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SUBJECT: Comments on NRC requirement re installation of reactor vessel water level instrument at facility. Requirement is unreasonable due to amount of development work necessary to implement reliable vessel level instrument.

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LEON D. WHITE, JR.
VICE PRESIDENT

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July 2, 1980

Director of Nuclear Reactor Regulation
Attention: Mr. Dennis M. Crutchfield, Chief
Operating Reactors Branch #5
U.S. Nuclear Regulatory Commission
Washington, D.C. 20555

Subject: NRC Requirements for Reactor Vessel Level Instrumentation
R.E. Ginna Nuclear Power Plant
Docket No. 50-244

Dear Mr. Crutchfield:

The purpose of this letter is to state Rochester Gas and Electric Corporation's views on installation of a reactor vessel water level instrument at R.E. Ginna. Discussions with the NRC Staff have indicated that installation of a vessel level instrument may be required by the end of this year or shortly thereafter. We believe that this would be an unreasonable requirement given the amount of development work necessary to implement a reliable vessel level instrument.

Section 2.1.3.b of NUREG 0578 dealt with instrumentation for detection of inadequate core cooling and suggested that system modifications, including PWR vessel level detectors, be studied and developed. The report also concluded that a detailed engineering evaluation was necessary before design requirements could be specified. Harold Denton's letter dated October 30, 1979 provided clarification of the staff position and stated that a commitment to provide the necessary analysis and to study advantages of various instruments to monitor water level and core cooling was required. RG&E's responses to the staff positions, dated October 17, 1979 and December 28, 1979 described the analyses being performed and noted that these analyses might identify the need for additional instrumentation. Our responses indicated that a differential pressure (dp) based water level meter was the most promising of several systems studied and the usefulness of the instrument to the operator was being evaluated. Even though a conceptual sketch of a proposed differential pressure water level meter was prepared at that time, a great deal of analysis remained to be completed to correlate vessel water level with vessel differential pressure. At least one vendor is analyzing a dp water level instrument which it is marketing and has informed us that for several transients analyzed so far, water level can be inferred from differential pressure. Transients have also been

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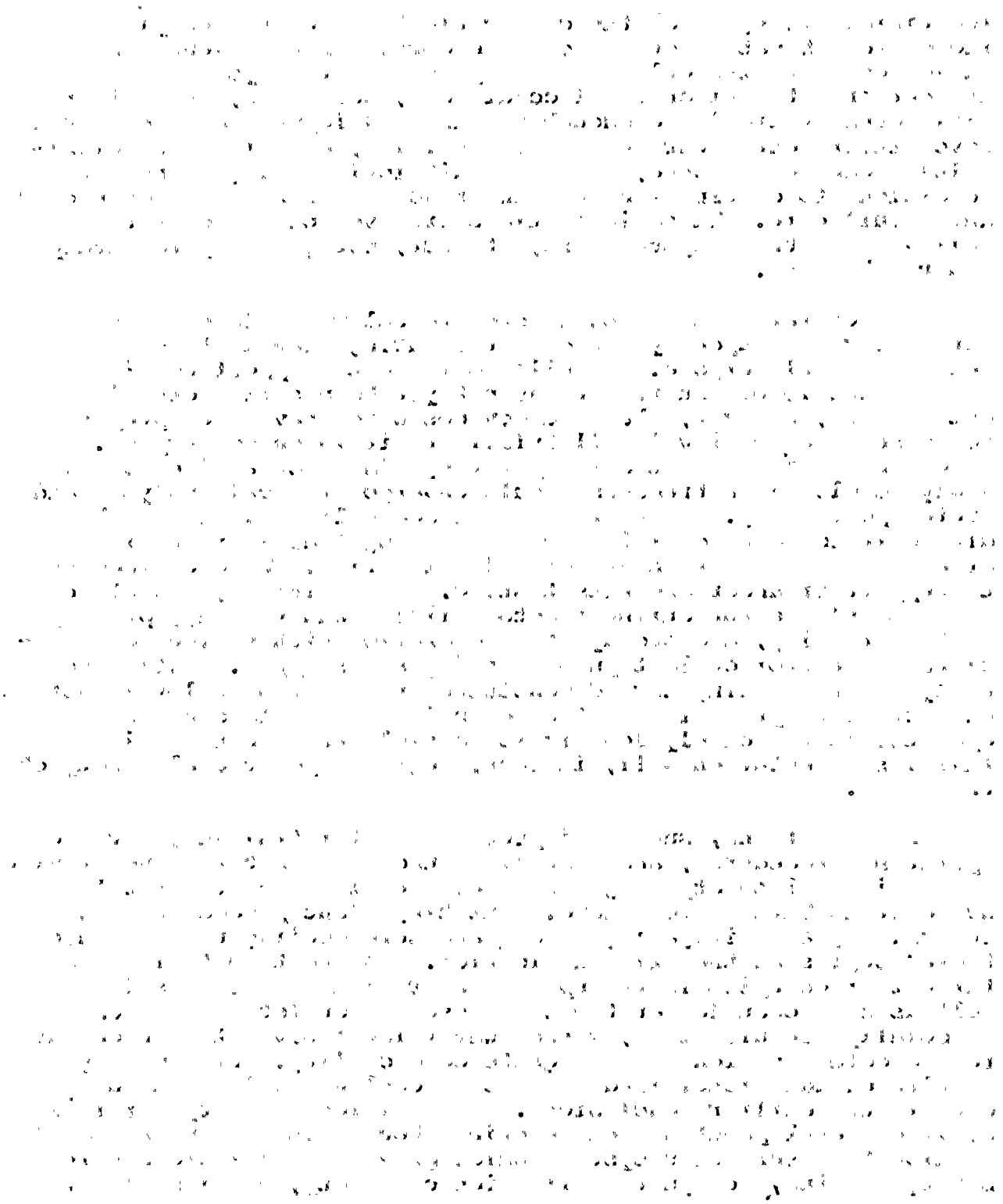
identified during which the core could be uncovered despite indication of water level above the core. Another vendor has indicated that difficulties in compensating the system for changes in containment environmental conditions, core flow, and primary fluid density are large enough to make development of a dp water level instrument unwarranted. In addition, even if these difficulties can be overcome, it may be difficult during transient conditions to distinguish the difference between a full downcomer and a full core. These indications from vendors lead us to believe that these systems are, at best, not yet easy to interpret and unambiguous.

