



REGIS T. REPKO
Vice President
McGuire Nuclear Station

Duke Energy
MG01VP / 12700 Hagers Ferry Rd.
Huntersville, NC 28078

980-875-4111
980-875-4809 fax
regis.repko@duke-energy.com

10 CFR 50.90

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U. S. Nuclear Regulatory Commission
Document Control Desk
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Subject: Duke Energy Carolinas, LLC (Duke Energy)
McGuire Nuclear Station (McGuire), Units 1 and 2
Docket Nos. 50-369 and 50-370
Amendment to Technical Specification 3.8.1, "AC Sources-Operating,"

Pursuant to 10 CFR 50.90, Duke Energy is submitting a License Amendment Request (LAR) to revise Technical Specification (TS) 3.8.1 for McGuire Units 1 and 2.

The proposed LAR revises TS Surveillance Requirement (SR) 3.8.1.14 by modifying the 24 hour endurance test whereby the two hour at 105-110 % of continuous duty rating test (two hour margin test) would no longer be required to be performed on a routine (18 months) basis as long as the maximum diesel generator loading remains at or below the machine's continuous duty rating of 4000 kW. This modification also is an exception to Regulatory Guide 1.9, Revision 3, Regulatory Position 2.2.9.

The Enclosure provides Duke Energy's evaluation of the changes. The proposed TS and TS Bases page markups are included as attachments to the Enclosure. The proposed TS Bases changes are provided for your information only and do not require your approval. Reprinted TS pages will be provided to the NRC prior to issuance of the approved amendments. This LAR contains no NRC commitments.

By letter dated March 24, 2010, Duke Energy submitted a LAR requesting relocation of specific TS SR frequencies to a licensee controlled program consistent with TS Task Force 425, Revision 3. That LAR contained some of the same TS pages affected by this submittal. Duke Energy will track these LARs such that one does not inadvertently undo previously approved amendments. Duke Energy requests NRC assistance in this matter. It should be noted that neither LAR relies on the approval of the other.

Duke Energy requests NRC approval of these proposed changes as soon as reasonably possible. The NRC's standard 30-day implementation grace period will be sufficient to implement this LAR.

Revisions to the McGuire Updated Final Safety Analysis Report, necessary to reflect approval of this LAR, will be made in accordance with 10 CFR 50.71(e).

In accordance with Duke Energy internal procedures and the Quality Assurance Topical Report, the proposed LAR has been reviewed and approved by the McGuire Plant Operations Review Committee.

Pursuant to 10 CFR 50.91, a copy of this LAR has been forwarded to the appropriate North Carolina state officials.

Please direct any questions you may have in this matter to P. T. Vu at (980) 875-4302.

Very truly yours,



Regis T. Repko

Enclosure

xc w/ Attachments:

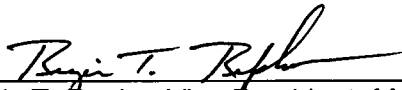
L. A. Reyes
Administrator, Region II
U. S. Nuclear Regulatory Commission
Marquis One Tower
245 Peachtree Center Ave., NE Suite 1200
Atlanta, GA 30303-1257

J. B. Brady
NRC Senior Resident Inspector
McGuire Nuclear Station

J. H. Thompson (addressee only)
NRC Project Manager
U. S. Nuclear Regulatory Commission
Mail Stop O-8 G9A
Washington, DC 20555-0001

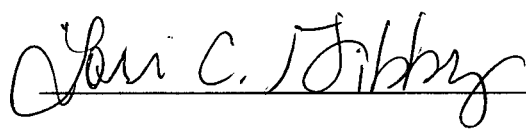
W. L. Cox, III, Section Chief
Division of Environment Health, Radiation Protection Section
North Carolina Department of Environmental and Natural Resources
1645 Mail Service Center
Raleigh, NC 27699-1645

Regis T. Repko affirms that he is the person who subscribed his name to the foregoing statement, and that all the matters and facts set forth herein are true and correct to the best of his knowledge.



