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Guidelines for Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems

Comment On: NRC-2018-0076-0001

Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems

Document: NRC-2018-0076-DRAFT-0006

Comment on FR Doc # 2018-08493

Submitter Information

Name: Susan Mitchell

Submitter's Representative: Kari Osborne

Organization: Southern Nuclear Operating Company

General Comment

See attached file(s)

Attachments

NL-18-0835

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Eudy, Thomas Boyce

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NL-18-0835

Southern Nuclear Operating Company Comments on Draft Regulatory Guide DG-1333,
"Evaluating Electromagnetic and Radio-Frequency Interference in
Safety-Related Instrumentation and Control Systems," Docket ID NRC-2018-0076

Dear Ms. Ma:

In response to Federal Register Notice 83 FR 17867 released on April 24, 2018, Southern Nuclear Operating Company (SNC) is hereby providing comments on draft Regulatory Guide (RG) DG-1333, "Evaluating Electromagnetic and Radio-Frequency Interference in Safety-Related Instrumentation and Control Systems," (Docket ID NRC-2018-0076).

SNC has reviewed the draft RG and has comments as detailed in the attachment to this letter.

This letter contains no NRC commitments. If you have any questions, please contact me at 205.992.5998.

Respectfully submitted,

Justin T. Wheat
Nuclear Licensing Manager

JTW/kmo/cag

Attachment: SNC Comments on Docket ID NRC-2018-0076

cc: Southern Nuclear Operating Company
Mr. M. D. Meier, Vice President – Regulatory Affairs
Mr. E. Berry, Vogtle 1 & 2 Engineering Director
Mr. T. M. Drouin, Fleet Engineering Director
SNC Document Services - RType: CGA02.001

**Southern Nuclear Operating Company Comments on Draft Regulatory Guide DG-1333,
“Evaluating Electromagnetic and Radio-Frequency Interference in
Safety-Related Instrumentation and Control Systems,” Docket ID NRC-2018-0076**

Attachment

SNC Comments on Docket ID NRC-2018-0076

SNC Comments on Docket ID NRC-2018-0076

#	Identifier (Section, Page, Paragraph)	Comment	Proposed Resolution
1.	<ul style="list-style-type: none"> - Part "A. Introduction;" <ul style="list-style-type: none"> o Section "Related Guidance;" <ul style="list-style-type: none"> ▪ Page 3 <ul style="list-style-type: none"> • 5th Bullet 	<p>RG 1.89, "Environmental Qualification of Certain Electric Equipment Important to Safety for Nuclear Power Plants" is listed in the "Related Guidance". However, the RG does not address EMI specifically. Traditionally EQ does not include EMI which is why it has its own separate RG.</p>	<p>Recommend deleting the reference to RG 1.89.</p>
2.	<ul style="list-style-type: none"> - Part "B. Discussion;" <ul style="list-style-type: none"> o Section "Reason for Revision" & "Background;" <ul style="list-style-type: none"> ▪ Page 5 	<p>EPRI TR-102323 has been the key document for the nuclear industry for EMI for many years and there needs to be a clear reason why this version of the RG is silent on the document.</p>	<p>Recommend that either the "Reason for Revision" or "Background" sub-sections address why the NRC no longer endorses EPRI TR-102323.</p>
3.	<ul style="list-style-type: none"> - Part "B. Discussion;" <ul style="list-style-type: none"> o Section "Background;" <ul style="list-style-type: none"> ▪ Page 5 <ul style="list-style-type: none"> • 1st Paragraph 		<p>Recommend providing a reference that supports the claim in the first paragraph of subsection "Background" that states "However, the electronic architecture used with these technologies may be more sensitive to the nuclear power plant EMI/RFI environment than existing I&C systems." If there is no research to support this claim, then recommend removing the statement.</p>
4.	<ul style="list-style-type: none"> - Part "B. Discussion;" <ul style="list-style-type: none"> o Section "Background;" <ul style="list-style-type: none"> ▪ Page 5 <ul style="list-style-type: none"> • 3rd Paragraph; <ul style="list-style-type: none"> o 3rd Sentence 	<p>The word "recent" is a holdover from the RG version that was issued 15 years ago. Therefore, it no longer seems appropriate.</p>	<p>Recommend deleting "recent."</p>

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5.	<ul style="list-style-type: none"> - Part "B. Discussion;" <ul style="list-style-type: none"> o Section "Background;" <ul style="list-style-type: none"> ▪ Page 5 <ul style="list-style-type: none"> • 4th Paragraph o 2nd Sentence 	<p>The statement "and non-safety-related I&C system whose failure can affect safety functions" is inconsistent with the title for the RG which limits the guidance to "Safety-Related Instrumentation and Control Systems". The wording is inconsistent with the title and involves expanding the scope of the guidance.</p>	<p>Recommend removing the statement "and non-safety-related I&C system whose failure can affect safety functions".</p>
6.	<ul style="list-style-type: none"> - Part "C. Staff Regulatory Guidance;" <ul style="list-style-type: none"> o Section "1. General;" <ul style="list-style-type: none"> ▪ Page 8 <ul style="list-style-type: none"> • 2nd Paragraph o 4th Sentence 	<p>The statement "and non-safety-related systems and components whose operation can affect safety-related system or component functions" is inconsistent with the title for the RG which limits the guidance to "Safety-Related Instrumentation and Control Systems." The wording is inconsistent with the title and involves expanding the scope of the guidance.</p>	<p>Recommend removing the statement "and non-safety-related systems and components whose operation can affect safety-related system or component functions."</p>
7.	<ul style="list-style-type: none"> - Part "C. Staff Regulatory Guidance;" <ul style="list-style-type: none"> o Section "1. General;" <ul style="list-style-type: none"> ▪ Page 8; <ul style="list-style-type: none"> • 3rd Paragraph; o Last Sentence 	<p>The 8-decibel margin requirement is one of the primary obstacles to implementing enhancements to the stations. It essentially imposes a 250% margin on exclusion distances. Based upon changes to EMI regulations in other federally regulated industries like aviation and communications, this margin needs to be critically examined. The research, experience, and improvements in devices can easily be used to justify the reduction of the 250% margin.</p>	<p>Recommend reducing the 8-decibel margin requirement.</p>

