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 VISSING,G.S.

SUBJECT: Responds to NRC 971224 ltr re violations noted in insp rept  
 50-244/97-13 on 980226. Corrective actions:RG&E revised  
 engineering procedure EP-3-P-154 to enhance control of  
 vendor calculations.

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Robert C. Mecredy  
Vice President  
Nuclear Operating Group

March 3, 1998

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

Subject: Reply to a Notice of Violation  
Inspection Report No. 50-244/97-13 and Notice of  
Violation, dated December 24, 1997  
R.E. Ginna Nuclear Power Plant  
Docket No. 50-244

Dear Mr. Vissing:

USNRC Inspection Report No. 97-13 requires that Rochester Gas & Electric (RG&E) submit a reply to the Notice of Violation within 30 days of receipt of the letter transmitting the Notice of Violation. It further states that where good cause is shown, consideration will be given to extending the response time.

We have discussed this matter with Mr. James Wiggins, Director, Division of Reactor Safety, requesting a 30-day extension for our response. This letter documents Mr. Wiggins' concurrence in January, 1998, with this 30-day extension of time. We discussed an extra one day extension (from March 2 to March 3, 1998) with Mr. Wiggins on February 26, 1998. This letter also documents Mr. Wiggins' concurrence for this additional one day extension. Therefore, this reply is submitted per the extension schedule.

During an inspection conducted from October 27 through November 7, 1997, violations of NRC requirements were identified. In accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," NUREG-1600, the violations, and RG&E's replies, are provided in Attachments 1 and 2.

In addition to the Notice of Violation, NRC Inspection Report No. 50-244/97-13 requested that RG&E address the use of the SMARTBOOK database. RG&E addresses the use of SMARTBOOK in Attachment 3.

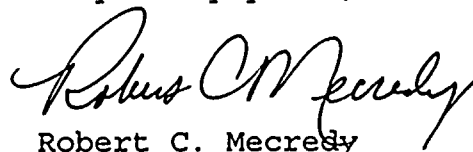
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RG&E also wishes to respond to the statement in the December 24, 1997 cover letter that states, "These findings are of concern to the NRC since you committed in a January 13, 1997 letter to complete the implementation of proposed enhancements to the NRC Generic Letter (GL) 89-10 program in June 1997." We acknowledge that the letter did provide a June due date, and we expected to meet that date. While we did discuss with the NRC that we would not achieve closure by June 1997, due to the more extensive upgrade effort being conducted, we did not formally document a commitment revision. The program scope and effort was also discussed with the NRC staff on February 26, 1998.

RG&E also wishes to clarify facts provided to the NRC, as documented in NRC Inspection Report No. 50-244/97-13. For closure of Follow-up Item 50-244/95-06-06, RG&E stated that Attachment G of the MOV Program Manual addresses margin to account for valve degradation. Criteria to maintain a minimum 10% margin above the target thrust to account for effects of stem lubrication degradation was recently moved from Attachment G to the tracking and trending procedure. (This criterion is more appropriate to control in a lower tier implementing procedure, rather than in the Program Manual.)

Very truly yours,



Robert C. Mecresdy

Attachments: (3)

xc: Mr. Guy S. Vissing (Mail Stop 14B2)  
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U.S. Nuclear Regulatory Commission  
475 Allendale Road  
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U.S. NRC Ginna Senior Resident Inspector

Attachment 1  
Reply to Notice of Violation 97-13-02

1. 10 CFR Part 50, Appendix B, Criterion VII, "Control of Purchased Material, Equipment, and Services," requires that measures shall be established to assure that purchased services conform to the procurement documents. Documentary evidence that material conforms to the procurement requirements shall be available at the nuclear power plant site prior to the use of such material. This documentary evidence shall be retained at the nuclear power plant site and shall be sufficient to identify the specific requirements, such as codes, standards, or specifications, met by the purchased material.

