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November 10, 1989

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, DC 20555

Subject: **McGuire Nuclear Station, Unit 2**
Docket No. 50-370
Groundwater Monitoring Special Report

Gentlemen:

Pursuant to FSAR Selected Licensee Commitment 16.9-8, Groundwater Level Monitoring System, find attached a special report concerning the inoperability of a groundwater level switch.

If you have any questions, please contact S.E. LeRoy at (704) 373-6233.

Very truly yours,

Hal B. Tucker

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Attachment

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Attachment 1

Duke Power Company
McGuire Nuclear Station
Groundwater Monitoring Special Report

On October 11, 1989, Groundwater Monitor (WZ) level switch 2WZLT5060 was discovered to be inoperable. The level switch had been left inoperable following maintenance performed during May 17, 1989 through May 23, 1989. The level switch had been logged in the Technical Specification Action Item Logbook (TSAIL) at 0530 on May 15, 1989 because of an Alert level alarm. A work request was written at 1130 to investigate the alarm; however, the work request number was not written in the TSAIL. While investigating the alarm, Instrument and Electrical personnel (IAE) disconnected and removed the level switch to manually measure the water level in the well. Manual level switch contact status measurements were performed until May 23, 1989. Although IAE were still taking measurements on the well, Operations cleared the TSAIL entry on May 21, 1989. On June 6, 1989 the work request was rescheduled and assigned to Projects for further action. At this time, the level switch was still disconnected. The communications error that allowed the TSAIL entry to be cleared and the switch left disconnected could not be determined. On October 20, 1989, the switch was reconnected and returned to service. The Alert level alarm was still activated at that time. Pursuant to the Selected Licensee Commitment 16.9-8, a Design Engineering evaluation was requested to determine the cause of the alarm (which was assumed to have been in alarm for more than seven days). This WZ monitor provides an indication of groundwater level on the exterior of the Unit 2 Reactor Building and Diesel Generator Building. Attachment 2 of this report contains the Design Engineering evaluation. This incident will be reviewed with IAE personnel to emphasize the importance of adequate communications when rescheduling a work request that leaves equipment inoperable. Operations management will also discuss with Operations personnel proper clearance of items listed in the TSAIL.

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Attachment 2

Duke Power Company
McGuire Nuclear Station
Groundwater Monitoring Special Report
Design Engineering Evaluation of Groundwater Level Switch 2WZLT5060

Following the discovery of the inoperable groundwater level switch, the water level in the monitoring well was manually monitored and found to be at elevation 726 ft. + 3 1/4 in. This level is 1 ft. 3 1/4 in. above the Alert alarm level for this monitor. This monitor was last operable on May 23, 1989 before the instrument was disconnected. The Alert alarm has been activated for the seven day limit provided in Selected Licensee Commitment 16.9-8. Therefore, as required by the commitment, Design Engineering has performed the following evaluation to determine the cause of the higher than normal groundwater level as well as the corrective actions for this situation.

As noted in a previous Problem Investigation Report dated June 13, 1989, the Alert alarm for the Unit 2 reactor Building exterior monitor (Mk. GWA-2) has been activated several times in 1988 and 1989. The maximum level previously measured in this well was at elevation 725 ft. 3 in. As previously discussed, on October 11, 1989, the water level in well Mk. GWA-2 was measured at elevation 726 ft. + 3 1/4 in. This level is approximately one foot higher than the highest level recorded for this monitor.

It appears there may be a correlation in the higher than normal rainfall levels (and lake levels) and the higher than normal groundwater levels measured in the subject groundwater well during this time period. On September 30, 1989 and October 1, 1989, the McGuire area received approximately 3 1/2 in. of rainfall which resulted in a surge condition on Lake Norman where the lake level elevation was 760 ft. + 6 in. on October 1, 1989.

The Auxiliary Building Interior monitor, located at column lines PP-61 (on the side of the auxiliary building closest to Lake Norman), has not indicated any significant increase in groundwater during this same period. McGuire Maintenance personnel have manually checked the groundwater buildup behind the wall at column lines PP-61 on an daily basis by opening the impulse line drain valve for groundwater instrument 2WZLT5100. A typical amount of water released daily through the drain valve has been approximately 50 ml. Since the instrument sleeve through the wall for this monitor is located at elevation 718 ft. (bottom of sleeve), this monitor would reveal any significant rise in groundwater level.

Groundwater well Mk. GWA-2 is also located just a few feet from the recently constructed McGuire Equipment Staging Building. As noted in the past, the original soil conditions around this groundwater well may have been disturbed during the construction of the McGuire Equipment Staging Building. This would help explain a local rise in groundwater around groundwater well Mk. GWA-2, and no noticeable increase around the interior groundwater monitor at column PP-61.

The cause of the higher than normal groundwater level at well Mk. GWA-2 cannot be verified unless a detailed subsurface investigation were performed. Such an investigation does not appear to be justified at this time since a groundwater increase has not been detected at any other groundwater monitoring locations.

Design Engineering has recommended that McGuire initiate a change to Selected Licensee Commitment 16.9-8 to include the following revision:

> Delete the Alert alarm setpoint at elevation 725 ft. for the Unit 1 and 2 Reactor Building exterior monitors, and replace the present Remedial Action for the Alert alarm activation with similar actions upon activation of the Hi alarm (elevation 730 ft.).

The Reactor Buildings have been analyzed and qualified by Duke Design Engineers for a maximum groundwater level of 760 ft. without adverse effects from lateral pressures, uplift, or overturning due to buoyancy. Additionally, the adjacent Diesel Generator Buildings are not specifically designed for lateral pressures due to hydrostatic loadings with a groundwater level of 760 ft; however, the Diesel Generator Buildings were designed for loading cases that exceed the groundwater loadings that would occur. The hydrostatic loads due to groundwater are negligible compared to the design loads for these buildings. The Diesel Generator Buildings have been analyzed for uplift and overturning due to buoyancy and were found to be structurally acceptable for a groundwater elevation up to 760 ft. Based on our analyses, the Reactor and Diesel Generator Buildings are designed for a groundwater elevation of 760 ft. which is also full pond level for Lake Norman; therefore, it is acceptable to change the Selected Licensee Commitment 16.9-8 to delete the Alert alarm setpoint (set at 725 ft.) for the Unit 1 and 2 Reactor Building exterior monitors.

McGuire will change Selected Licensee Commitment 16.9-8 as recommended by Design Engineering, and the system changes will then be implemented.