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SUBJECT: Responds to Generic Ltr 85-12, "Implementation of TMI Action Item II.K.3.5, Automatic Trip of Reactor Coolant Pumps." Reactor coolant pump trip criterion, based on primary & secondary sys pressure, implemented at facility.

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 TITLE: OR Submittal: TMI Action Plan Rgmt NUREG-0737 & NUREG-0660

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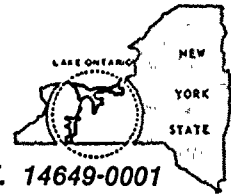


1. The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for ensuring the integrity of the financial statements and for providing a clear audit trail. The text also mentions that proper record-keeping is necessary for compliance with various regulatory requirements.

2. The second part of the document focuses on the role of internal controls in preventing and detecting errors and fraud. It highlights that a strong internal control system is crucial for the reliability of the financial reporting process. The text suggests that management should regularly evaluate and update the internal controls to address any changes in the business environment.

3. The third part of the document discusses the importance of transparency and communication in financial reporting. It states that providing clear and concise information to stakeholders is key to building trust and confidence in the organization's financial performance. The text also notes that effective communication is essential for identifying and resolving any issues that may arise during the reporting process.

4. The fourth part of the document addresses the challenges of financial reporting in a complex and rapidly changing business landscape. It suggests that organizations should adopt a proactive approach to financial reporting, staying up-to-date on the latest trends and technologies. The text also emphasizes the need for collaboration and teamwork to overcome these challenges and ensure the accuracy and timeliness of the financial reports.



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ROGER W. KOBER
VICE PRESIDENT
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AREA CODE 716 546-2700

August 19, 1985

Director of Nuclear Reactor Regulation
Attention: Mr. John A. Zwolinski, Chief
Operating Reactors Branch No. 5
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: Generic Letter No. 85-12, "Implementation of TMI Action
Item II.K.3.5, Automatic Trip of Reactor Coolant Pumps"
R. E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Zwolinski:

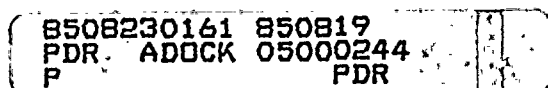
This letter is in response to Generic Letter 85-12, dated June 28, 1985. Consistent with the Ginna Steam Generator Tube Rupture SER, a reactor coolant pump (RCP) trip criterion has been implemented at Ginna. This criterion is based on primary and secondary system pressure and assures RCP trip for all losses of primary coolant for which trip is considered necessary but also permits RCP operation to continue during most non-LOCA, including steam generator tube rupture events up to the design basis double-ended tube rupture.

Our previous letters dated April 22, 1983, December 21, 1983 and April 10, 1984 provided a majority of the plant specific information currently being requested by Generic Letter 85-12. For completeness, the attachment to this letter contains the requested information to aid the Staff in the plant-specific review.

Very truly yours,


Roger W. Kober

Attachment



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Attachment

Generic Letter 85-12

NRC Request: A.1. Identify the instrumentation to be used to determine the RCP trip setpoint, including the degree of redundancy of each parameter signal needed for the criterion chosen.

Response: The instrumentation used to determine if RCPs should be tripped is the primary system wide-range pressure indication and the steam generator pressure indication. There are two primary system-wide-range transmitters and six steam generator pressure transmitters. Therefore, there are three steam generator pressure signals per steam generator and two wide-range primary system pressure signals.

NRC Request: A.2. Identify the instrumentation uncertainties for both normal and adverse containment conditions. Describe the basis for the selection of the adverse containment parameters. Address, as appropriate, local conditions such as fluid jets or pipe whip which might influence the instrumentation reliability.

Response: The instrument uncertainties used to determine the RCP trip setpoint are listed below. Since the steam generator pressure transmitters are located outside containment, adverse containment conditions do not apply to steam generator pressure.

	Instrument Channel normal containment	Uncertainty adverse containment
	psi	psi
SG pressure	45	45
RCS pressure	85	327

The basis for selection of adverse containment parameters is the Westinghouse Owners Group (WOG) Emergency Operating Procedures (EOPs). The EOPs define adverse containment conditions as a pressure of approximately 5 psig or a radiation level of approximately 10⁵ R/hr. The transmitter uncertainty is based on the generic qualification of Foxboro transmitters for post LOCA environment.

During the past several years, the [redacted] has been engaged in a program of research and development in the area of [redacted]. This program has been carried out in cooperation with the [redacted] and the [redacted].

The [redacted] has been working on a program to develop a new type of [redacted]. This program has been carried out in cooperation with the [redacted] and the [redacted].

The [redacted] has been working on a program to develop a new type of [redacted]. This program has been carried out in cooperation with the [redacted] and the [redacted].

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The transmitter locations were selected such that fluid jets or pipe whip would have negligible effects on instrumentation reliability. See SEP Topic III-5.A.

NRC Request: A.3. In addressing the selection of the criterion, consideration to uncertainties associated with the WOG supplied analyses values must be provided. These uncertainties include both uncertainties in the computer program results and uncertainties resulting from plant specific features not representative of the generic data group.

