3/4.7.13 GROUNDWATER LEVEL

LIMITING CONDITION FOR OPERATION

3.7.13 The groundwater level shall be maintained at or below the top of the adjacent floor slabs of the reactor containment building and the auxiliary building.

APPLICABILITY: At all times.

ACTION: (Unit 1 or 2 as shown in Table 3.7-7)

a. With the groundwater level above the top of the adjacent floor slab by less than or equal to 5 feet, reduce the groundwater level to or below the top of the affected adjacent floor slab within 7 days or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

b. With the groundwater level above the top of the adjacent floor slab by greater than 5 feet but less than 15 feet, reduce the groundwater level to less than or equal to 5 feet above the top of the affected adjacent floor slab within 24 hours and to or below the top of the affected adjacent floor slab within 7 days of initially exceeding the above limits or be in at least HOT STANDBY within the next 6 hours and in COLD SHUTDOWN within the following 30 hours.

c. With the groundwater level above the top of the adjacent floor slab by greater than or equal to 15 feet, be in at least HOT STANDBY within 6 hours and in COLD SHUTDOWN within the next 30 hours. Perform an engineering evaluation to determine the effects of this high groundwater level on the affected building(s) and submit the results of this evaluation and any corrective action determined necessary to the Commission as a Special Report pursuant to Specification 6.9.2 prior to increasing T_{avg} above 200°F.

d. With the groundwater level above the top of the adjacent floor slab by greater than or equal to 2 feet, determine the rate of rise of the groundwater level at a representative monitor or by time interval between successive vertical alarm levels at least once per hour. If the rate of rise of the groundwater level is greater than or equal to 0.3 foot per hour, determine the rate of rise at least once per 30 minutes. If the rate of rise exceeds 0.5 foot per hour for more than 1 hour, be in at least HOT STANDBY within 1 hour and in COLD SHUTDOWN within the following 30 hours. If the rate of rise is less than 0.5 foot per hour, comply with the requirements of ACTIONS a., b., and c. above.

SURVEILLANCE REQUIREMENTS

4.7.13 The groundwater level shall be determined at the following frequencies by monitoring the water level in each of the accessible interior groundwater level monitoring stations and by verifying the absence of alarm for the exterior and the inaccessible interior groundwater level monitoring stations as shown in Table 3.7-7:

a. At least once per 7 days when the groundwater level is at or below the top of the adjacent floor slab, and

b. At least once per 24 hours when the groundwater level is above but less than 2 feet above the top of the adjacent floor slab.

TABLE 3.7-7

GROUNDWATER LEVEL MONITORS

LOCATION	INTERIOR/ EXTERIOR	ACCESSIBLE/ INACCESSIBLE	APPLICABILITY
Unit 1 Reactor Building	Exterior	Inaccessible	Unit 1
Auxiliary Bldg - West Wall	Exterior	Inaccesible	Unit 1
AA-40, Elev. 736'	Interior	Accessible	Unit 1
DD-42, Elev. 736'	Interior	Accessible	Unit 1
PP-51, Elev. 716'	Interior	Accessible	Unit 1
Unit 2 Reactor Building	Exterior	Inaccessible	Unit 2
Auxiliary Bldg - East wall	Exterior	Inacessible	Unit 2
BB-72, Elev. 736'	Interior	Accessible	Unit 2
DD-69, Elev. 736'	Interior	Accessible	Unit 2
PP-61, Elev. 716'	Interior	Accessible	Unit 2
QQ-56, Elev. 716'	Interior	Inaccessible	Units 1 and 2*

*No ACTION required if the monitors at PP-51, Elev. 716' (Unit 1 only) and pp-61, Elev. 716' (Unit 2 only) are OPERABLE.

FOR INFORMATION ONLY

3/4.7.13 GROUNDWATER LEVEL

This specification is provided to ensure that groundwater levels will be monitored and prevented from rising to excessively high levels which could cause unacceptable structural stresses in the reactor containment and/or auxiliary building due to uplift forces. Structural stresses due to high groundwater levels will not exceed allowable stresses until groundwater rises to elevation 732 MSL.

ATTACHMENT 2

PROPOSED TECHNICAL SPECIFICATION REVISION

3/4.7.13 GROUNDWATER LEVEL

LIMITING CONDITION FOR OPERATION

3.7.13 The groundwater level shall be maintained at elevations less than the values in Table 3.7-7 for the five (5) Auxiliary Building monitors listed in Table 3.7-7.

