II-501/504-505)	
1)	RWCU Flow - High
2)	RWCU Differential Flow - High
3)	RWCU Area Temperature - High
4)	RWCU Area Ventilation Differential Temperature - High
5)	Reactor Vessel Low-Low Water Level (Level 2)
Filter Demin Trains to Regen Heat Exchangers : (Filter Demin Rooms)	
1)	RWCU Flow - High
2)	RWCU Differential Flow - High
3)	Reactor Vessel Low-Low Water Level (Level 2)
Regen Heat Exchangers (2E207) to FE-G33-2N040 : (Rooms II-501/504)	
1)	RWCU Flow - High
2)	RWCU Differential Flow - High
3)	RWCU Area Temperature - High
4)	RWCU Area Ventilation Differential Temperature - High
5)	Reactor Vessel Low-Low Water Level (Level 2)
FE-G33-2N040 to Feedwater Piping : (Filter Demin Rooms/Main Steam Tunnel)	
1)	RWCU Flow - High
2)	Reactor Vessel Low-Low Water Level (Level 2)

Based on the above, we have determined that the RWCU Flow-High trip function is necessary to provide diversity to detect and isolate leaks in the "FE-G33-2N040 to Feedwater Piping" section of piping. For this section, PP&L believes that it is safe to operate Susquehanna Unit 2 for Cycle 6 due to:

1. The OPERABLE 'A' trip channel, which will isolate the RWCU system. An additional calibration of the 'A' channel was performed while RWCU was isolated to ensure its OPERABILITY.

2. The Non-Regenerative heat exchangers are expected to indicate high discharge temperature during a high flow condition. The present RWCU containment isolation logic provides an isolation signal to the F004 valve upon reaching a high discharge temperature. As a result of a system leak bounded by the setpoint of the high flow instrument, this temperature detection will isolate the RWCU F004 valve. While this is a non-1E instrument, it is powered by a safety grade power supply.

3. The subject piping is 4" ASME Section III Class 2 SA-106 Grade B Seamless Carbon piping. It is therefore resistant to Intergranular Stress Corrosion Cracking (IGSCC), and does not require augmented inspection in accordance with Generic Letter 88-01.

4. The low probability of a break in the subject piping section coupled with failure to isolate the RWCU penetration. PP&L has prepared a probabilistic evaluation of this case, and results indicate a 1.1E-6 probability for this event for a 15 month operating cycle. This calculation is conservative in that it did not take credit for the Non-Regenerative heat exchanger high temperature isolation, and it did assume minimum wall thickness of the piping.

Despite the low probability of such an event, the 'A' channel of the RWCU High Flow isolation trip function will remain OPERABLE to provide automatic isolation capability. In addition, various other indication is available to the operator to detect system leakage. For instance, the existing flow indication will be available to confirm the presence of a high flow condition should the high flow trip function become unreliable. For leakage into the Main Steam Tunnel, temperature increases will be experienced by the area temperature and area ventilation differential temperature instrumentation. Local sump level indication will also provide additional confirmation of a system leak within this portion of the RWCU system.

The above sources of indication will not provide automatic RWCU system isolation. These instruments will help alert operators to a reactor coolant leak and provide means for confirmation of such a condition. This would eventually lead operators to a manual system isolation.

For the balance of the RWCU piping, the OPERABLE leak detection channels provide sufficient redundancy and diversity to cover the range of potential leak/break scenarios evaluated in the FSAR. This includes (for two trip systems):

1. Ambient Temperature High - Capable of Detecting a 25 GPM (or larger) Leak

TSH-G33-2N600A	Pump Room
TSH-G33-2N600B	Pump Room
TSH-G33-2N600C	Heat Exchanger Room
TSH-G33-2N600D	Heat Exchanger Room
TSH-G33-2N600E	Penetration Room
TSH-G33-2N600F	Penetration Room
Instrument A or C or E will close the inboard valve. Instrument B or D or F will close the outboard valve.	

2. Differential Temperature High - Capable of Detecting a 25 GPM (or larger) Leak

TDSH-G33-2N602A	Pump Room
TDSH-G33-2N602B	Pump Room
TDSH-G33-2N602C	Heat Exchanger Room
TDSH-G33-2N602D	Heat Exchanger Room
TDSH-G33-2N602E	Penetration Room
TDSH-G33-2N602F	Penetration Room
Instrument A or C or E will close the inboard valve. Instrument B or D or F will close the outboard valve.	

