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RECIP.NAME RECIPIENT AFFILIATION
VISSING,G.S.

See Reports

SUBJECT: Forwards response to request for addl info re util 970929 request for amend to license DPR-18,revising TS on main steam line isolation signal set point.Design analysis DA EE-92-089-21,Rev 1 encl.

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ROBERT C. MECREDY
Vice President
Nuclear Operations

February ~~9~~ 6, 1998

U.S. Nuclear Regulatory Commission
Document Control Desk
Attn: Guy S. Vissing
Project Directorate I-1
Washington, D.C. 20555

Subject: Response to Request for Additional Information dated November 20, 1997
Rochester Gas & Electric Corporation
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Reference: Letter from Guy S. Vissing, NRC, to R.C. Mecredy, RG&E, *Request for Additional Information - Review of the Request for Amendment Dated September 29, 1997 - Change to the Technical Specification related to the Main Steam Line Isolation Signal Set Points (TAC No. M99702)*, dated November 20, 1997

Dear Mr. Vissing,

Enclosed please find a response to the subject request for additional information (RAI). Please contact us if we may be any further assistance.

Very truly yours,

Robert C. Mecredy

A001 1/1

Subscribed and sworn to before me on this ~~9~~ 6th day of February 1998.

Notary Public

**JOHN-SCOTT FISH**
**Notary Public in the State of New York**
**Monroe County**
**My Commission Expires 2/16/99**
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Attachment

120010

JOHN-SCOTT FISH
Notary Public in the State of New York
Monroe County
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# RAI Dated November 20, 1997

The response to Questions 1 through 4 have been consolidated into one response.

1. *Provide the bases for Function 4.d, "High Steam Flow Coincident with Safety Injection and Coincident with $T_{avg}$ - Low," and Function 4.e, "High - High Steam Flow Coincident with Safety Injection" of LCO Table 3.3.2-1. Provide a discussion of how the bases for these functions will be met with the proposed Allowable Values and Trip Setpoints for Modes 1, 2, and 3.*

2. *Provide a discussion of the applicable analyses and how these functions are modeled. Provide the setpoints used in the analysis.*

3. *In your submittal you stated, "...Function 4.e will not provide closure of the MSIVs due to an inadvertent opening of an atmospheric relief or safety valve. Consequently, only Function 4.d performs this function." However, the setpoint for Function 4.d is higher than the capacity of a single atmospheric relief valve. Please explain your statement.*

4. *You stated, "Choosing 10% RTP equates to 0.66E6 lbm/hr and is also equal to two ARVs opening at 1005 psig." However, should both ARVs open, the steam generators would blow down from each of the ARVs and, therefore, each steam line would only be expected to experience the effect of a single open ARV. Also, the proposed allowable value would require a steam break to result in a flow equivalent to the capacity of two ARVs (on a steam line) before the Allowable Value is reached. Justify your selection of the allowable value for breaks resulting in flows ranging between the proposed value and the sizes assumed in UFSAR Section 15.1.6.*

The steam line break analyses for Ginna Station are described in UFSAR Sections 6.2.1.2, 15.1.5, and 15.1.6. A discussion of the Chapter 15 analyses with respect to LCO Table 3.3.2-1 is provided below. Steam line breaks for the containment integrity analysis (UFSAR Section 6.2.1.2) occur upstream of the main steam isolation valves (MSIVs) such that the non-return check valves are credited with preventing blowdown from more than one steam generator. The non-return check valves are passive devices that are not assumed to fail; therefore, automatic isolation via the MSIVs is not assumed (see ITS bases page B 3.7-7). A discussion of the Chapter 15 analyses with respect to LCO Table 3.3.2-1 is provided below.

UFSAR Section 15.1.5 provides the assumptions and results of steam line breaks equivalent to: (1) a full severance of a main steam line, and (2) a steam release through one main steam safety valve (MSSV). Although only hot zero power conditions are presented in the UFSAR, other power levels (e.g., 30%, 70%, 100%) have been evaluated to demonstrate that hot zero power is most limiting with respect to DNB. The LOFTRAN code is used for steam line break analyses. Main steam isolation is required for both UFSAR Section 15.1.5 cases with the MSIVs assumed to close within 5 seconds of receiving a close signal. This 5 second closing time is addressed by ITS surveillance requirement SR 3.7.2.1. The generation of the closing signal is described below:

a. For the large steam line break scenario, credit is taken for main steam isolation on high-high steam flow coincident with SI (i.e., LCO Table 3.3.2-1, Function 4.e). Specifically, the MSIVs are assumed to receive a closure signal 2 seconds after the SI parameter for low steam line pressure is reached (358 psig per LCO Table 3.3.2-1, Function 1.e). This is due to the fact that the high-high steam flow input of 3.7E6 lbm/hr is reached very rapidly (<< 1 second) with SI on low steam line pressure occurring at approximately 1.5 seconds (see UFSAR Table 15.1-6). The fact that the SI occurs <u>after</u> the high-high steam flow input is also verified after the LOFTRAN run is complete. The additional 2 second delay addresses signal delay time after the SI parameter has been met.