The Rochester Gas & Electric (RG&E) Ginna Station Quality Assurance Program (QAP), as described in Nuclear Directive (ND) ND-QAP and Appendix A to the Quality Assurance Manual, requires that the quality assurance program shall apply to activities such as design and procurement. Step 3.5.5 of ND - Plant Engineering Services, "Control of Procurement Activities," requires that the verification and acceptance of procured services be accomplished in accordance with approved procedures.

Section 5.2.7 of Engineering Procedure (EP)-3-P-154, "Review and Approval of Vendor Drawings, Design and Manufacturing Technical Documents," Revision 0, states that vendor calculations shall not form any portion of the basis for operation and operability of safety related modifications, equipment, systems, parts, or procedures unless formal, final approval has been obtained. Section 5.2 of EP-3-P-154 requires review by and acceptance of the calculations for use by RG&E. A formal approval memorandum shall be prepared which is reviewed by a nuclear safety and licensing engineer, with final approval by the engineering manager. A copy of the written, formal approval memorandum shall be incorporated into each vendor calculation and be considered as part of the calculation.

Contrary to the above, as of November 18, 1997, documentary evidence that vendor-performed calculations that were used to establish the basis for operation and operability of safety-related motor-operated valves conformed to the procurement requirements was not available, and no formal, final approval was obtained or incorporated by memorandum into each vendor calculation.

- (1) the reason for the violation, or, if contested, the basis for disputing the violation:

Rochester Gas and Electric (RG&E) agrees that a violation of 10 CFR 50, Appendix B, Criterion VII occurred.

Following an NRC Inspection of the Ginna Station motor-operated valve (MOV) Program in July 1996, RG&E undertook an extensive effort to ensure the operability of all MOVs, and to update the program to meet current industry standards. This effort included an independent assessment of the capability of each valve in the program; a peer review of our program; update of the MOV Program Manual (EWR 5111, Revision 3); revision of all weak-link analyses; revision of the degraded voltage calculations for all MOVs; revision of the Pressure Locking/Thermal Binding (PL/TB) Susceptibility Technical Assessment; and revision of the MOV design basis conditions analysis (Design Analysis NSL-5080-002, Revision 8). Some of these documents were prepared by a contractor, Altran Corporation (Altran).

As part of the program reassessment, Altran performed MOV thrust requirement/torque switch setting calculations for each MOV in the program. These calculations were performed in accordance with a new methodology described in the revised MOV Program Manual. The purpose of these calculations was two-fold:

- To provide an independent assessment of the adequacy of the existing settings.
- To provide a template of the methodology for RG&E to use when establishing setpoints in the future.

Where these vendor calculations pointed to a potential concern with the current settings of a MOV, an operability assessment was performed. In accordance with the Ginna Station Corrective Action process, RG&E initiated an ACTION Report to assess the operability of these valves, prior to formal approval of the calculations, in an attempt to proactively assess the potential situation. RG&E did not formally review and approve these calculations immediately because:

- The Altran calculations did not provide the basis for the as-left field settings of the valves.
- They did not provide the basis for the operability of the valves. (The RG&E calculations of record, which defined the field settings of the valves, when coupled with the aforementioned operability assessment, provided that basis.)

- The review and comment period between RG&E and Altran for these calculations was still in process. Because of the changing state of knowledge and calculational inputs during this time period, finalization of the calculations was a prolonged process.
- RG&E intended to generate new calculations of record, in-house, as the MOVs were to be recalibrated, during the normal course of the MOV program. These new sizing calculations would be prepared by an RG&E engineer and reviewed by another RG&E engineer in accordance with the MOV Program Manual for all valves adjusted during the 1997 refueling outage.

Although the Altran calculations cited in the Notice of Violation were not intended to become the calculations of record, and therefore did not need to be reviewed and approved in accordance with Engineering Procedure EP-3-P-154, some vendor calculations within the MOV program reassessment did form the basis for program acceptance, and should have been reviewed and approved in accordance with procedure EP-3-P-154. These documents were the weak-link analyses, the PL/TB Susceptibility Technical Assessment, and the pressure-lock thrust requirement calculations. These documents were revisions to existing documents previously approved. These revisions were reviewed by knowledgeable RG&E personnel, but were not yet formally and finally approved at the time of the NRC inspection.

