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May 20, 2003

U.S. Nuclear Regulatory Commission
ATTENTION: Document Control Desk
Washington, D.C., 20555

Subject: Duke Energy Corporation
McGuire Nuclear Station, Unit 2
Docket Number 50-370

Special Report Number 2003-01 for Selected Licensee
Commitment 16.9.8, Groundwater Level Monitoring System,
Problem Investigation Process Number M-03-01377

Please find attached Revision 0 of Special Report Number 2003-01. This report is being submitted in accordance with McGuire Nuclear Station Updated Final Safety Analysis Report, Selected Licensee Commitment 16.9.8, Groundwater Level Monitoring System. On two occasions, a Groundwater level monitor remained above its allowed level limit for a period greater than 7 days. Per the Commitment, a Special Report is required due to these occurrences.

The attached Special Report provides details of these occurrences, the cause, and corrective actions. These occurrences were determined to be of no significance to the health and safety of the public.

Inquiries on this matter should be directed to Lee A. Hentz at 704-875-4187.

Sincerely,

D. M. Jamil

Attachment

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Duke Energy Corporation
McGuire Nuclear Station
Special Report 2003-01
Revision 0

BACKGROUND

The Reactor and Auxiliary Buildings for McGuire Nuclear Station (McGuire) are partially built below the natural groundwater level, so a permanent groundwater dewatering underdrain (WZ) system was designed and installed to preclude groundwater from rising above the structural distress level. The Reactor and Diesel Buildings are analyzed for hydrostatic loads up to 760 feet MSL which is the site grade level.

The Auxiliary Building houses three WZ sumps, with two pumps each, designed to remove the accumulation of groundwater from the underdrain system. Eleven permanent groundwater wells with monitors are installed around the perimeter of the Reactor and Auxiliary Buildings to monitor the groundwater level. These monitors provide early indication of a rise in natural groundwater, a problem or blockage of the underdrain system, or a ruptured piping system.

The McGuire Updated Final Safety Analysis Report (UFSAR), Selected Licensee Commitment (SLC) 16.9.8, Groundwater Level Monitoring System, Condition C states that if the groundwater level for the Reactor or Diesel Buildings is not within the level limits of Table 16.9.8-1, restore the level to within the limit in 7 days. Condition D states that if the groundwater level cannot be restored, initiate an engineering evaluation to determine the cause and prepare and submit a Special Report to the NRC documenting the results of the investigation within 30 days.

DESCRIPTION OF OCCURRENCE

On March 25, 2003, the Unit 2 Reactor Building Groundwater Level Monitoring switch, 2WZ-LS5060, came into alarm (733 feet MSL) indicating a potential high groundwater condition. A review of the pump-out rates from the WZ sumps found no change that would indicate an increase in groundwater inflow around the Unit 2 Reactor Building. In addition, none of the adjacent groundwater level monitors were in an alarm

condition at this time. This led to the postulation that 2WZ-LS5060 may have failed. On March 26, 2003, it was determined that, by alternate method, a high groundwater level condition did in fact exist around the Unit 2 Reactor Building and that 2WZ-LS5060 was functioning correctly. At this time, the groundwater level in this well was only indicating a few inches above the SLC level limit (alarm point) of 733 feet MSL.

The high groundwater level condition indicated by 2WZ-LS5060 cleared after 6 days, 19 hours such that SLC 16.9.8 Condition C was exited. Over the next several weeks, 2WZ-LS5060 came into alarm 2 more times but cleared in less than 7 days. On April 13, 2003, 2WZ-LS5060 came into alarm and exceeded the 7 day SLC limit on April 20, 2003. Pursuant to the remedial actions of SLC 16.9.8, Condition D, an engineering evaluation was initiated and this NRC Special Report was written to document the investigation.

This high groundwater level alarm condition cleared on April 26, 2003 but returned several more times indicating the level was hovering at the alarm setpoint. On May 15, 2003, 2WZ-LS5060 exceeded the 7 day SLC limit again. This Special Report will address both occurrences.

The Unit 2 Reactor Building Groundwater level monitor, 2WZ-LS5060, has a history of indicating a high level. On June 9, 1997, McGuire submitted Special Report 96-04, Revision 3, regarding an extended high level condition on 2WZ-LS5060. The cause of the 1996/97 condition was attributed to higher than average rainfall and higher than average seasonal level in Lake Norman, the ultimate heat sink for McGuire. It was also determined that the location of this monitor well is significant. 2WZ-LS5060 is located on the north side of the McGuire site, in a flow path for the groundwater flow pattern from Lake Norman.

In 1997, Duke conducted a 9 month study of actual groundwater level in this monitor well and the adjacent well. The study identified a delayed correlation between high lake levels and groundwater level at 2WZ-LS5060. During the 1997 study, the lake level remained at or below the target value of 759 feet. As a result of the 1997 study, 2WZ-LS5060 high level setpoint was raised 30 inches to 733 feet MSL to preclude nuisance alarms. Since that time, 2WZ-LS5060 has not alarmed until present.

From the summer of 1998 through the summer of 2002, the Catawba River Basin, which feeds Lake Norman, was in an extreme drought condition. This led to lower than normal lake levels. From autumn 2002 to the present time, precipitation received at the McGuire site and in the Catawba River basin has been above normal. For the 30 day period from March 25 to April 24, 2003, rainfall exceeded 12 inches at the site and Lake Norman exceeded full pond level of 760 feet on 2 occasions. In addition, due to the long term drought conditions, the planned winter seasonal lowering of Lake Norman was cancelled as a measure to raise the lower than normal groundwater levels in the area.

CAUSES

The cause of the high groundwater level outside the Unit 2 Reactor Building, as measured at 2WZ-LS5060, is attributed to the high pond level on Lake Norman. This groundwater level monitor is the only SLC required, WZ monitor that exceeded its remedial action completion time. Also, this monitor has a history of high level when the lake remains at or near full pond for an extended period of time. An additional contributor is thought to be higher than average precipitation at the McGuire site over the last 6 months.

CORRECTIVE ACTIONS

Immediate:

1. 2WZ-LS5060 was determined to be fully functional and verified to be indicating an actual high level.
2. Pump out rates for the WZ sumps in the Auxiliary Building were verified to be normal.
3. A field survey of the surrounding area verified there was no water percolating to the surface that would indicate a piping system leak or failure.

Subsequent:

1. An engineering evaluation was completed to determine the cause of the high groundwater level per SLC 16.9.8 Required Actions.

Planned

1. Monitor and sample the groundwater wells and other site locations to characterize the source of water in 2WZ-LS5060 and adjacent groundwater well locations.

SAFETY ANALYSIS

A high groundwater level condition outside the Unit 2 Reactor Building is not considered to be safety significant. The McGuire Reactor Buildings were analyzed and qualified by Duke for a maximum groundwater level up to the site grade level of 760 feet MSL without adverse effects from lateral pressures, uplift, or any tendency to overturn due to the effects of buoyancy. This maximum groundwater level also represents full pond level of Lake Norman.

Therefore, this condition represents no significance with respect to the health and safety of the public.