APPLICABILITY: At all times.

ACTION: For Units 1 and 2.

If groundwater level for any three (3) of the five (5) monitors is above the values shown in Table 3.7-7, take the following actions:

1. Within one hour, reduce the groundwater level to below the values shown in Table 3.7-7; or,

2. Be in at least HOT STANDBY within 6 hours, and HOT SHUTDOWN within the next 6 hours, and COLD SHUTDOWN within the following 30 hours.

SURVEILLANCE REQUIREMENTS

4.7.13.1 During each shift, the groundwater level shall be demonstrated to be within the values of Table 3.7-7 by the absence of alarms or by visual observation of the monitor level gauge.

4.7.13.2 Each groundwater level monitor instrument/loop for locations listed in Table 3.7-7 shall be demonstrated OPERABLE at least once per year by the performance of a loop calibration and operational test.

TABLE 3.7-7

GROUNDWATER LEVEL MONITORS

LOCATION	INTERIOR/ EXTERIOR	ELEVATION (Feet - Mean Sea Level)	UNIT
AUXILIARY BLDG.			
PP51	Interior	731' - 0"	1
QQ56	Interior	731' - 0"	1 & 2
PP-61	Interior	731' - 0"	2
West Wall	Exterior	731' - 0"	1
East Wall	Exterior	731' - 0"	2

3/4.7.13 GROUNDWATER LEVEL

This Technical Specification is provided to ensure that groundwater levels will be monitored and prevented from rising to the potential failure limit for the McGuire Units 1 and 2 Auxiliary Buildings. This potential failure limit is based on engineering calculations that have determined that the Auxiliary Buildings are susceptible to overturning due to buoyancy at elevation 737 feet Mean Sea Level (MSL). Under the requirements of this Technical Specification, if groundwater level exceeds elevation 731 feet MSL, (3 out of 5 Tech Spec groundwater monitor alarms), and cannot be reduced in one (1) hour, McGuire must begin reducing Units 1 and 2 to Mode 5, Cold Shutdown.

Analysis performed by Design Engineering determined that the Reactor and Diesel Generator Buildings are designed to withstand hydrostatic loadings due to groundwater levels up to elevation 760 feet MSL; therefore, no Technical Specification requirements are specified for these structures.

Elevation 731 feet MSL is the Technical Specification action level of the five Technical Specification groundwater monitors listed in Table 3.7-7. The East Wall exterior monitor alarm at elevation 731 feet MSL is the Alert alarm due to the groundwater well being bored to a depth of 730 feet MSL because of underground rock formation below the well. The other four (4) monitors are Hi-Hi alarms at elevation 731 feet (MSL).

The East Wall exterior monitor was originally on the exterior of the Unit 2 Auxiliary Building and subsequently was enclosed by the construction of the Equipment Staging Building.

As required by Operations procedures, any alarms on non-Technical Specification groundwater monitors will also be investigated. Additionally, if three (3) out of the five (5) Technical Specification groundwater monitors alarm at levels below the Technical Specification action levels, Operations will contact Duke Design Engineering (Civil) for investigation and resolution of the increased groundwater level.

If one or more of the groundwater monitors is determined to be inoperable, the monitor(s) will be considered to be in the alarmed position until repaired and returned to an operable status.

ATTACHMENT 3

Justification For Proposed Technical Specification Revision
And
Analysis of Significant Hazards Consideration

Introduction

On October 31, 1984 Duke submitted a proposed revision to Technical Specification 3/4.7.13 to eliminate an inconsistency between the Technical Specification and the capabilities of the groundwater monitoring instruments installed at McGuire. The Technical Specification did not differentiate between the interior groundwater monitors, which detect groundwater level 2 feet 3 inches above the top of the floor slabs and the exterior groundwater monitors which detect groundwater level at the top of the floor slabs. The proposed revision would have provided consistency between the Technical Specification and the as-built system. The NRC requested supplemental information regarding the reduction in time for operators to respond and take action for an alarm prior to the groundwater level reaching the next monitored level (5 feet above the floor slab). Duke analyzed this situation and determined that with total blockage of the underground drainage system as a worst case scenario, it would take 38.4 $\pm$ 2 hours for the groundwater level to reach 5 feet above the floor slab level. For the as-built situation, it was calculated that it would take 19.2 $\pm$ 2 hours for the level to rise from 2 feet 8 inches above the floor slab to 5 feet above the floor slab which would reduce the time in half allowed for operator response.