(2) the corrective steps that have been taken and the results achieved:

- RG&E revised Engineering Procedure EP-3-P-154 to enhance the control of vendor calculations.
- RG&E trained the Engineering staff in the proper use of this procedure. Engineers now understand the expectations for the appropriate timeliness for review and approval of vendor calculations.
- RG&E revised procedure EP-3-P-122 to enhance the control of in-house calculations.
- RG&E completed an effort to prepare in-house design analyses for thrust torque setting requirements for all MOVs.

- Vendor calculations which form part of the basis for the MOV program have been reviewed and approved in accordance with procedure EP-3-P-154.

(3) the corrective steps that will be taken to avoid further violations:

- RG&E will conduct formal training:
  1. MOV Program training, to be conducted by Altran, currently scheduled to be completed by April 17, 1998.
  2. Training on the Electric Power Research Institute (EPRI) Performance Prediction Program (PPP) methodology, to be conducted by MPR Associates, currently scheduled to be completed by April 30, 1998
- Future vendor calculations will be reviewed and approved in accordance with procedure EP-3-P-154.

(4) the date when full compliance will be achieved:

Full compliance was achieved on March 3, 1998, when all appropriate calculations for MOVs were confirmed as being formally approved by RG&E.

Attachment 2  
Reply to Notice of Violation 97-13-03

2. 10 CFR Part 50, Appendix B, Criterion III, "Design Control", requires that measures shall be established to assure that applicable regulatory requirements and the design basis are correctly translated into specifications, drawings, procedures, and instructions.

Section 3.2 of RG&E Engineering Procedure 3-P-121, "Design Criteria", Revision 1, requires that "...design inputs shall be specified and approved on a timely basis and to the level of detail necessary to permit the design activity to be carried out in a correct manner and to provide a consistent basis for making design decisions, accomplishing design verification measures, and evaluating design changes."

Contrary to the above, as of November 18, 1997, measures were not established to assure that the design basis of safety-related motor-operated valves was correctly translated into specifications, drawings, and procedures in that certain motor-operated valve (MOV) design basis thrust calculations were incorrect, as evidenced by the following:

- a. A November 3, 1997, thrust calculation used to establish the torque switch settings of the pressurizer power operated relief valve (PORV) block valves (MOV 515 and 516) did not include an adjustment for load sensitive behavior.
  - b. Friction coefficients from the Electric Power Research Institute MOV Performance Prediction Program were incorrectly used as design inputs to calculate the design basis thrust requirements for the PORV block valves and the reactor coolant pump seal water return containment isolation valve (MOV 313), resulting in under-predicting the minimum thrust required to fully seat and seal the valves.
- (1) the reason for the violation, or, if contested, the basis for disputing the violation:

RG&E agrees that a violation occurred. However, consistent with the Inspection Report, the fact that there was a violation of Criterion III does not imply that operability of these three valves was involved.



Regarding the first example: when concerns were expressed during the NRC inspection regarding sufficient thrust for MOVs 515 and 516, RG&E performed a hand calculation utilizing the EPRI Performance Prediction Program (PPP) methodology to determine the relative change in required thrust that would result from use of this methodology.

The minimum torque switch setting requirements for these valves were then modified to be consistent with the resultant requirements from this PPP calculation to achieve "flow isolation". Consistent with the MOV Program Manual guidance (to adjust torque switch settings as high in the allowable range as practicable) the actual torque switch settings were adjusted to values considerably higher. However, RG&E agrees that the modified torque switch settings specified did not specifically include an allowance for load sensitive behavior.

The second example of a violation of 10 CFR 50, Appendix B, Criterion III is RG&E's incorrect use of friction coefficients derived from the EPRI Performance Prediction Program for MOVs 515, 516 and 313.

