Wisconsin Electric POWER COMPANY
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November 7, 1983

Mr. J. G. Keppler, Regional Administrator
Office of Inspection and Enforcement,
Region III
U. S. NUCLEAR REGULATORY COMMISSION
799 Roosevelt Road
Glen Ellyn, Illinois 60137

Dear Mr. Keppler:

DOCKET NO. 50-301
RESPONSE TO NRC INSPECTION REPORT NO. 50-301/83-11
POINT BEACH NUCLEAR PLANT, UNIT 2

The following is in response to the Notice of Violation appended to IE Inspection Report No. 50-301/83-11 as enclosed in Mr. C. E. Norelius' letter dated October 5, 1983. The Notice of Violation stated that on June 16, 1983, contrary to Technical Specifications 15.3.8.A.7 and 15.3.8.A.8, radiation monitors 2RE-211 and 2RE-212 (containment atmosphere air particulate and noble gas monitors) were inoperable while fuel motion for core reload continued. This incident is accepted as an item of non-compliance, although we wish to clarify that 2RE-211 was not required in this instance as it does not perform the control function described in Specification 15.3.8.A.7. The report also requested that a number of concerns itemized in the report be addressed in responding to the item of noncompliance. These concerns, including whether alarms are safety-related or are used to verify operability of safety-related equipment and whether they require 10 CFR 50.59 reviews prior to modification, are also discussed in this response.

In regard to the violation, the immediate corrective actions, which were described in Licensee Event Report No. 83-008/01T-0 in Docket 50-301, were to place the unit in a condition where operation of the affected system (2RE-211 and 2RE-212) was no longer less conservative than the least conservative aspect of the limiting condition for operation established in the Technical Specifications. The problem was discovered when the intermittent low flow condition on the newly installed radiation monitoring system (RMS) 2RE-211 and 2RE-212 was noted. The system sampling pump was verified to be inoperable. Fuel movement was then stopped. It was determined

that the sample pump had stopped because of a blown fuse in the data acquisition monitor circuit that supplies power to the pump. After the fuse was replaced, sample flow was reestablished and the low flow alarm setpoint was raised and operationally tested to ensure that if the sample pump stopped, the low flow alarm would lock in. Fuel movement was then resumed.

Analysis of this event resulted in a determination by the plant staff that additional corrective actions should be taken. The following discussion is provided to further explain the conditions leading up to and causing this event and the additional follow-up corrective actions we have taken.

During the months of May and June 1983, operator training was conducted to explain the operation of the new RMS. This training included information about how the new 2RE-211/212 system would work. This training did not address and emphasize that analog flow channels were included in the 2RE-211/212 data acquisition monitor, and that the new sample pump, unlike the existing 2R11/12 sample pump, would be likely to overload and be protectively deenergized if the flow path through the pump were isolated during operation. Accordingly, the operators were not aware of these differences. This turned out to be important with respect to the operators' understanding and actions concerning the events of the incident.

On June 10, 1983, Instrumentation and Control technicians had calibrated the new 2RE-211/212 flow rotameters in accordance with the startup special maintenance procedure. Satisfactory calibration was performed over the entire range of these analog flow meters, which was from a minimum of 0.6 standard cubic feet per minute (scfm) to a maximum of 6.0 scfm. The system was then turned over to Health Physics for radiation calibrations. Health Physics personnel were not concerned with the rotameter calibrations as the rotameter inputs were not scheduled to be used in the data acquisition monitor programming.

On June 14, 1983 following the Health Physics radiation calibrations, the new 2RE-211/212 system was turned over to Operations for use. Verification had been completed using a radiation source to ensure that the nuclear safety-related radioactive release termination control function associated with the system (i.e., activate containment ventilation isolation) was operational. Later that day the system control terminal printer became saturated with external failure alarms from the vacuum switch flow circuit for 2RE-211/212. The vacuum switch flow input was disconnected from the data acquisition monitor, which fed the control terminal, when investigation of the failure alarms showed excessive electrical noise in its circuit. The fact that there was no control room flow information available was explained to shift operational personnel.

Between June 15 and 16, 1983 efforts were made to restore remote flow information for the 2RE-211/212 system, particularly since fuel movement would be commencing shortly. The design engineer and the responsible plant group head decided to use the analog rotameter flow inputs for flow information to the data acquisition monitor and control terminal. Without analyzing the rotameter input, a low-flow alarm of 0.5 scfm was selected, and the rotameter analog flow channels were programmed by Health Physics personnel. This low-flow alarm function, however, was not verified to actually signal a loss of sample pump flow through testing. An explanation of the change to the low-flow alarm was prepared for the Superintendent - Operations, but was not received by him or conveyed to the plant operators in time to prevent the incident.

Since the new RMS was still in the implementation phase, and because this change was to a non-nuclear safety-related portion of the modification which did not change the intent of the modification, the responsibility for the change came under the cognizance of the design engineer, assisted by the responsible plant group head in this case. It was the responsibility of these individuals to exercise quality control in the change to the modification, insuring that selected analog channels were properly programmed, analyzed for settings and setpoints, tested, and information communicated to Operations and the plant staff. The licensee acknowledges that this activity did not include all appropriate quality control actions.