Another concern expressed was that the bases for the Technical Specification was unclear. In July of 1987, during a teleconference between Duke Licensing and the NRC McGuire Project Manager, these concerns were discussed. It was agreed that it would help clarify some of these concerns if key NRC personnel visited the McGuire site and observed the actual system and components involved in the groundwater monitoring system. Following that tour, Duke and NRC met and discussed some of the concerns. Duke at that time informed NRC that additional analysis performed by Duke Design Engineering revealed that some buildings at McGuire were designed to withstand hydrostatic loadings at groundwater levels greater than the action levels presently listed in the existing Technical Specification. At that time Duke committed to reanalyze the Reactor Buildings and Auxiliary Buildings for lateral stresses, uplift, buoyancy, and turnover that might result from excessive groundwater levels. Based on these calculations, Duke would then submit a proposed revision to the existing Technical Specification.

Duke Design Engineering completed an in-depth analysis. Based on this analysis Duke proposes to completely revise the existing Technical Specification.

The proposed revision would replace the current Technical Specification 3/4.7.13, Groundwater Level. The proposed revision would also resolve existing concerns and supersede all previous groundwater revisions pending NRC approval.

Background

The McGuire Nuclear Station site is located within the groundwater region of Charlotte, North Carolina which is part of the Piedmont Groundwater Province. Groundwater in this area is derived entirely from local precipitation. The water table varies from ground level in valleys to greater than 100 feet below the surface on hill areas. The occurrence, location, and movement of groundwater at the McGuire site is controlled primarily by the water level in Lake Norman which borders the north side of the McGuire site (reference McGuire FSAR, Figure 2B-2). The only expected groundwater recharge areas within the influence of McGuire are adjacent to the Standby Nuclear Service Water Pond and the Waste Water Collection Basin.

Since the lower elevations of McGuire are below the natural water table, a permanent Category I Groundwater Drainage system was installed during initial construction to lower the water table (reference McGuire FSAR Figure 2B-3). The groundwater system was designed to relieve subsurface hydrostatic loadings by discharging groundwater collected in the groundwater sumps. The groundwater is discharged to the surface water drainage system resulting in a depression of the water table. The groundwater system is a safety related (ANS Safety Class 3) system as it protects Category I seismic structures by preventing structural stresses from being exerted upon the Auxiliary and Reactor Buildings due to hydrostatic pressures and uplift forces as a result of high groundwater levels. During normal operation of the groundwater system, groundwater level is maintained at or below elevation 712 feet MSL in the Auxiliary Building areas and elevation 717 feet MSL in the Reactor Building areas.

The groundwater system consists of a grid of interconnected flow channels (reference McGuire FSAR Figure's 2.4.13-1 and 2.4.13-2) at the top of rock or fill concrete below the building foundation slabs, which drains the entire foundation of the Auxiliary and Reactor Buildings, with the exception of deeper pits that are designed for hydrostatic loads. All channels in the grid system gravity drain to three groundwater sumps (A, B, and C) in the Auxiliary Building. An exterior wall drain composed of two separate flow mediums of zoned sand and stone filter, and a metal perforated pipe extends around the foundation perimeter and drains to groundwater sump C. The zoned wall filter and perforated pipe is not required on the south side of the Auxiliary Building due to the adjacent Turbine Buildings which prevent any groundwater rise from exceeding elevation 735 feet MSL. In the event a single flow channel or wall drain becomes blocked, groundwater will flow to the groundwater sumps through redundant drain routes. Groundwater collected in the groundwater sumps is pumped to the Yard Storm Drain system or to the Turbine Building sumps via groundwater sump pumps. There are six groundwater sump pumps available and the three groundwater sumps are interconnected by drainage channels; therefore, the many redundant features ensure the function of the groundwater drainage system. Redundancy of vital system components assure the ability of the groundwater drainage system to perform its function over the life of the plant.

