



DAVE BAXTER  
Vice President  
Oconee Nuclear Station

Duke Energy  
ON01VP / 7800 Rochester Highway  
Seneca, SC 29672

864-873-4460  
864-873-4208 fax  
dabaxter@dukeenergy.com

December 17, 2009

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

Subject: Duke Energy Carolinas, LLC  
Oconee Nuclear Station, Units 1, 2, and 3  
Docket Numbers 50-269, 50-270, and 50-287  
Revised Duke Comments on Draft NRC Safety Evaluation for Acceptance  
of the Oconee Reactor Protective System and Engineered Safeguards  
Protective System Digital Upgrade

The Nuclear Regulatory Commission (NRC) provided a draft Safety Evaluation (SE) for Acceptance of the Oconee Nuclear Station (ONS) Reactor Protective System (RPS) and Engineered Safeguards Protective System (ESPS) Digital Upgrade to Duke Energy Carolinas, LLC (Duke) by letter dated October 23, 2009. Duke submitted the License Amendment Request (LAR) associated with this SE by letter dated January 31, 2008.

Duke submitted comments to the draft SE by letter dated November 19, 2009. The Enclosure revises several comments as discussed during a Duke/NRC meeting held on December 10, 2009.

If there are any questions regarding this submittal, please contact Boyd Shingleton at (864) 873-4716.

I declare under penalty of perjury that the foregoing is true and correct. Executed on December 17, 2009.

Sincerely,

Dave Baxter, Vice President  
Oconee Nuclear Station

Enclosure

ADD  
LRR

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cc: Mr. J. F. Stang, Project Manager  
Office of Nuclear Reactor Regulation  
U. S. Nuclear Regulatory Commission  
Mail Stop O-14 H25  
Washington, D. C. 20555

Mr. L. A. Reyes, Regional Administrator  
U. S. Nuclear Regulatory Commission - Region II  
Atlanta Federal Center  
61 Forsyth St., SW, Suite 23T85  
Atlanta, Georgia 30303

Mr. A. T. Sabisch  
Senior Resident Inspector (Acting)  
Oconee Nuclear Station

S. E. Jenkins, Manager  
Infectious and Radioactive Waste Management Section  
2600 Bull Street  
Columbia, SC 29201

**Enclosure**

**Revised Draft RPS/ESPS Safety Evaluation Comments**

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5	3	2.1	All		<p>The SER is based on the GDCs rather than the Oconee design criteria. Revise the SER to correlate the applicable Oconee preliminary design criteria (PDC) to the GDCs cited as applicable to the RPS/ESPS digital upgrade.</p> <p>Revise the SER as follows:</p> <p>"The SER states that the ONS design criteria called plant design criteria (PDC) were developed in consideration of the General Design Criterion (GDC) in the proposed rulemaking published for 10 CFR Part 50 in the Federal Register of July 11, 1967. As such, the ONS design criteria numbers do not directly correlate to the current GDC numbers. The staff considered the following applicable GDCs to evaluate the digital RPS/ESPS (the corresponding PDC number is provided in parenthesis after the GDC number):"</p> <p>The GDC to PDC correlation is provided in the Recommended Resolution column.</p>	<p>The Oconee PDC's correlate to the GDC's as follows:</p> <table border="1" style="width: 100%;"> <thead> <tr> <th>Appendix A GDC</th> <th>Oconee PDC</th> </tr> </thead> <tbody> <tr><td>1</td><td>1</td></tr> <tr><td>2</td><td>2</td></tr> <tr><td>4</td><td>40</td></tr> <tr><td>10</td><td>6</td></tr> <tr><td>13</td><td>12</td></tr> <tr><td>15</td><td>9</td></tr> <tr><td>16</td><td>10</td></tr> <tr><td>19</td><td>11</td></tr> <tr><td>20</td><td>14, 15</td></tr> <tr><td>21</td><td>19, 20, 21</td></tr> <tr><td>22</td><td>2, 20</td></tr> <tr><td>23</td><td>26</td></tr> <tr><td>24</td><td>22</td></tr> <tr><td>25</td><td>31</td></tr> <tr><td>29</td><td>29</td></tr> <tr><td>33</td><td>37</td></tr> <tr><td>34</td><td>37</td></tr> <tr><td>35</td><td>37</td></tr> <tr><td>38</td><td>52</td></tr> <tr><td>41</td><td>70</td></tr> </tbody> </table>	Appendix A GDC	Oconee PDC	1	1	2	2	4	40	10	6	13	12	15	9	16	10	19	11	20	14, 15	21	19, 20, 21	22	2, 20	23	26	24	22	25	31	29	29	33	37	34	37	35	37	38	52	41	70
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38	52																																															
41	70																																															
12	9	3.1	All		See Comment 5	See Comment 5																																										
243	136	3.3.1.4		5	<p>Update Section 3.3.1.4 to show how RPS/ESPS equipment complies with ERPI TR-102323 and Reg. Guide 1.1.80, Rev. 1. Revise the last 3 sentences of the paragraph as follows:</p> <p>The EMI/RFI tests performed in <b>2001 to EPRI TR-102323 Revision 1 requirements</b> are described in the TXS Supplemental Equipment Qualification Summary Test Report (Reference 129) and it referenced AREVA document 58-1018178-00, "Electromagnetic Compatibility Test Report for Framatome ANP, TELEPERM XS," providing details of the tests and test results. The NRC staff</p>	Revise as recommended.																																										