RG&E's methodology for determining design valve factors is described in Attachment K of the RG&E MOV Program Manual. At the time of the NRC inspection, MOV valve factors were derived from three sources:

1. For MOVs which have been adequately differential pressure (DP) tested at Ginna, the derived values from these tests are used;

If an MOV has not been DP tested at Ginna, the greater of the following are used:

2. The highest valve factor for the valve group derived from a DP test;
3. The valve factor derived from the EPRI PPP methodology Separate Effects Test friction factor data (use of industry data as a last resort)

The valve factors used for MOVs 515 and 516 were based on the EPRI data since Ginna-specific data was not available. RG&E concluded that the EPRI test data was the best available source of industry data for valve factors. The EPRI test data was derived from controlled laboratory tests designed to maximize the predicted friction coefficient. In addition, the values from the EPRI data bounded similar valves at Ginna, which were DP tested.

However, RG&E agrees that we should have also explicitly used the complete EPRI PPP methodology or provided additional justification for using the valve factor derived. Although this inconsistent use of EPRI data and methodology led to the underprediction of minimum thrust to fully seat and seal these valves, leakage calculations recently completed by Kalsi Engineering confirmed that these valves were indeed capable of performing their safety functions, including capability to meet adequate leak tightness.

In terms of leakage criteria for MOV 313, the established limits of our 10 CFR 50, Appendix J Program apply. Since the valve had been DP tested, and had separately passed its Appendix J Local Leak Rate test (LLRT) acceptance criteria, no concerns were considered relative to its operability or leak-tightness.

We acknowledge that the DP testing performed for this valve does not correspond precisely to its post-accident operational closure state for containment isolation, because testing methodology does not allow for perfect similarity. However, the relatively small design DP of 150 pounds per square inch and flow rate of three gallons per minute are not expected to result in major "flow effects" which would challenge the operability of this MOV to perform containment isolation within its Appendix J LLRT limits.

- (2) the corrective steps that have been taken and the results achieved:

During the time of the NRC inspection, RG&E raised the torque switch settings for MOVs 515 and 516 as high as practicable to ensure some "soft wedging" would occur.

Kalsi Engineering performed a calculation to quantify the leakage expected from MOVs 515 and 516 if only flow isolation (i.e., no wedging) occurred. These calculations indicate that flow isolation alone will prevent unacceptable leakage, and that the valves are operable.

Recent analysis by Kalsi Engineering has confirmed that hard seating occurs for MOV 313, utilizing the PPP methodology with a representative coefficient of friction for the valve.

(3) the corrective steps that will be taken to avoid further violations:

- RG&E is participating in the Joint Owners' Group (JOG) GL 96-05 effort to provide a greater population of industry data for valve factors. This program sets up consistent criteria for valve DP tests, thus improving the quality and quantity of industry valve factor data available.
- RG&E will perform training for selected engineers in the use of the EPRI PPP methodology so that this methodology can be used when deemed appropriate. RG&E anticipates this training to be completed by April 30, 1998.
- RG&E has also undertaken several activities to improve the quality of data available to determine valve factors:
  1. As part of the program upgrade, RG&E has purchased new test equipment to allow continuous collection of upstream and downstream pressures throughout the valve stroke. This provides for a more accurate valve factor determination.
  2. RG&E will continue to schedule and perform DP tests on GL 89-10 MOVs to improve the in-house database used for determining and extracting valve factors.

(4) the date when full compliance will be achieved:

Full compliance was achieved on March 3, 1998, when improved documentation supporting all chosen valve factors for GL 89-10 MOVs was approved by RG&E.

Attachment 3  
Use of MOV Database (SMARTBOOK)

A concern was expressed by the NRC in the cover letter for Inspection Report No. 50-244/97-13, where the NRC stated:

"We are also concerned with the use of a programmable database to perform calculations and provide inputs to safety-related design documents. We therefore request that you address the use of the SMARTBOOK database in this manner along with your response ...."

RG&E Response:

Engineering Procedure EP-3-P-171 was developed to provide the framework for how to use the SMARTBOOK database. This database is used to generate reports that are used in formal design analyses. Acceptance of the SMARTBOOK output reports occurs after a line-by-line review (of the inputs, calculations, and limits) is performed. For any formal design analysis that incorporates these SMARTBOOK reports, the design analysis is prepared and reviewed in accordance with our internal design analysis procedure, EP-3-P-122.