An accurate measure of reactor vessel water level which could be relied upon by the operator during transients would serve a useful purpose. We will continue to support development of a vessel level meter. It has not yet been satisfactorily established, however, that the devices which have been proposed to measure vessel level will fulfill their intended purpose. Before being incorporated in operating plants on a wide scale, newly developed instruments should undergo critical analysis and prototype testing. Neither has been accomplished. It may be difficult to test level instruments during transient conditions at any place other than national laboratories. We encourage you to support or undertake this testing. As a minimum, prototype tests should be run during reactor filling and venting, primary system draining, and steady state operation with various combinations of reactor coolant pumps running and stopped. Until the analyses and testing have demonstrated that a vessel level instrument will function properly and the potential for misleading the operator is reasonably low, it is possible that installation of this instrumentation will, in fact, degrade operational safety of the plant.

Other actions, such as improved operator training, revised operating procedures, and installed subcooling meters have provided the additional safety margin for core cooling sought after the accident at Three Mile Island. Existing plant procedures for recognizing and mitigating inadequate core cooling use the incore thermocouples as the prime indication. The fact that Ginna has three thermocouples in the upper head region of the vessel as well as thermocouples at the fuel assembly outlet makes them especially useful. Thus, vessel water level may not be necessary to the determination of inadequate core cooling. Preliminary results of additional inadequate core cooling analyses tend to confirm the earlier conclusions. If additional safety margin is desired, development and engineering should proceed in an orderly fashion to assure that systems which provide real increases in safety margins, not just an illusion of safety, are installed.



Fiscal responsibility to our ratepayers precludes commitment of large sums of money, estimated to be in excess of two million dollars, with no established increase in plant safety. However, regardless of the monetary impact, our objection to installation of a vessel level system is based upon the lack of established technical merit for the system. Therefore, RG&E does not plan to install a reactor vessel water level instrument until it has been shown that a clear, unambiguous indication of water level can be obtained, or unless the NRC requires that a device designated to indicate reactor water level be implemented on the plant. Should the NRC require such an installation, we require early notification in order to support a Spring 1981 installation.

Sincerely yours,

L. D. White, Jr.

LDW/PCW/ng