If a licensee determines that the WOG alternative criteria are marginal for preventing unneeded RCP trip, it is recommended that a more discriminating plant-specific procedure be developed. For example, use of the NRC-required inadequate core cooling instrumentation may be useful to indicate the need for RCP trip. Licensees should take credit for all equipment (instrumentation) available to the operators for which the licensee has sufficient confidence that it will be operable during the expected conditions.

Response:

The WOG supplied analysis is presented in Reference 1. The Westinghouse plants were grouped into categories with similar plants (generic groups) and accident analyses were performed for representative plants in each category. The resulting generic group analysis is conservative for Ginna.

The LOFTRAN computer code was used to perform the alternate RCP trip criteria analyses. Both Steam Generator Tube Rupture (SGTR) and non-LOCA event were simulated in these analyses. Results from the SGTR analyses were used to obtain all but three of the trip parameters. LOFTRAN is a Westinghouse licensed code used for FSAR SGTR and non-LOCA analyses. The code has been validated against the January 1982 SGTR event at the Ginna plant. The results of this validation show that LOFTRAN can accurately predict RCS pressure, RCS temperatures and secondary pressures especially in the first ten minutes of the transient. This is the critical time period when minimum pressure and subcooling is determined.

The major causes of uncertainties and conservatism in the computer program results, assuming no changes in the initial plant conditions (i.e., full power, pressurizer level, all SI and AFW pumps run) are due to either



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models or inputs to LOFTRAN. The following are considered to have the most impact on the determination of the RCP trip criteria:

1. Break flow
2. SI flow
3. Decay heat
4. Auxiliary feedwater flow

The following sections provide an evaluation of the uncertainties associated with each of these items.

To conservatively simulate a double-ended tube rupture in safety analyses, the break flow model used in LOFTRAN includes substantial amount of conservatism (i.e., predicts higher break flow than actually expected). Westinghouse has performed analyses and developed a more realistic break flow model than has been validated against the Ginna SGTR tube rupture data. The break flow model used in the WOG analyses has been shown to be approximately 30% conservative when the effect of the higher predicted break flow is compared to the more realistic model. The consequence of the higher predicted break flow is a lower than expected predicted minimum pressure.

The SI flow input used was derived from best estimate calculations, assuming all SI trains operating. An evaluation of the calculational methodology shows that these inputs have a maximum uncertainty of $\pm 10\%$.

The decay heat model used in the WOG analyses was based on the 1971 ANS 5.1 standard. When compared with the more recent 1979 ANS 5.1 decay heat inputs, the values used in the WOG analyses is higher by about 5%. To determine the effect of the uncertainty due to the decay heat model, a sensitivity study was conducted for SGTR. The results of this study show that a 20% decrease in decay heat resulted in only a 1% decrease in RCS pressure for the first 10 minutes of the transient. Since RCS temperature is controlled by the steam dump, it is not affected by the decay heat model uncertainty.

The AFW flow rate input used in the WOG analyses are best estimate values, assuming that all auxiliary feed pumps are running, minimum pump start delay, and no throttling. To evaluate the



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uncertainties with AFW flow rate, a sensitivity study was performed. Results from the two loop plant study show that, a 64% increase in AFW flow resulted in only an 8% decrease in minimum RCS pressure, a 3% decrease in minimum RCS subcooling, and an 8% decrease in minimum pressure differential. Results from the 3 loop plant study show that, a 27% increase in AFW flow resulted in only a 3% decrease in minimum RCS pressure, a 2% decrease in minimum RCS subcooling, and a 2% decrease in pressure differential.

The effects of all these uncertainties with the models and input parameters were evaluated and it was concluded that the contributions from the break flow conservatism and the SI uncertainty dominate. The calculated overall uncertainty in the WOG analyses as a result of these considerations for R. E. Ginna is +90 to +100 psi for the minimum RCS/secondary differential pressure RCP trip setpoint. Due to the minimal effects from the decay heat model and AFW input, these results include only the effects of the uncertainties due to the break flow model and SI flow inputs.

The RCP Trip Criterion based on primary and secondary system pressure has been implemented at Ginna. The setpoint assuming normal containment conditions is acceptable based on Table 1 of Reference 1.

- NRC Request: B.1. Assure that containment isolation, including inadvertent isolation, will not cause problems if it occurs for non-LOCA transients and accidents.
- a. Demonstrate that, if water services needed for RCP operations are terminated, they can be restored fast enough once a non-LOCA situation is confirmed to prevent seal damage or failure.
 - b. Confirm that containment isolation with continued pump operation will not lead to seal or pump damage or failure.

Response: Essential services for RCP operation are available during a Containment Isolation signal at Ginna unless a Safety Injection (SI) signal occurs with a loss of offsite power. Seal injection from the Chemical Volume Control System is terminated by a charging pump trip upon

Reference 1: Westinghouse Owners Group, Letter OG-110, "Evaluation of Alternate RCP Trip Criteria," December 1, 1983.