Based on past performance of the groundwater monitors and engineering judgement, McGuire performs two year frequency preventative maintenance/periodic testing on both the interior and exterior groundwater monitors. The interior groundwater monitor instruments are inspected, cleaned, repaired if necessary, and a loop/instrument calibration is performed. The exterior groundwater monitors, which are float type instruments in a bored well, are inspected and cleaned, the alarm floats are checked and set, and a functional test is performed. McGuire procedures used for these activities were developed, written, and are implemented by McGuire Instrument and Electrical personnel. Also, an engineer in the Instrument and Electrical group is assigned to support maintenance activities involving the groundwater monitoring system. To provide added assurance that the technical specification groundwater monitors will

provide dependable service, the maintenance frequency will be increased to once per year for these monitors. Therefore, maintenance and testing of the groundwater monitoring system in the manner described provides assurance that the groundwater monitoring system will function properly.

Although the wall drain and the underdrain system prevent a rise in the groundwater around the exterior building walls, calculations are presented in FSAR Appendix 2B, Section 2.7 for the water level recovery based on the postulated simultaneous blockage of all drains into the groundwater sumps (e.g. underdrain failure). FSAR Figure 2B-8 shows the results of the groundwater level recovery calculations. Based on design calculations performed by Duke Design Engineers, structural stresses exceeding allowables will not occur until groundwater rises to elevation 737 feet MSL for the Auxiliary Building and above 760 feet MSL for the Reactor Buildings and Diesel Generator Buildings. The time required for a rise to elevation 737 feet MSL from 731 feet MSL under the most adverse soil conditions is approximately 9.5 days. Since the zoned filter drain system is confined by building walls and the compacted earth backfill and/or rock at the foundation level, the wall drain system and the underdrain system will remain passive during an earthquake. With the top of the zoned wall filter 5 feet below the plant yard grade, there is no credible flood that would affect the underdrain system. There is also no credible risk to the underdrain system from non-Category 1 piping systems (e.g. Condenser Cooling Water). The postulated failure of the Nuclear Service Water (RN) system pipes has also been evaluated to determine the potential for flooding the underdrain system since the pipes for this system penetrate the zoned wall filter and would result in the largest discharge of water into the underdrain system. The RN system is a moderate energy fluid system and has been evaluated according to NRC Branch Technical Positions MEB 3-1 and APCSB 301. A through wall leakage crack, one half the pipe diameter times one half the wall thickness, would result in a flow of 666 GPM to the underdrain system. This flow plus the calculated groundwater seepage would result in a total flow of 696 GPM. Since six (6) 250 GPM pumps are available to discharge groundwater, the postulated failure of the RN system water pipe would not flood the underdrain system.

Walls below the plant yard grade are not waterproofed, but waterstops are provided in all construction joints. In the unlikely event that groundwater level rises outside the Auxiliary, Diesel Generator and Reactor Building walls, seepage through the walls would not exceed the capacity of the floor drain system.

The groundwater level monitoring program for the Auxiliary and Reactor Building areas as defined in Technical Specification 3/4.7.13 required the groundwater level monitoring portion of the groundwater system to continuously monitor groundwater levels in the zoned wall filter, and provides an audible alarm (annunciator) in the control room if there is enough rise in groundwater to reach the alarm setpoint. Eleven permanent groundwater monitors are installed around the perimeter of the Auxiliary, Reactor and Diesel Generator Building walls. Seven interior monitors instrumented through walls are mounted inside the Auxiliary and Diesel Generator Buildings. Four exterior monitors instrumented in cased wells are located on the east and west sides of the Auxiliary and Reactor Buildings, (reference McGuire FSAR Figure 2.4.13-1). There are no monitors on the south side of the Auxiliary Building as they are not needed due to the adjacent Turbine Buildings and associated underground structures (reference McGuire FSAR Figure 2.5.1-1).

Each groundwater monitor has 3 setpoints: 1) Alert, 2) Hi, and 3) Hi-Hi. Any single alarm or any combination of alarms will alert Control Room personnel to a rise in groundwater level at preset alarm levels by an audible and visual alarm indication. Operations uses the McGuire procedure, Annunciator Response for Panel 1AD-8, to respond to groundwater monitor alarms. The procedure provides instructions for Alert, Hi, and Hi-Hi alarm levels. The Alert level alarm is at two (2) feet above the floor slab and requires the dispatch of an operator to check the groundwater monitor panel and the actual monitor that is in alarm. Supplementary actions involve:

1) Monitoring the eleven (11) groundwater monitoring stations for the level of the seven (7) interior monitors at least once per 24 hours and recording the levels found,in the reactor operator log;
2) Refer to the Technical Specifications for appropriate actions to be taken;
3) Notify the Operations Shift Supervisor for additional guidance; and,

4) In the event the alarm may be caused by an equipment malfunction, contact Instrument and Electrical personnel for investigation and repair.