Regis T. Repko, Vice President, McGuire Nuclear Station

Subscribed and sworn to me: 4/26/2010
Date


_____, Notary Public

My commission expires: July 1, 2012
Date



ENCLOSURE

EVALUATION OF PROPOSED CHANGE

Subject: License Amendment Request to Revise Technical Specification
Surveillance Requirement 3.8.1.14 – Emergency Diesel Generator
24-Hour Endurance Test

- 1.0 SUMMARY DESCRIPTION
- 2.0 DETAILED DESCRIPTION
- 3.0 TECHNICAL EVALUATION
- 4.0 REGULATORY EVALUATION
 - 4.1 Applicable Regulatory Requirements/Criteria
 - 4.2 Significant Hazards Consideration
 - 4.3 Conclusions
- 5.0 ENVIRONMENTAL CONSIDERATION
- 6.0 PRECEDENT
- 7.0 REFERENCES

ATTACHMENTS:

- 1. Technical Specification Page Markups
- 2. Technical Specification Bases Page Markups

1.0 SUMMARY DESCRIPTION

Pursuant to 10 CFR 50.90, Duke Energy is submitting a LAR to revise TS SR 3.8.1.14 by modifying the 24 hour endurance test whereby the two hour at 105 -110 % of continuous duty rating test (two hour margin test) would no longer be required to be performed on a routine (18 month) basis as long as the maximum diesel generator (DG) loading remains at or below the machine's continuous duty rating of 4000 kW.

The proposed change will reduce unnecessary wear of the diesel engines, thereby increasing their life and reliability as a source of standby emergency electrical power. Since the maximum DG loading does not exceed the continuous duty rating of 4000 kW, there is no benefit from subjecting the DG to an additional load of 10 % of its continuous duty rating.

2.0 DETAILED DESCRIPTION

The McGuire onsite electrical power system consists of all sources of electrical power and their associated distribution systems in each of the two generating units. These sources are the main generator, two DGs and the batteries.

Each unit has two redundant and independent 4160 Volt Essential Auxiliary Power (EPC) systems which normally receive power from the normal power distribution system. After verification of a loss of offsite power (LOOP) or a sustained degraded offsite power condition, the normal and alternate incoming feeder circuit breakers automatically trip. During these conditions, power to each of the EPC systems is provided by a completely independent DG unit. Each of the EPC systems is totally capable of fulfilling its design function independently. There are no overlapping electrical loads shared between these systems. A loss of one DG does not increase the demand on the other DG.

The diesel engines at McGuire were originally purchased for a continuous duty rating of 3500 kW. In 1972, Nordberg, the engine manufacturer, was contracted to upgrade the engines to 4000 kW continuous duty rating (the generators were already rated for continuous 4000 kW). The manufacturer replaced the pistons, changed the main and connecting rod bearings from aluminum shell to tri-metal, and changed the inlet valve timing lead mechanism. Nordberg subsequently re-rated the engines to the requested continuous duty rating of 4000 kW.

TS SR 3.8.1.14 presently requires an endurance test be performed during which the DGs are continuously operated ≥ 24 hours of which \geq two hours include a load of ≥ 4200 kW and ≤ 4400 kW. The remainder of the test is performed with the load ≥ 3600 kW and ≤ 4000 kW.

The proposed LAR revises TS SR 3.8.1.14 by modifying the existing 24 hour endurance test whereby the two hour margin test would no longer be required to be performed on a routine (18 month) basis so long as the maximum DG loading remains at or below the machine's continuous duty rating of 4000 kW.

3.0 TECHNICAL EVALUATION

The DGs are designed to provide power to their respective safety-related electrical buses in the event of a LOOP with or without a coincident Engineered Safety Feature (ESF) actuation on the

related reactor unit. When called upon, the DG is loaded automatically by the sequencer in load groups. As listed in the table below (References 1 and 2), the maximum DG loading is 3830 kW, or 95.75 % of the DG's continuous duty rating.