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					audited Electromagnetic Compatibility Test Report at the AREVA Rockville, Maryland, facility during a July 2009, audit. <b>Test specimens consisted of TELEPERM XS modules, interface components, and power supply components mounted in two rigid open stainless steel structures.</b> The EMC tests review is discussed and the results reported in the following subsections.													
244	137	3.3.1.4.4	4		<p>Update Section 3.3.1.4 to show how RPS/ESPS equipment complies with ERPI TR-102323 and Reg. Guide 1.1.80, Rev. 1. Revise the Table in Section 3.3.1.4.4 as follows:</p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Test Type</th> <th>Description</th> <th>Range</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td rowspan="2">IEC 61000-4-2***</td> <td>Direct discharge</td> <td>±8 kV</td> <td>Pass</td> </tr> <tr> <td>Air discharge</td> <td>±15 kV</td> <td>Pass</td> </tr> </tbody> </table> <p>*** Testing limited to closed cabinets (66-5015893-03)</p>	Test Type	Description	Range	Result	IEC 61000-4-2***	Direct discharge	±8 kV	Pass	Air discharge	±15 kV	Pass	Revise as recommended.	
Test Type	Description	Range	Result															
IEC 61000-4-2***	Direct discharge	±8 kV	Pass															
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245	137	3.3.1.4.4	5	4	<p>Update Section 3.3.1.4 to show how RPS/ESPS equipment complies with ERPI TR-102323 and Reg. Guide.1.1.80, Rev. 1.</p> <p><u>Add New Section</u></p> <p>3.3.1.4.5            <u>Additional EMC Testing</u></p> <p>The EMI/RFI tests performed in 2005 to RG 1.180 Revision 1 requirements are summarized in AREVA NP document 66-5065212-04, "Oconee Nuclear Station Unit 1 RPS/ESFAS Replacement Project Equipment Qualification Report," May 6, 2009 (LAR Supplement 18). Test specimens consisted of interface components and power supply components mounted in two rigid open stainless steel structures. The EMC test results are summarized below.</p> <p><u>Emission Testing</u></p> <table border="1" style="margin-left: 40px;"> <thead> <tr> <th>Test Type</th> <th>Description</th> <th>Range</th> <th>Result</th> </tr> </thead> <tbody> <tr> <td>CE101</td> <td>Low-frequency conducted emissions</td> <td>30 Hz to 10 kHz</td> <td>Pass</td> </tr> <tr> <td>CE102</td> <td>High-frequency conducted emissions</td> <td>10 kHz to 2 MHz</td> <td>Pass</td> </tr> </tbody> </table>	Test Type	Description	Range	Result	CE101	Low-frequency conducted emissions	30 Hz to 10 kHz	Pass	CE102	High-frequency conducted emissions	10 kHz to 2 MHz	Pass	Revise as recommended.
Test Type	Description	Range	Result															
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CE102	High-frequency conducted emissions	10 kHz to 2 MHz	Pass															