3. Differential Flow High - Capable of Detecting a 60 GPM (or larger) Leak

FDSH-G33-2N603A	Closes inboard valve
FDSH-G33-2N603B	Closes outboard valve

4. Reactor Vessel Water Level Low, Low (Level 2) - Capable of Detecting Pipe Breaks Inside or Outside Containment Up to a Double-Ended Guillotine Break

LITS-B21-2N026A	Both switches must actuate to close the inboard valve
LITS-B21-2N026B	
LITS-B21-2N026C	Both switches must actuate to close the outboard valve
LITS-B21-2N026D	

Each of the above trip channels is supported by divisionalized power; each trip function has two redundant, divisionalized trip systems. These instruments cover the necessary range of potential pipe leak/break scenarios. The ambient temperature and delta temperature detection instruments are designed to detect and isolate leaks as small as 25 gpm, which are below the flow rate corresponding to critical crack size. The delta flow, and Level 2 channels will detect and isolate increasingly larger breaks, up to and including a double-ended guillotine break, as reflected above. All of these channels will detect leaks or breaks outside containment; the Level 2

channel also detects breaks inside containment. Finally, the manual isolation provides a backup to allow the operator to effect the isolation in response to control room alarms if an automatic isolation does not occur.

Leak detection can be considered as a safety function with the purpose of minimizing or precluding the potential for a high energy line break (for which independent and diverse detection and isolation systems exist). FSAR Figure 5.2-10, attached, correlates leak rates to crack size up to cracks associated with unstable piping rupture for different pipe sizes and stresses. The RWCU system piping is 4 inches and 6 inches in diameter. A leak rate of 25 gpm can be seen from that Figure to be less than those leak rates associated with the onset of unstable pipe rupture.

Furthermore, the alarm response procedures identify specific actions required including observation, confirmation, isolation, and repair of leaks. Visual observation of a steam leak, rising room temperatures, rising area radiation levels, or the occurrence of a pre-isolation temperature alarm in the main control room would invoke operator action without attempting to quantify the leak rate, or waiting for the temperature to reach the isolation setpoint. Prolonged operation with any significant leak is not anticipated.

Based on the above, operation with the RWCU high flow isolation trip channel inoperable is not a significant degradation in the safety margin associated with RWCU isolation for one cycle.

COMPENSATORY ACTIONS

In support of this waiver request:

1. PP&L has confirmed OPERABILITY of the 'A' high flow isolation trip channel and of all other RWCU isolation trip functions, and that no detectable leakage from the RWCU system exists, based on pertinent plant indications.

2. Technical Specification surveillances will be performed on the Non-Regenerative heat exchanger high temperature isolation channel to ensure its reliability during Unit 2 Cycle 6 operation. This channel will be required to be OPERABLE during Unit 2 Cycle 6 in the forthcoming proposed Technical Specification Amendment request. A CHANNEL FUNCTIONAL TEST and CHANNEL CALIBRATION have already been performed, and other required Surveillances will be completed prior to submittal of the Amendment request. Once these Surveillances have been completed, if this channel or the RWCU High Flow isolation 'A' channel is determined to be inoperable, Specification 3.3.2 Action b will be followed.

3. Additional guidance is also being provided to operations personnel to ensure heightened awareness of this condition.

NO SIGNIFICANT HAZARDS CONSIDERATIONS

1. This request does not involve a significant increase in the probability or consequences of an accident previously evaluated. The RWCU piping is carbon steel and is therefore resistant to IGSCC. For one operating cycle, the probability of a RWCU line break coincident with a failure to isolate the RWCU containment penetration in the section of piping which depends on it for diversity has been determined to be very low (1.1 E-6). For the balance of the RWCU piping, operation without the inoperable RWCU high flow trip channel does not increase the probability of containment isolation malfunction as analyzed in the Susquehanna IPE. With regard to consequences, other redundant and diverse means of break detection are available, and have been determined to be adequate to cover the range of potential break scenarios evaluated in the FSAR. For the section of RWCU piping that is dependent on high flow for diversity, the combined protection of the OPERABLE 'A' channel, the compensatory actions, and the Level 2 isolation will ensure that the consequences are bounded by previous FSAR evaluations.

2. This request does not create the possibility of a new or different kind of accident from any accident previously evaluated. Inoperability of the subject trip channel can only affect the probability or consequences of analyzed events. It cannot create a new event.

3. The proposed change does not involve a significant reduction in a margin of safety. For the reasons described in 1 above, the 'B" high flow trip channel can be inoperable for one cycle of operation. Adequate diversity to operate the Susquehanna units has been determined to exist in the remaining OPERABLE trip channels and those channels have been determined to cover the complete range of analyzed break scenarios required. The exception is the section of piping which depends on the High Flow function for diversity. The probability of a line break of this piping coincident with a failure to isolate has been found to be sufficiently low for one cycle. Given this low probability and the proposed Compensatory Actions, an acceptable level of RWCU isolation reliability continues to exist, and a significant reduction in safety margin will not occur if the proposed waiver is approved.