McGuire current DG rating and bus loading during limiting accident conditions (assuming nominal values for bus voltage and frequency)	
Engine Continuous Duty Rating	4000 kW
90% - 100%	3600 - 4000 kW
105 - 110%	4200 - 4400 kW
LOOP/ESF loads - peak steady state load (assuming minimum flow for the Auxiliary Feedwater Pump)	Bus 1A: 3826 kW (95.65 %) Bus 1B: 3826 kW (95.65 %) Bus 2A: 3830 kW (95.75 %) Bus 2B: 3827 kW (95.68 %)
LOOP only loads - peak steady state load	Bus 1A: 3394 kW (84.85 %) Bus 1B: 3565 kW (89.13 %) Bus 2A: 3378 kW (84.45 %) Bus 2B: 3589 kW (89.73 %)

When worst case conditions allowed by TS 3.8.1 are assumed for bus voltage and frequency (i.e., 4580 V and 61.2 Hz), the maximum DG loading during ESF actuation coincident with a LOOP event is 3907 kW (References 1 and 2), or 97.68 % of the DG's continuous duty rating. McGuire's engineering change process and procedural limitations do not allow the maximum bus loading to exceed the continuous duty rating. Although operation of the DG at 105-110 % capacity is possible, loads of this magnitude cause the engine to operate at its peak and the engine turbocharger perform close to its upper speed limit. This tends to un-necessarily challenge the engine's life. Since the maximum DG loading does not exceed the continuous duty rating of 4000 kW, there is no benefit from subjecting the DG to an additional load of 10 % of its continuous duty rating.

4.0 REGULATORY EVALUATION

4.1 Applicable Regulatory Requirements/Criteria

10 CFR 50, Appendix A, General Design Criterion 17 (GDC-17) (Reference 3) requires, in part, that nuclear power plants have an onsite and offsite electric power system to permit the functioning of structures, systems and components important to safety. The onsite system is required to have sufficient independence, redundancy and testability to perform its safety function, assuming a single failure, and the offsite system is required to be supplied by two independent circuits. In addition, GDC-17 requires provisions to minimize the probability of losing electric power from the remaining electric power supplies as the result of loss of power from the unit, the offsite transmission network, or the onsite power supplies.

GDC-18 (Reference 4) requires that electric power systems important to safety be designed to permit appropriate periodic inspection and testing.

RG 1.9 (Reference 5), Regulatory Position 2.2.9 requires demonstration of full-load carrying capability at a power factor between 0.8 and 0.9 for an interval of not less than 24 hours, of which two hours are at a load equal to 105 to 110 % of the continuous rating of the emergency diesel generator, and two hours are at a load equal to 90 to 100 % of its continuous rating and

verify that voltage and frequency requirements are maintained. This LAR proposes an exception to this regulatory position such that the two hour at 105-110 % of continuous duty rating test would no longer be required as long as the maximum DG loading remains at or below the machine's continuous duty rating.

4.2 Significant Hazards Consideration

Duke Energy has evaluated whether or not a significant hazards consideration is involved with the proposed amendment by focusing on the three standards set forth in 10 CFR 50.92, "Issuance of amendment," as discussed below:

1. Does the proposed amendment involve a significant increase in the probability or consequences of an accident previously evaluated?

Response: No.

Implementation of the proposed amendment does not significantly increase the probability or the consequences of an accident previously evaluated. The DGs and their associated emergency buses function as accident mitigators. The proposed change does not involve a change in the operational limits or the design of the electrical power systems (particularly the emergency power systems), change the function or operation of plant equipment, or affect the response of that equipment when called upon to operate.

The proposed change will not result in an increase in the consequences of accidents previously evaluated. The ability of the DGs to respond to a design basis accident will not be adversely affected by the proposed change.

Thus, based on the above, the proposed change does not involve a significant increase in the probability or consequences of an accident previously evaluated.

2. Does the proposed amendment create the possibility of a new or different kind of accident from any accident previously evaluated?

Response: No.

The proposed change does not involve a change in the operational limits or the design capabilities of the emergency electrical power systems. The proposed change does not change the function or operation of plant equipment. The proposed change does not introduce any new or different types of failure mechanisms; plant equipment will continue to respond as designed and analyzed.

