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SUBJECT: Provides supporting justification for deviating from GL 82-33, "BWR Neutron Flux Monitoring," requirements.

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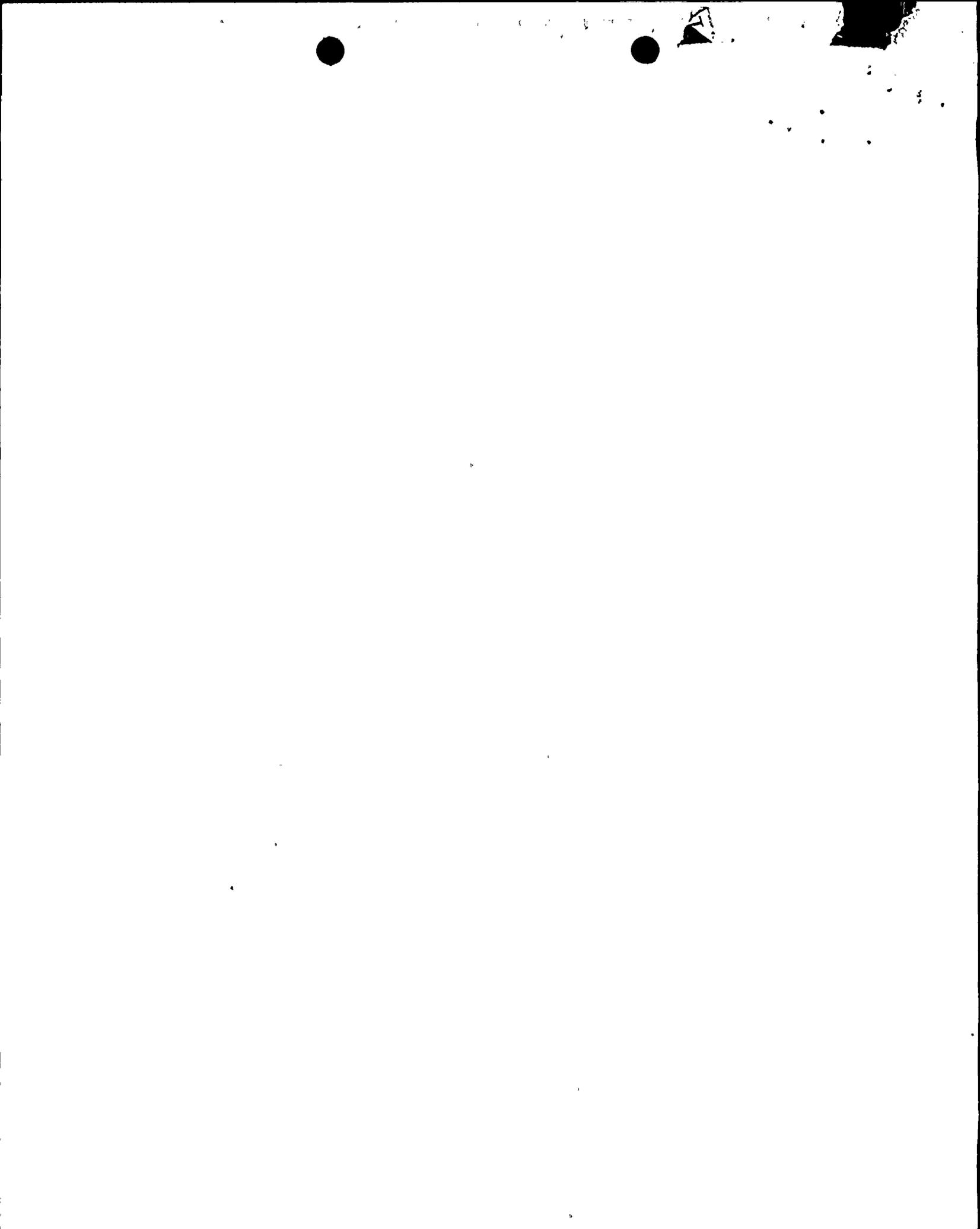
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Washington, D.C. 20555Re: Nine Mile Point Unit 1  
Docket No. 50-220  
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Gentlemen:

***SUBJECT: REGULATORY GUIDE 1.97 - BOILING WATER REACTOR NEUTRON  
FLUX MONITORING***

Section 6.2 of Generic Letter 82-33 requested that licensees provide a report on their implementation of Regulatory Guide 1.97, Revision 2, and methods for complying with the Commission's regulations including supporting technical justification of any proposed deviations or alternatives. A large number of deviation requests were submitted by Boiling Water Reactor licensees concerning neutron flux monitoring instrumentation. These requests were initially denied.