Subsequently, on June 16, 1983, maintenance was required to be done on one of the containment isolation valves associated with the 2RE-211/212 air sample system. As a result of a tagout error, the electrical sliders in the main control board for an associated valve were mistakenly opened. When maintenance was initiated on the proper valve, a ground fault alarm occurred, followed by a trip of the breaker which supplied power to the valve under maintenance, the associated valve, and two containment purge supply and exhaust valves. This caused all four valves to shut, and a partial containment ventilation isolation to occur. Operators then discovered that a tagout error had occurred and corrected the error. It was determined that since the terminal strips for the valve requiring maintenance and the associated valve were next to each other, the labeling on the terminal strips was somehow misread during the tagout process, and the wrong sliders opened. Although we firmly believe that the labeling of these slides is both accurate and unambiguous, an improvement to the understanding of the labels may be achieved by adding arrows to direct the labels to each specific terminal strip. This additional direction is expected to be completed by January 1, 1984.

After the tripped breaker was closed, operators reinitiated containment ventilation and air sampling and verified proper control room indications and system operation, thus establishing that the 2RE-211/212 sample isolation valves were open. Because the operators were not aware of the fact that the new sample pump would be likely to overload and blow its fuse when it was isolated, and because of

the absence of a low-flow alarm, the shift operational personnel assumed proper operation of the 2RE-211/212 sample system. It was a shortcoming in the system knowledge and an improperly tested low-flow indication which allowed the inoperable pump to be missed by the operator's normal system and parameter operational check.

During the next three hours, there were intermittent alarms on the new RMS control terminal. Due to the inherent design of the control terminal, all visual alarms would clear as soon as the alarm condition was cleared, but the audible alarm would continue until acknowledged. Since the low-flow alarm was set below the normal limits of the flowmeter, only intermittent and random alarms annunciated. In addition, there were also other intermittent external failure alarms from other portions of the system. Because of the location of the control terminal, which is in a corner of the control room, the visual alarms were not observed, and the continuous audible alarm was discounted because of the background noise in the control room (communications associated with fuel motion and the necessary source range audible monitor). As a permanent correction to this, a modification has been completed which causes the control terminal alarm light and horn to activate a main control board RMS annunciator. This provides for acknowledgement of the alarm condition and also allows the new RMS to cause a subsequent alarm to be annunciated at the main control board. In addition, a CRT visual display of the entire new RMS has been added to the system and placed closer to the control room operators so they will have better and more immediately visible information about the entire system.

On June 17, 1983 the problem with the vacuum switch flow circuit, which had been disconnected on June 14, 1983, was isolated to electrical noise induced from the sample pump control relay. The AC power lead to this relay is physically located in the same cable as the vacuum switch flow signal lead. The relay was bypassed, eliminating the noise source, and the vacuum switch flow circuit was placed back in service. When this was completed, there were two flow circuits which would alert the operator to a flow-related problem in the 2RE-211/212 system.

In order to control more formally temporary modifications to a system which is partially operational, but not yet completely turned over to Operations, the Superintendent-Operations will order that changes of this type to any portion of a system which is under Operations' cognizance to be controlled under the "Lifted Wires, Jumpers, and Bypasses" program. This will insure that operator knowledge of the system status is maintained and will aid in tracking the progress of the temporary modification until the system is returned to normal. This order is expected to be fully disseminated to all Operations shift personnel by December 31, 1983.

The modification request administrative procedure has been revised to assist in controlling changes to modifications which are found to be necessary during final design or implementation of the physical work associated with the modification. The revision implemented a Modification Request Addendum form to insure that certain changes are appropriately reviewed and approved in a manner similar to the modification request itself. The reviews will determine if a further safety evaluation is required or if special test or maintenance procedures need to be followed.

Following dissemination and discussion of this event, plant group heads are now more cognizant of the necessity for detailed special maintenance procedures. We believe the lessons learned from this incident have resulted in an improved quality control awareness toward any new modification installation, particularly as they relate to insuring proper operator orientation and a full and complete testing of alarms and system operability.

In regard to the review and evaluation of safety-related modifications, we support the physical and administrative control of safety-related equipment and procedures through the performance of 10 CFR 50.59 reviews at the design and implementation stages. We do not, however, believe that the temporary alteration of the system low-flow alarm, which was a factor in this violation, invoked or necessitated a 10 CFR 50.59 review. As described previously, because of electrical noise and spurious alarm problems with the vacuum switch flow-circuit, a temporary substitution of the rotameter flow input was made for a low-flow alarm. This was only a substitution of air flow sensing points involving two subsystems in the RE-211/212 RMS and did not constitute a design change to the system. If the substituted low-flow alarm had been properly tested, this incident would not have occurred. Since there had been no change in the system design or basic concept of operation, a 10 CFR 50.59 review would not be applicable to the action that was taken.

In this system, the purpose of the low-flow alarm is to indicate a degraded support system parameter-low flow. Although we agree that air sample flow is necessary for the proper safety-related function of the 2RE-211/212 system, the actuation or, indeed, the lack of a low-flow alarm does not confirm the proper air flow. Typically, most alarms have back-up indication on some analog-type meter. The back-up for air flow in this case was remote at the 2RE-211/212 sample pallet where the actual rotameter flow indicators were located. This indication could have been used to verify proper operation of the system after a transient occurred in the system. After the incident, it was decided to maintain two low-flow alarms for the 2RE-211/212 system, those being the external fail alarm from the vacuum switch flow circuit and the low-flow alarm from the rotameter flow instruments, for redundant indication of flow abnormalities.

We certainly agree that alarms are important to the safe operation of a system, and that they often direct operator attention to safety-related actions. The operator's attention to all system parameters and indications is, however, required to insure proper operation of safety-related equipment. We shall continue to stress this in our daily operations and expect that the potential for incidents such as this will be reduced.

Very truly yours,

C. W. Fay

Vice President-Nuclear Power

C. W. Fay

Copy to NRC Resident Inspector