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8.	<ul style="list-style-type: none"> - Part "C. Staff Regulatory Guidance;" <ul style="list-style-type: none"> o Section "1. General;" <ul style="list-style-type: none"> ▪ Page 10 <ul style="list-style-type: none"> • 1st Paragraph o 2nd Sentence 	<p>The 8-decibel margin requirement is one of the primary obstacles to implementing enhancements to the stations. It essentially imposes a 250% margin on exclusion distances. Based upon changes to EMI regulations in other federally regulated industries like aviation and communications, this margin needs to be critically examined. The research, experience, and improvements in devices can easily be used to justify the reduction of the 250% margin.</p>	<p>Recommend reducing the 8-decibel margin requirement.</p>
9.	<ul style="list-style-type: none"> - Part "C. Staff Regulatory Guidance;" <ul style="list-style-type: none"> o Section "3. EMI/RFI Emissions Testing;" <ul style="list-style-type: none"> ▪ Page 10 <ul style="list-style-type: none"> • 2nd Paragraph <ul style="list-style-type: none"> o 2nd to Last Sentence ▪ Page 11 <ul style="list-style-type: none"> • 2nd Paragraph <ul style="list-style-type: none"> o 1st Sentence 	<p>These two paragraphs seemingly contradict each other in regards to performing tests entirely using one standard (military or IEC) and when testing can be combined. A clarifying sentence would be helpful in removing the uncertainty.</p>	<p>Recommend clarifying when military standards and IEC standards must be used in their entirety and when then can be used in combination.</p>
10.	<ul style="list-style-type: none"> - Part "C. Staff Regulatory Guidance;" <ul style="list-style-type: none"> o Section "3. EMI/RFI Emissions Testing;" <ul style="list-style-type: none"> ▪ Page 13 <ul style="list-style-type: none"> • Figure 3.2 & 3.3 	<p>It seems that Figure 3.2 has a second figure overlaid upon it while Figure 3.3 is missing.</p>	<p>Recommend reformatting Figure 3.2 and Figure 3.3.</p>

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11.	<ul style="list-style-type: none"> - Part "C. Staff Regulatory Guidance;" <ul style="list-style-type: none"> o Section "3. EMI/RFI Emissions Testing;" 	<p>The proposed revision implies that licenses must use and adhere to the CISPR 16 tests referenced in IEC 61000-6-4 when not testing to MIL-STD-461. Currently, IEC 61000-6-4 incorporates the test methods of both CISPR 16 and CISPR 11 by reference. Because CISPR 11 was the only one referenced in IEC 61000-6-4 prior to 2006, the proposed guidance implies licensees will have to retest a considerable number of legacy components in inventory without gaining any safety benefit. This effort would not only be very costly to licensees, but would likely delay beneficial modifications.</p>	<p>Recommend removing the explicit reference to only CISPR 16, or adding a statement that permits licensees to utilize components currently tested to older EMI/RFI certifications.</p>
12.	<ul style="list-style-type: none"> - Part "C. Staff Regulatory Guidance;" <ul style="list-style-type: none"> o Section "3.6 EMI/RFI Emissions Test Summary;" <ul style="list-style-type: none"> ▪ Page 15 	<p>For the majority of evaluations, non-safety-related components are justified using an alternative option related to FCC Part 15, Class A. Most non-safety-related vendors will not perform separate testing in accordance with military standards and IEC standards. However, they will provide a certificate of conformance with FCC Part 15 Class A. Without this option, Licensees will have to perform unnecessary testing which will provide no additional benefit to nuclear safety.</p>	<p>Recommend keeping the alternative option of using FCC Part 15 Class A.</p>
13.	<ul style="list-style-type: none"> - Part "C. Staff Regulatory Guidance;" <ul style="list-style-type: none"> o Section "4.2 EMI/RFI Conducted Susceptibility Testing—Signal Leads;" <ul style="list-style-type: none"> ▪ Page 21 <ul style="list-style-type: none"> • Table 13 		<p>Recommend revising the title of Table 13 to use "MIL-STD-461G" instead of "MIL-STD-461E".</p>

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#	Identifier (Section, Page, Paragraph)	Comment	Proposed Resolution
14.	General Comment	In many instances, Licensees have not committed to RG 1.180, but do refer to EPRI TR102323 in their procedures and analyses. The proposed version of the RG no longer mentions EPRI TR102323. Licensees and their contractors heavily reference and use EPRI TR102323.	Recommend not deleting any reference or mention of EPRI TR102323.