3. Does the proposed amendment involve a significant reduction in the margin of safety?

Response: No.

Margin of safety is related to the confidence in the ability of the fission product barriers to perform their design functions during and following an accident situation. These barriers

include the fuel cladding, the reactor coolant system, and the containment system. The performance of these barriers will not be impacted by the proposed change.

The proposed change does not change the function or operation of plant equipment or affect the response of that equipment if it is called upon to operate. The performance capability of the DGs will not be affected. DG reliability and availability will be improved by implementation of the proposed change.

Thus, it is concluded that the proposed change does not involve a significant reduction in the margin of safety.

Based on the above, Duke Energy concludes that the proposed amendment does not involve a significant hazards consideration under the standards set forth in 10 CFR 50.92(c), and, accordingly, a finding of "no significant hazards consideration" is justified.

4.3 Conclusions

In conclusion, based on the considerations discussed above, (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, (2) such activities will be conducted in compliance with the Commission's regulations, and (3) the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

5.0 ENVIRONMENTAL CONSIDERATION

The proposed change does not involve (i) a significant hazards consideration, (ii) a significant change in the types or a significant increase in the amounts of any effluents that may be released offsite, or (iii) a significant increase in individual or cumulative occupational radiation exposure. Accordingly, the proposed amendment meets the eligibility criterion for categorical exclusion set forth in 10 CFR 51.22(c)(9). Therefore, pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the proposed amendment.

6.0 PRECEDENT

Callaway Plant Unit 1 (Amendment 112 to FOL No. NPF-30, ADAMS Accession No. ML021630373, USNRC Safety Evaluation Report dated June 17, 1996).

Seabrook Station Unit 1 (Amendment 80 to FOL No. NPF-86, ADAMS Accession Nos. ML020330118 and ML020700335, USNRC Safety Evaluation Report dated March 7, 2002).

7.0 REFERENCES

1. MCC-1381.05-00-0260, Revision 5, "McGuire Nuclear Station Unit 1, 4.16kV Essential Auxiliary Power System (EPC) Diesel Generator Dynamic Loading Analysis Using ETAP."
2. MCC-1381.05-00-0266, Revision 3, "McGuire Nuclear Station Unit 2, 4.16kV Essential Auxiliary Power System (EPC) Diesel-Generator (D/G) Dynamic Loading Analysis."

3. 10 CFR 50, Appendix A, GDC-17, "Electric Power Systems."
4. 10 CRR 50, Appendix A, GDC-18, "Inspection and Testing of Electric Power Systems."
5. Regulatory Guide 1.9, Revision 3, "Selection, Design, Qualification, and Testing of Emergency Diesel Generator Units Used as Class 1E Onsite Electrical Power Systems at Nuclear Power Plants."

ATTACHMENT 1
TECHNICAL SPECIFICATION PAGE MARKUPS

SURVEILLANCE REQUIREMENTS (continued)

SURVEILLANCE	FREQUENCY
<p>SR 3.8.1.13 Verify each DG's non-emergency automatic trips are bypassed on actual or simulated loss of voltage signal on the emergency bus concurrent with an actual or simulated ESF actuation signal.</p>	<p>18 months</p>
<p>SR 3.8.1.14 -----NOTES-----</p> <ol style="list-style-type: none"> 1. Momentary transients outside the load range do not invalidate this test. 2. DG loadings may include gradual loading as recommended by the manufacturer. <p>-----</p> <p>Verify each DG, when connected to its bus in parallel with offsite power and operating with maximum kVAR loading that offsite power conditions permit, operates for :</p> <p>> 24 hours:</p> <p><i>Insert 1</i> { a. For ≥ 2 hours loaded ≥ 4200 kW and ≤ 4400 kW, and</p> <p>b. For the remaining hours of the test loaded > 3600 kW and ≤ 4000 kW.</p>	<p>18 months</p>

(continued)

Insert 1:

- a. ≥ 24 hours loaded to ≥ 3600 kW and ≤ 4000 kW if maximum DG loading is less than or equal to continuous duty rating of 4000 kW, or
- b. ≥ 2 hours loaded to ≥ 4200 kW and ≤ 4400 kW and ≥ 22 hours loaded to ≥ 3600 kW and ≤ 4000 kW if maximum DG loading is greater than continuous duty rating of 4000 kW.