For the Hi level groundwater alarm which is set at five (5) feet above the floor slab, the procedure requirements are the same. For the Hi-Hi level groundwater alarm which is set at fifteen (15) feet above the floor slab, the procedure requirements are to refer to the Technical Specification and inform the Operations Shift Supervisor. Also if the alarm occurs without previous alarms at the Alert and Hi levels, Instrument and Electrical personnel are contacted. It should be noted that at the Hi-Hi level alarm the existing Technical Specification requires the unit to be in at least Hot Standby within six (6) hours and in Cold Shutdown within the next thirty (30) hours.

Justification For Proposed Technical Specification Revision

As previously discussed, the present groundwater monitoring program for the Auxiliary, Diesel Generator, and Reactor Buildings is defined in Technical Specification 3/4.7.13. It is the purpose of this discussion to justify the following revisions to the Technical Specification:

Item 1) Delete the exterior groundwater monitors next to each Reactor Building (2), and delete the four (4) interior groundwater monitors in the Diesel Generator Building;

Item 2) Introduce one (1) alarm level for the Auxiliary Building monitors; and,

Item 3) Change the unit shutdown requirement from one (1) alarmed monitor to three (3) alarmed monitors out of a total of five (5) for the Auxiliary Building.

Item 1:

The Reactor Buildings have been analyzed and qualified by Duke Design Engineers for a maximum groundwater level of 760 feet MSL without adverse effects from lateral pressures, uplift, or overturning due to buoyancy. Elevation 760 feet MSL is the Full Pond Elevation for Lake Norman. Any groundwater rise of this magnitude would occur with Lake Norman as the source.

The Diesel Generator Buildings are not specifically designed for lateral pressures due to a hydrostatic loading with a groundwater level of 760 feet MSL; however, the Diesel Generator Buildings were designed for loading cases that exceed the groundwater loadings that could occur. Therefore, it has been determined by Duke Design Engineering that hydrostatic loads due to groundwater are negligible compared to design loads for these buildings. Additionally, the Diesel Generator Buildings have been analyzed for uplift and overturning due to buoyancy and are structurally acceptable for a groundwater elevation of up to 760 feet MSL.

Based on Duke Design Engineering analysis, both the Reactor and Diesel Generator Buildings are designed for a groundwater elevation of 760 feet MSL which is also the full pond level for Lake Norman; therefore, it is not necessary to continue monitoring the groundwater levels at lower elevations for these buildings. Accordingly, the two (2) exterior groundwater monitors next to the Unit One and Two (2) Reactor Buildings and the four (4) interior groundwater monitors inside the Unit One and two Diesel Generator Buildings would be deleted from McGuire Technical Specification 3/4.7.13.

Item 2:

Currently, as required by Technical Specification 3/4.7.13, action is required when the groundwater level alarm, "Alert" is activated. In the revised Technical Specification, action is not required until three (3) out of five (5) Technical Specification groundwater monitors for the Auxiliary Building alarm at elevation 731 feet MSL.

The Auxiliary Building has been analyzed for uplift and overturning in addition to local hydrostatic stresses that could be induced laterally on the exterior walls. The exterior walls are qualified for a lateral hydrostatic load due to a maximum groundwater elevation of 760 feet MSL (full pond level of Lake Norman). The governing failure mode of the Auxiliary Building is overturning of the building and would require an increase in groundwater around the entire perimeter or a large portion of the perimeter of the Auxiliary Building to cause this affect. Elevation 737 feet MSL has been calculated to be the maximum level that groundwater could rise before overturning would be initiated.

The revised Technical Specification would require action to be taken to put both Units One and Two be in Mode 5, Cold Shutdown within 42 hours after three (3) out of the five (5) groundwater alarms for the Auxiliary Building are activated at 731 feet MSL. The minimum elevation for groundwater to initiate an overturning failure of the Auxiliary Building is elevation 737 feet MSL. Therefore, action is initiated at a groundwater level well below the potential failure limit of 737 feet MSL.

Using McGuire FSAR Figure 2B-8, (Volume 2, Appendix B) Duke estimates that it would take approximately 9.5 days for the groundwater to rise from elevation 731 feet MSL to elevation 737 feet MSL. Therefore, the time duration of 42 hours, proposed by Duke, to bring the units to Mode 5, Cold Shutdown, is clearly adequate to safely shutdown the plant and establish decay heat removal, and to take action(s) to eliminate the source of groundwater rise to the extent possible.