b. For the steam release equivalent to a MSSV lift, credit is taken for main steam isolation on high steam flow coincident with SI and low $T_{avg}$ (i.e., LCO Table 3.3.2-1, Function 4.d). Similar to the large steam line break, the MSIVs are assumed to receive a closure signal 2 seconds after the SI parameter is reached. The high steam flow input of 0.66E6 lbm/hr (i.e., proposed Allowable Value) is reached very rapidly since the flowrate through a MSSV is 0.82E6 lbm/hr per UFSAR Table 10.1-1 (also see UFSAR Figure 15.1-34). The low $T_{avg}$ of 543°F is reached approximately 40-50 seconds after the break per UFSAR Figure 15.1-33. The SI occurs after 100 seconds (see UFSAR Table 15.1-6) with an additional 2 second time delay assumed. The fact that the SI occurs <u>after</u> the high steam flow and low $T_{avg}$ input is also verified after the LOFTRAN run is complete.

UFSAR Section 15.1.6 describes the assumptions and results of the combined atmospheric relief valve (ARV) and main feedwater regulating valve (MFRV) failures. These combined failures are addressed due to postulated instrument failures with respect to the advanced digital feedwater control system (ADFCS). Several cases were examined (see Table 15.1-7) with the worst being the coincident failure of both ARVs and both MFRVs going full open. Each ARV provides flow equivalent to 0.329E6 lbm/hr per UFSAR Table 10.1-1. As stated in UFSAR Section 15.1.6.1.2, manual operator action to initiate SI, feedwater isolation, and main steam isolation is assumed to occur at 600 seconds for hot zero power cases (i.e., <u>no</u> automatic main steam isolation is assumed). For full power cases, a reactor trip terminates the event either automatically or manually at 600 seconds (i.e., <u>no</u> automatic main steam isolation is assumed). Given these assumptions, the full steam line breaks at hot zero power remain bounding.

In summary, Ginna Station has analyzed and documented in the UFSAR steam line breaks down to that equivalent to a MSSV steam release (0.82E6 lbm/hr) assuming automatic steam line isolation. In addition, steam line breaks up to the flow equivalent to two ARVs (or 0.66E6 lbm/hr) have been analyzed assuming no steam line isolation until 600 seconds. However, this steam flow is divided between two steam generators. This is not considered to be significant since the overall cooldown effect on the RCS would be the same. Also, the UFSAR analysis assumes that both MFW regulating valves failed full open to maximize the cooldown effect. This assumption is not valid for a steam break equivalent to 0.66E6 lbm/hr on one steam generator since ADFCS could not cause a break size this large. RG&E has performed a LOFTRAN run with a 0.66E6 lbm/hr break in one steam generator with no steam line isolation until 600 seconds with MFW operating normally. For this case, the coincident ARV and MFW regulating valve failure remains bounding.

Therefore, RG&E has selected 0.66E6 lbm/hr as the Allowable Value for the LCO Table 3.3.2-1, Function 4.d since there is no existing UFSAR analysis demonstrating that manual steam line isolation is acceptable above this flowrate. The basis for the Trip Setpoint of 0.4E6 lbm/hr is addressed in response to Question 5 below.

5. *Provide the instrument uncertainty calculation that was performed to confirm the Allowable Value will not be exceeded. Discuss the analytical value used in this calculation.*

A copy of Design Analysis EE-92-089-21, Revision 1 is attached. Section 10.0 of this analysis presents the actual setpoint evaluation based on the instrument loop uncertainties calculated in earlier sections of the analysis. As shown on the bottom of page 48, a setpoint of 0.4E6 lbm/hr did not meet the current Allowable Value of 0.55E6 lbm/hr when all uncertainties were accounted for. Attachment 1 (page 52) shows that with a revised uncertainty analysis for this instrument loop based on Ginna historical data, and using the existing setpoint of 0.4E6 lbm/hr, the new Allowable Value of 0.66E6 lb/hr would be met.