In support of these requests, the Boiling Water Reactor Owners' Group submitted NEDO-31558, "Position on NRC Regulatory Guide 1.97, Revision 3, Requirements for Post-Accident Neutron Monitoring System." NEDO-31558 proposed alternative criteria for neutron flux monitoring instrumentation in lieu of the Category I criteria stated in Regulatory Guide 1.97. The Staff completed its review of NEDO-31558, and by letter dated January 13, 1993, to the Boiling Water Reactor Owners' Group, issued a safety evaluation report. The safety evaluation report concluded that for current Boiling Water Reactor operating licensees the criteria of NEDO-31558 were acceptable.

By letter dated April 15, 1993, the Staff requested that Niagara Mohawk review the Nine Mile Point Unit 1 neutron flux monitoring instrumentation against the criteria of NEDO-31558 to determine whether these criteria are being met, and provide a letter to the Commission documenting the result of this review. On June 18, 1993, Niagara Mohawk provided to the Staff the results of a comparison of the design of the Nine Mile Point Unit 1 neutron flux monitoring instrumentation against the design criteria of NEDO-31558. In Item 2 of our response, Instrument Loop Accuracy, Niagara Mohawk indicated that plans were in place to calculate the overall accuracy of the Average Power Range Monitoring (APRM) system instrument loops. Our response also indicated that the results of these calculations would be compared to the  $\pm 2\%$  accuracy criterion of NEDO-31558 and if the criterion was not met, Niagara Mohawk would either 1) make a commitment to meet the criterion and state when this commitment would be fulfilled or 2) provide appropriate supporting justification for deviating from the criterion. The purpose of this letter is to provide to you the appropriate supporting justification for deviating from the  $\pm 2\%$  accuracy criterion.

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Niagara Mohawk has completed instrument loop accuracy calculations for APRM recorders RI05A,B,C,D. These calculations indicate an overall loop indicated accuracy of  $\pm 2.6\%$ . Niagara Mohawk Engineering considers this overall loop accuracy adequate and sufficient to carry out those actions currently required by the Niagara Mohawk Emergency Operating Procedures (EOPs) as well as those actions required to mitigate other plant challenges such as those encountered during an Anticipated Transient Without Scram (ATWS) scenario. This conclusion is based on the following:

- The above calculations were performed using ISA Standards as guidance for treatment of tolerances. The results yielded are considered to be very conservative with allowances for large margins of error. Therefore, the actual device accuracy in the field is generally expected to be better than that derived in the calculations.
- The magnitude of the difference between the calculated accuracy ( $\pm 2.6\%$ ) and the accuracy criterion specified in NEDO-31558 ( $\pm 2.0\%$ ) is very small. In addition, the calculated accuracy was conservatively based on a 125% full scale indication although rated power at NMP1 is considered to be 100% full scale.
- The accuracy of the current equipment has already proven to be adequate to successfully operate the plant. In addition, the calculations show that since the majority of the APRM system components are located in the control room, the overall loop accuracy is not significantly affected by environmental changes during an ATWS event. Therefore, since the overall loop accuracy is adequate for normal operation, it will also be adequate for monitoring power level during ATWS events.
- In addition, during certain ATWS events, the operator is directed to lower reactor pressure vessel water level to control reactor power. Included in the criteria to terminate the lowering of reactor pressure vessel water level is reactor power dropping below that power level corresponding to the APRM downscale trip. To make the determination that reactor power is below 6%, the operator can rely on the APRM chart recorders, or can use other instrumentation, including the APRM downscale trip at 6%. This approach is consistent with standard guidance derived from the Emergency Procedure Guidelines (EPG) Rev. 4 (NEDO-31331) and is implemented in accordance with the EOP Plant Specific Technical Guidelines via Emergency Operating Procedure No. N1-EOP-3. Although the APRM chart recorders are the primary means of determining reactor power level, other alternate instrumentation is also available. This alternate instrumentation includes the APRM drawer power indicators on "G" Panel, downscale illumination of the LPRM meters on "F" Panel (full core display), and the APRM downscale trip at 6% (annunciator window and white indicating lights on "E" Panel). The actual setpoint for this downscale trip is at 6.25% with an allowable value range of 5.21% to 7.29%. This allowable value range is considered to be more restrictive than the 2% accuracy criterion specified in NEDO-31558.



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- The Boiling Water Reactor Owners' Group Regulatory Guide 1.97/Neutron Monitoring System Committee's position concerning instrument accuracy indicates that the accuracy of displays, indicators and signal processing devices used to obtain a main control panel display was not included in the 2% accuracy specified by NEDO-31558. The Owners' Group position also indicated that the plant specific display inaccuracies (including recorders) need not be added to the APRM inaccuracy to show compliance to the 2% criterion and that Regulatory Guide 1.97 does not specify any accuracy requirements. If APRM recorders RI05A,B,C,D are not included in the Instrument Loop Accuracy Calculations, the calculated accuracy improves to just over 2%.

Very truly yours,



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Vice President  
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