ATTACHMENT 2

TECHNICAL SPECIFICATION BASES PAGE MARKUPS

(FOR INFORMATION ONLY)

SURVEILLANCE REQUIREMENTS (continued)

The non-emergency automatic trips are all automatic trips except:

- a. Engine overspeed;
- b. Generator differential current;
- c. Low lube oil pressure; and
- d. Generator voltage - controlled overcurrent.

The non-emergency trips are bypassed during DBAs and provide an alarm on an abnormal engine condition. This alarm provides the operator with sufficient time to react appropriately. The DG availability to mitigate the DBA is more critical than protecting the engine against minor problems that are not immediately detrimental to emergency operation of the DG.

The 18 month Frequency is consistent with Regulatory Guide 1.9 (Ref. 3) Table 1, taking into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths. Operating experience has shown that these components usually pass the SR when performed at the 18 month Frequency. Therefore, the Frequency was concluded to be acceptable from a reliability standpoint.

This SR is not normally performed in MODE 1 or 2, but it may be performed in conjunction with periodic preplanned preventative maintenance activity that causes the DG to be inoperable. This is acceptable provided that performance of the SR does not increase the time the DG would be inoperable for the preplanned preventative maintenance activity.

Should maximum DG loading be greater than 4000 kW, this Surveillance requires demonstration that the DGs can operate for an interval of not less than 2 hours

SR 3.8.1.14

Regulatory Guide 1.9 (Ref. 3), paragraph 2.2.9, requires demonstration once per 18 months that the DGs can start and run continuously at full load capability for an interval of not less than 24 hours. 2 hours of which is at a load equivalent from 105% to 110% of the continuous duty rating and the remainder of the time at a load equivalent to the continuous duty rating of the DG. The DG starts for this Surveillance can be performed either from standby or hot conditions. The provisions for prelubricating and warmup, discussed in SR 3.8.1.2, and for gradual loading, discussed in SR 3.8.1.3, are applicable to this SR.

SURVEILLANCE REQUIREMENTS (continued)

This Surveillance is performed with the DG connected to its bus in parallel with offsite power supply. The DG is tested under maximum kVAR loading, which is defined as being as close to design basis conditions as practical subject to offsite power conditions. Design basis conditions have been calculated to be greater than 0.9 power factor. During DG testing, equipment ratings are not to be exceeded (i.e., without creating an overvoltage condition on the DG or 4 kV emergency buses, over-excitation in the generator, or overloading the DG emergency feeder while maintaining the power factor greater than or equal to 0.9).

The load band is provided to avoid routine overloading of the DG. Routine overloading may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY.

The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3) Table 1, takes into consideration unit conditions required to perform the Surveillance, and is intended to be consistent with expected fuel cycle lengths.

This Surveillance is modified by two Notes. Note 1 states that momentary transients due to changing bus loads do not invalidate this test. Note 2 allows gradual loading of the DG in accordance with recommendation from the manufacturer.

This Surveillance should be conducted on only one DG at a time in order to avoid common cause failures that might result from offsite circuit or grid perturbations.

SR 3.8.1.15

This Surveillance demonstrates that the diesel engine can restart from a hot condition, such as subsequent to shutdown from normal Surveillances, and achieve the required voltage and frequency within 11 seconds. The 11 second time is derived from the requirements of the accident analysis to respond to a design basis large break LOCA. The 18 month Frequency is consistent with the recommendations of Regulatory Guide 1.9 (Ref. 3) Table 1.

This SR is modified by two Notes. Note 1 ensures that the test is performed with the diesel sufficiently hot. The load band is provided to avoid routine overloading of the DG. Routine overloads may result in more frequent teardown inspections in accordance with vendor recommendations in order to maintain DG OPERABILITY. The requirement that the diesel has operated for at least 2 hours at full load