Item 3:

Presently, Technical Specification 3/4.7.13 requires that action be taken when one (1) of the eleven (11) alarms is activated at elevations 718 feet MSL, 721 feet MSL, and 731 feet MSL. The proposed Technical Specification would require three (3) of the five (5) groundwater monitor alarms for the Auxiliary Building to be activated before action to shut down the units is required. As specified in the previous discussion, the exterior Auxiliary Building walls

are structurally acceptable for hydrostatic pressure from a groundwater elevation of 760 feet MSL (full pond level of Lake Norman). Therefore, the additional groundwater monitors (the other 6 of the total 11 used for the Reactor and Diesel Generator Buildings) are not necessary for Technical Specification monitoring of the Auxiliary Building; however, would be used by Operations as an indication of any localized groundwater increases. The failure mode of overturning of the Auxiliary Building would require that groundwater be at elevation 737 feet MSL around the entire perimeter or a large portion of the perimeter of the Auxiliary Building to cause a buoyancy effect on the building. This however, is not a realistic event since the Reactor and Turbine Buildings shield portions of the Auxiliary Building perimeter from potential groundwater increases. However, Duke conservatively has assumed that the Auxiliary Building will be subject to overturning due to groundwater buoyancy force and believes the proposed Technical Specification revision would provide assurance that groundwater would be properly monitored and prevented from ever reaching the potential failure limit.

As shown in McGuire FSAR Figure 2.4.13-1, there is one (1) exterior groundwater monitor on the West exterior wall of the Auxiliary Building (Column Line 49); and, one (1) exterior groundwater monitor on the East exterior wall of the Auxiliary Building (Column Line 63). Additionally, there are three (3) interior monitors located along the North exterior wall of the Auxiliary Building, (on Column Lines PP & QQ) which is the side of the Auxiliary Building adjacent to Lake Norman. This layout of five (5) groundwater monitors provides for monitoring on all sides of the Auxiliary Building that are not bordered by the Turbine and Reactor Buildings. By requiring three (3) out of the five (5) groundwater monitors to be activated at elevation 737 feet MSL before any action is required by Technical Specifications, Duke will be providing for a more realistic indication of a potential groundwater buoyancy effect on the Auxiliary Building. Any three (3) alarmed groundwater monitors would indicate that the groundwater is spread out over a relatively wide area. The revision to the Technical Specification would be conservative in that there may be three (3) alarmed groundwater monitors which might indicate groundwater on only two (2) sides of the Auxiliary Building; thus, having a

non-buoyancy effect. However, the proposed Technical Specification would require Units 1 and 2 to begin going to Mode 5, Cold Shutdown nonetheless, until resolution of the increased groundwater has been achieved.

In addition to the requirements of the proposed Technical Specification, McGuire procedures will be utilized for response by Operations to groundwater alarms below the Technical Specification action level on the Technical Specification groundwater monitors and also on the non-Technical Specification groundwater monitors for the Reactor and Diesel Generator Buildings. Additionally by procedure, if three (3) out of the five (5) Technical Specification groundwater monitors alarm at the Alert or Hi alarm levels, Operations will be required to notify Duke Design Engineering for identification and resolution of the problem to further ensure groundwater level remains below the Technical Specification action level of 731 feet MSL and the potential failure limit of 737 feet MSL. The procedures discussed are existing Operations procedures that will be revised to conform to this revision and will be ready for implementation upon receipt of approval of this proposed revision.

Analysis of Significant Hazards Considerations

As required by 10CFR 50.91, this analysis is provided concerning whether the proposed Technical Specification changes involve significant hazards considerations as defined by 10CFR 50.92. Standards for determination that a proposed amendment involves no significant hazards considerations are if operation of the facility in accordance with the proposed change would not:

1) Involve a significant increase in the probability or consequences of an accident previously evaluated;

2) Create the possibility of a new or different kind of accident from any accident previously evaluated; or,

3) Involve a significant reduction in a margin of safety.