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REPORT OF THE
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receipt of an SI signal. However, Component Cooling Water (CCW) services to the RCP remain in operation independent of the SI and/or Containment Isolation signals, unless offsite power is lost. A loss of offsite power coincident with an SI signal will trip the CCW pumps, thereby terminating CCW flow to the RCPs. Since the RCPs operate from offsite power, the RCPs will also be tripped and will not be available while offsite power is lost.

As stated above, water services needed for RCP operations are supplied by two independent sources. Therefore, it is highly unlikely that both services would be terminated. If termination did occur, the RCPs would be tripped.

NRC Request: B.2. Identify the components required to trip the RCPs, including relays, power supplies and breakers. Assure that RCP trip, when determined to be necessary, will occur. If necessary, as a result of the location of any critical component, include the effects of adverse containment conditions on RCP trip reliability. Describe the basis for the adverse containment parameters selected.

Response: The components associated with tripping the RCPs are all located outside containment. The RCPs are hard wired to the breakers which are located in the Turbine Building. The relays associated with tripping the breakers are located at the breakers in the Turbine Building. Control room switches are hard wired to these relays. The relays and switches are powered from the 125V DC power system. Therefore, adverse containment conditions do not effect RCP trip reliability.

NRC Request: C.1. Describe the operator training program for RCP trip. Include the general philosophy regarding the need to trip pumps versus the desire to keep pumps running.

Response: The RCP Trip Criterion based on primary and secondary system pressure has been implemented and the Operators have been trained in the use of this criteria. The general philosophy regarding RCP trip is to trip the RCPs only when the trip criterion is reached.

NRC Request: C.2. Identify those procedures which include RCP trip related operations:



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- (a) RCP trip using WOG alternate criteria
- (b) RCP restart
- (c) Decay heat removal by natural circulation
- (d) Primary system void removal
- (e) Use of steam generators with and without RCPs operating
- (f) RCP trip for other reasons.

Response:

Since the requested information is scattered throughout several procedures, only a partial list is presented. This will provide a guideline as to where the information is located. Since the procedures are periodically reviewed and updated as necessary, the information presented herein may be revised in the future. The procedures are always available for inspection.

RCP trip using the Trip Criterion is addressed in the Emergency Series (E-Series) of procedures which are based on the Westinghouse Owners Group guidelines. These procedures are:

- E-0 - "Reactor Trip or Safety Injection"
- E-1 - "Loss of Reactor or Secondary Coolant"
- E-3 - "Steam Generator Tube Rupture"
- ES-0.4 - "Natural Circulation Cooldown with Steam Void in Vessel"
- ECA-2.1 - "Uncontrolled Depressurization of All Steam Generators".

RCP restart is addressed in the E and Operating (O-Series) of procedures. Some of these procedures are:

- ES-0.1 - "Reactor Trip Response"
- ES-1.1 - "SI Termination"
- ES-1.2 - "Post LOCA Cooldown and Depressurization"
- ECA-2.1 - "Uncontrolled Depressurization of All Steam Generators"
- E-3 - "Steam Generator Tube Rupture"

The first part of the document discusses the importance of maintaining accurate records of all transactions. It emphasizes that every entry should be supported by a valid receipt or invoice. This ensures transparency and allows for easy verification of the data.

In the second section, the author outlines the various methods used to collect and analyze the data. This includes both primary and secondary data collection techniques. The primary data was gathered through direct observation and interviews with key personnel. Secondary data was obtained from existing reports and databases.

The third section details the results of the data analysis. It shows a clear trend of increasing activity over the period studied. The data indicates that the most significant changes occurred in the latter half of the year. These findings are supported by statistical analysis and visual representations of the data.

Finally, the document concludes with a series of recommendations based on the findings. It suggests that the current processes are largely effective but require some minor adjustments to improve efficiency. The author also notes that ongoing monitoring and reporting will be necessary to track progress and identify any new challenges that may arise.

- ECA-3.1 - "Post-SGTR Cooldown Using Backfill"
- ECA-3.2 - "Post-SGTR Cooldown Using Blowdown"
- ECA-3.3 - "Post-SGTR Cooldown Using Steam Dump"
- FR-C.1 - "Response to Inadequate Core Cooling"
- FR-C.2 - "Response to Degraded Core Cooling"
- FR-P.1 - "Response to Imminent Pressurized Thermal Shock Condition"
- FR-I.3 - "Response to Voids in Reactor Vessel".

Decay heat removal by natural circulation is addressed in the O Series of procedures.

Primary system void removal is addressed in the E Series of procedures.

Use of steam generators with and without RCPs operating is not specifically addressed. It appears that this subject is inherent in the cooldown guidance given for normal and natural circulation cooldown.

RCP trip for other reasons will be addressed in the Abnormal Procedures (AP) Series of procedures when the Revision 1 E procedures are implemented later this year. RCP trip for other reasons are currently addressed in the Ginna E procedures.

"The first step in the process of..."
"The second step is to..."
"The third step involves..."
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