ENVIRONMENTAL CONSEQUENCES

No environmental consequences that have not been previously evaluated are anticipated, because the remaining OPERABLE RWCU isolation channels combined with the Compensatory Actions have been shown to be adequate to protect the validity of the existing affected FSAR analyses.

CONCLUSION

Susquehanna SES Unit 2 can be safely operated with the 'B' RWCU high flow isolation trip channel inoperable for one cycle.

PP&L is therefore requesting that this request be granted to allow for preparation and subsequent NRC review and approval of a formal Technical Specification Amendment request, which will be forwarded by 11/30/92. The Susquehanna Plant Operations Review Committee has reviewed and approved this request.

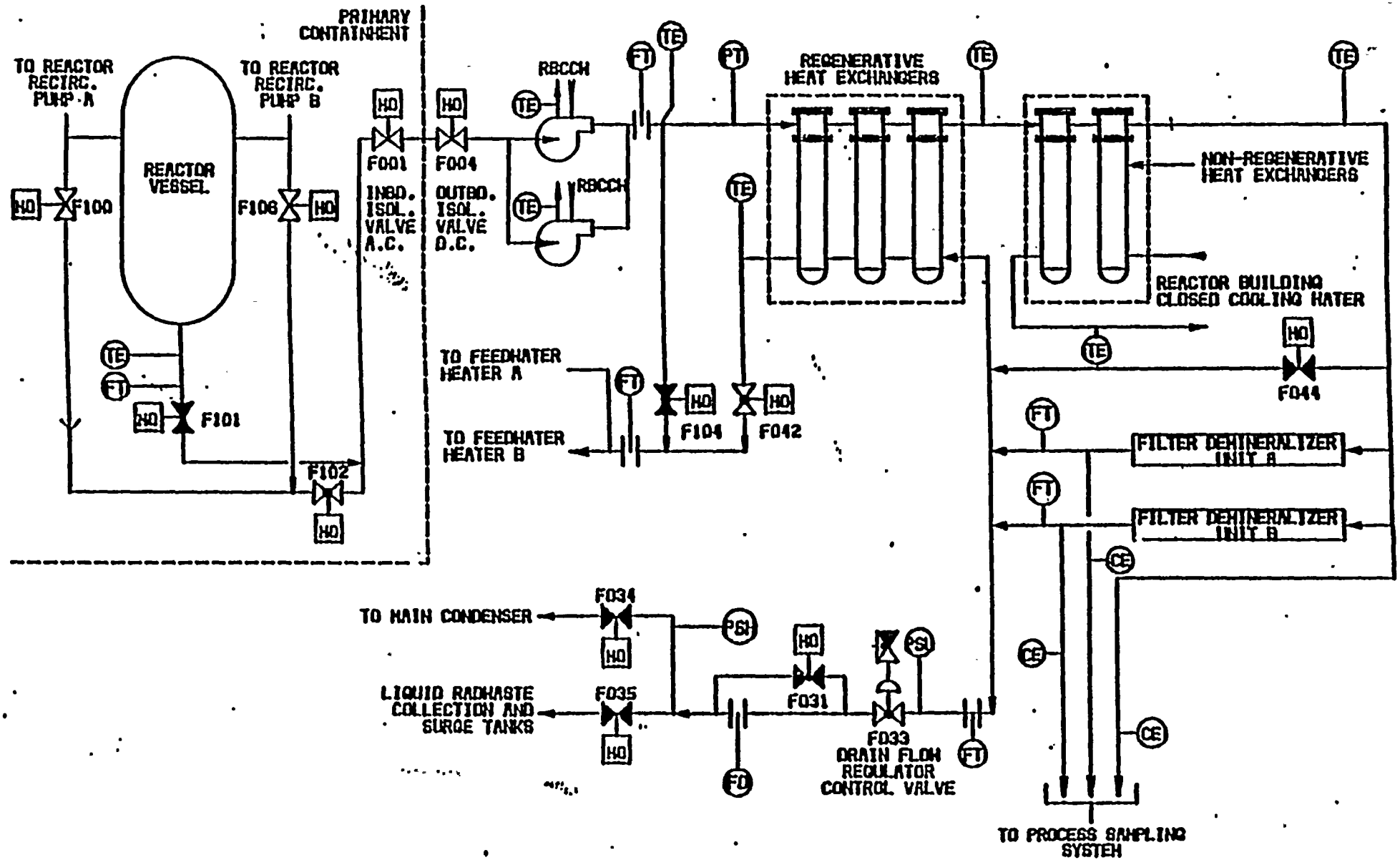
Any questions on this proposal should be directed to Mr. J.M. Kenny at (215) 774-7904.