The proposed revision does not involve a significant hazards consideration because operation of McGuire Units One and Two in accordance with this revision would not involve a significant increase in the probability or consequences of an accident previously evaluated. Duke Design Engineering has analyzed the McGuire Auxiliary, Reactor and Diesel Generator Buildings and determined that only the Auxiliary Building is subject to adverse affects due to groundwater buoyancy forces that would result in overturning of the building at a groundwater level of elevation 737 feet MSL. However, a groundwater increase of a magnitude that would involve the entire perimeter or majority of the perimeter of the Auxiliary Building walls would be required to cause this affect. Therefore, the five (5) groundwater monitors would have 3 alarm levels: Alert; Hi; and Hi-Hi (731 feet MSL). The lower alarm levels would be responded to as required by McGuire Operations procedures; however, these alarms are not included in the Technical Specification as action requirement levels. The Technical Specification Action requirement level of 731 feet MSL would place Units 1 and 2 in an action statement if 3 out of the 5 groundwater monitors alarm at this level. If groundwater level cannot be reduced within one hour to below 731 feet MSL, Units 1 and 2 would be required by Technical Specification to go to Mode 5 Cold Shutdown. Based on Duke Design Engineering analysis, with the groundwater level at 731 feet MSL, it would take a minimum of 9.5 days (using McGuire FSAR Figure 2B-8, Volume 2, Appendix B) for the groundwater level to rise to elevation 737 feet MSL which is the potential failure limit for the Auxiliary Building. Therefore, the proposed revision does not involve a significant increase in the probability or consequences of an accident previously analyzed.

The proposed revision does not involve a significant hazards consideration because operation of McGuire Units One and Two in accordance with this Technical Specification revision would not create the possibility of a new or different kind of accident from any accident previously evaluated. Duke has analyzed Reactor, Auxiliary, and Diesel Generator Building lateral pressures due to hydrostatic loading, uplift and overturning due to buoyancy from a groundwater level of 760 feet MSL, and has determined that the Reactor and

Diesel Generator Buildings are structurally acceptable for a maximum groundwater elevation of 760 feet MSL (full pond level of Lake Norman). The Auxiliary Building walls are also structurally acceptable for a maximum groundwater elevation of 760 feet MSL from lateral hydrostatic loadings. However, it has been determined that the governing potential failure mode for the Auxiliary Building is overturning of the building due to buoyancy at elevation 737 feet MSL; however, a majority of the perimeter of the building would have to be subjected to the increase in groundwater level. The proposed Technical Specification sets the unit shutdown limit at 731 feet MSL with a three (3) out of five (5) groundwater monitor alarm, at which point it is calculated that it would take a minimum of 9.5 days for groundwater level to increase to the potential failure limit of 737 feet MSL. Therefore, Duke believes that the proposed revision does not create the possibility of a new or different kind of accident from any previously evaluated.

The proposed revision does not involve a significant hazards consideration because the operation of McGuire Units One and Two in accordance with this revision would not involve a significant reduction in a margin of safety in that the proposed revision will change the technical specification that requires action based on a single localized increase in groundwater that, by design analysis, does not affect nuclear safety to a specification that realistically monitors groundwater by use of a non-localized method where an increase of such a magnitude as to involve a large perimeter of the Auxiliary Building would be significant. However, the revision does relax the present requirements of Technical Specification 3/4.7.13. The present Technical Specification requires the monitoring of the Reactor and Diesel Generator Buildings which are structurally qualified to withstand all groundwater effects up to 760 feet MSL and under the new technical specification only the Auxiliary Building is included. Additionally, 760 feet MSL is the highest level groundwater could rise at the site which is the grading level of the yard and the full pond level of Lake Norman. The present Technical Specification requires the unit to be shut down based on localized increases in groundwater which is overly conservative based on Duke's findings that a majority of the Auxiliary Building perimeter must be affected before the groundwater rise can affect the structure. The proposed revision, based on Duke Design Engineering studies,

is a more realistic method of monitoring groundwater levels and for protecting the Auxiliary Building from the affects of a large increase in groundwater level. The margin of safety is reduced; however, this reduction is clearly acceptable based on design analysis. The Technical Specification is going from "extremely conservative" to "conservative" and does not involve a significant reduction in the margin of safety. In addition to the requirements specified in the proposed Technical Specification, Duke will modify and utilize existing McGuire procedures to investigate and resolve any increases in groundwater levels below the Technical Specification alarm level of 731 feet MSL, whether localized or non-localized increases, using all eleven (11) of the groundwater monitors.

Therefore, based on the above considerations, Duke believes this proposed revision does not involve a significant hazards consideration.