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					<p><u>Susceptibility Testing</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Test</th> <th style="width: 35%;">Type Description</th> <th style="width: 15%;">Range</th> <th style="width: 35%;">Result</th> </tr> </thead> <tbody> <tr> <td>CS101</td> <td>Low-frequency conducted susceptibility</td> <td>30 Hz to 150 kHz</td> <td>Pass</td> </tr> <tr> <td>CS114</td> <td>High-frequency conducted susceptibility</td> <td>10 kHz to 30 MHz</td> <td>Pass</td> </tr> <tr> <td>CS115</td> <td>Conducted susceptibility, bulk cable injection</td> <td>impulse excitation</td> <td>Pass</td> </tr> <tr> <td>CS116</td> <td>Conducted susceptibility, damped sinusoidal transients</td> <td>10 kHz to 100 MHz</td> <td>Pass</td> </tr> <tr> <td>RS101</td> <td>Radiated magnetic field susceptibility</td> <td>30 Hz to 100 kHz</td> <td>Pass</td> </tr> <tr> <td>RS103</td> <td>Radiated electric field susceptibility</td> <td>30 MHz to 10 GHz</td> <td>Pass</td> </tr> </tbody> </table> <p><u>Surge Withstand Capability Testing</u></p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%;">Test Type</th> <th style="width: 35%;">Description</th> <th style="width: 15%;">Range</th> <th style="width: 35%;">Result</th> </tr> </thead> <tbody> <tr> <td>IEC 61000-4-4**</td> <td>Electrical fast transient/burst immunity</td> <td>±2 kV (low exposure) ±4 kV (medium exposure)</td> <td>Pass</td> </tr> <tr> <td>IEC 61000-4-5**</td> <td>Surge immunity combination wave</td> <td>±2 kV (low exposure) ±4 kV (medium exposure)</td> <td>Pass</td> </tr> </tbody> </table>	Test	Type Description	Range	Result	CS101	Low-frequency conducted susceptibility	30 Hz to 150 kHz	Pass	CS114	High-frequency conducted susceptibility	10 kHz to 30 MHz	Pass	CS115	Conducted susceptibility, bulk cable injection	impulse excitation	Pass	CS116	Conducted susceptibility, damped sinusoidal transients	10 kHz to 100 MHz	Pass	RS101	Radiated magnetic field susceptibility	30 Hz to 100 kHz	Pass	RS103	Radiated electric field susceptibility	30 MHz to 10 GHz	Pass	Test Type	Description	Range	Result	IEC 61000-4-4**	Electrical fast transient/burst immunity	±2 kV (low exposure) ±4 kV (medium exposure)	Pass	IEC 61000-4-5**	Surge immunity combination wave	±2 kV (low exposure) ±4 kV (medium exposure)	Pass	
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IEC 61000-4-12**	Ring wave immunity	±2 kV (low exposure) ±4 kV (medium exposure)	Pass							
246					Not used					
293	186	3.4.5	5	2	<p>The draft SER states that "...The digital RPS/ESPS equipment is powered by redundant 120 VAC / 24 VDC Absopulse power supplies, model <b>PFC419-Q9418</b>." Part number PFC419-Q9418 is the Absopulse part number for the power supply. Part number ARV419-Q9418 is the AREVA part number for the AREVA-qualified version of Absopulse power supply. The AREVA part number is the correct one to use for Oconee's application.</p>	<p>Revise to state "...The digital RPS/ESPS equipment is powered by redundant 120 VAC / 24 VDC Absopulse power supplies, model <b>ARV419-Q9418</b>."</p>				