Very truly yours,

H. W. Keiser

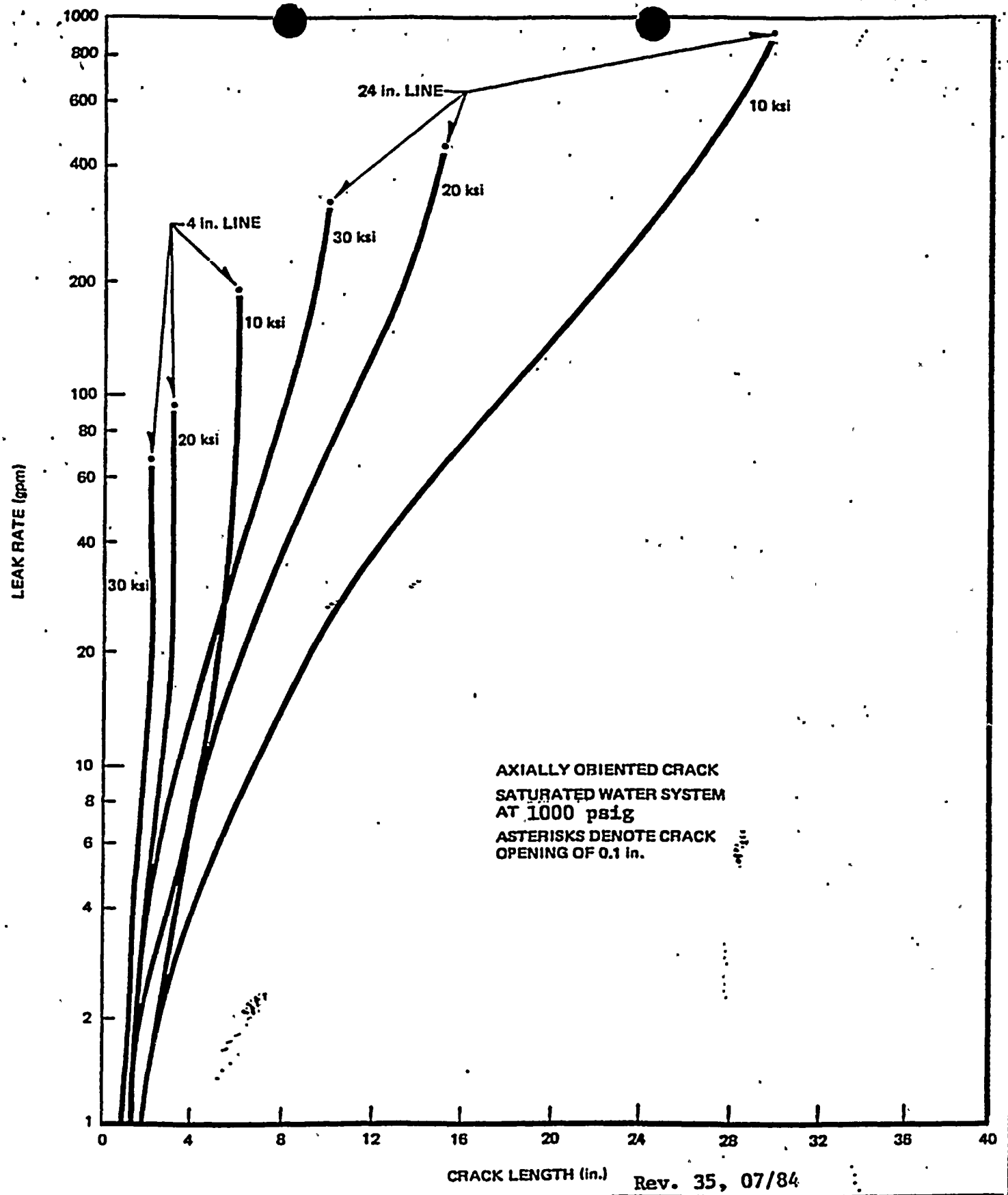
Attachment

cc: NRC Document Control Desk (original)
Mr. R. J. Clark, NRC Sr. Project Manager
Mr. G. S. Barber, NRC Sr. Resident Inspector
Mr. W. P. Dornsife, PA DER



REACTOR WATER CLEANUP SYSTEM SIMPLIFIED INSTRUMENTATION DIAGRAM

FIGURE 5



Rev. 35, 07/84

SUSQUEHANNA STEAM ELECTRIC STATIO
UNITS 1 AND 2
FINAL SAFETY ANALYSIS REPORT

CALCULATED LEAK RATE VERSUS CRACK LENGTH AS A FUNCTION OF APPLIED HOOP STRESS

FIGURE 5.2-10