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**DRAFT Comments on Definitions**

# Category	Section, Page, Line	Comment	Proposed Resolution (Correction, addition, deletion, future phase activity, etc.)	Status
10 Inconsistent Terminology (9/7/16)	Multiple Sections	The term "equivalent to a <u>licensing condition</u> of Not credible" and similar terms are found throughout the document. Issuance of licenses, including conditions, are discussed in <u>10 CFR 50.50</u> , while license amendments are discussed in <u>10 CFR 50.90</u> . It is unclear what the term "equivalent to a licensing condition" means with regards to the provisions of <u>10 CFR 50.50</u> and <u>10 CFR 50.90</u> . Please discuss why the term is being used and how it relates to the provisions of <u>10 CFR 50.50</u> and <u>10 CFR 50.90</u> .  NRC Staff is not aware of any "licensing conditions" of "Not Credible" or "Credible."	NEI should eliminate the use of the term "licensee condition" which has a very specific meaning to the NRC Staff. -- Or -- NEI should present where the term "licensing condition Not Credible" is used as well as other similar terms in the document relates to the provisions of <u>10 CFR 50.50</u> and <u>10 CFR 50.90</u> .	To be addressed in Evaluation discussion
12 Form & Content (9/7/16)	Section 2, "Definitions"	There appears to be a number of technical terms used within the body of Appendix D that have not been defined, but have significant bearing on the meaning or interpretation of key concepts in the document.	NEI should provide references to the definitions for these terms.	9/7/2016 NRC noted "critical digital review" and "discernable" as examples.
13 Previously Expressed Concerns (9/7/16)	2, "Definitions"	The NRC has a definition of software. This definition should be referenced (see PDF Page No. 10 of the <u>Inspection Report (IR) 05000400/2013009</u> Shearon Harris SSPS <u>10 CFR 50.59</u> Findings).	This issue is related to <u>Concern No. 1</u> as expressed by the NRC on October 9, 2014.  NEI should add to the "Definitions" section a reference to the NRC definition of software.	Working definitions agreed to on 11/2/2016; may revisit as NRC review and guidance adjustments progress.
14 Inconsistent Terminology (6/14/16) (9/7/16)	2.1, Definition of CCF	The definition of the term "Common Cause Failure" is not consistent with the industry developed definition due to these issues: a) <u>RG 1.153 Rev. 2</u> endorses <u>IEEE 379-2000</u> which contains one definition. Also <u>NEI 01-01</u> used the similar definition from EPRI Equipment Qualification Reference Manual TR-100516 and IEEE 352. b) The referenced standards stipulate there must be a loss of two or more	NEI should use a definition consistent with industry consensus or justify why an enhanced definition is needed here. If necessary apply additional conditions and stipulate the need for them that would explain the need to supplement additional characteristics.	Working definitions agreed to on 11/2/2016; may revisit as NRC review

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		<p>SSCs. The Appendix D definition relates to a time interval where the first failure is detected and subsequent failures are prevented. Does this mean there is not a CCF? Why include this in the definition when consensus standards and the main body of NEI 96-07 require multiple failures for a CCF to occur.</p> <p>It is not clear why a different definition for CCF is needed in this document and new definitions for CCF that could be endorsed by NRC in Appendix D in the near term could have implications on the broader review and update of NRC's policy of CCF as described in MP#1 of the integrated action plan.</p>		and guidance adjustments progress.
<p>16 CCF Unlikely &amp; Not Unlikely (6/14/16) (9/7/16)</p>	2.3(1)	<p>Section 2.3(1) defines the term "CCF Unlikely".</p> <p>NEI 96-07 Section 4.3.5 states:            "The possible accidents of a different type are limited to those that are as likely to happen as those previously evaluated in the UFSAR. The accident must be credible in the sense of having been created within the range of assumptions previously considered in the licensing basis (e.g., random single failure, loss of off-site power, etc.)." [emphasis added]</p> <p>It is understood that two new terms (i.e., "CCF Unlikely" and "CCF not Unlikely") were created to capture the decision made as a result of applying the emphasized text in the quotation; however, this concept is applied much more frequently in Appendix D <u>and than</u> in the body of NEI 96-07.</p> <p>Furthermore, the emphasized criteria is problematic for introduction of digital technology to a plant because it may not be clear how Digital CCF postulations are "within the range of assumptions previously considered in the licensing basis."</p>	<p>NEI should provide some examples how a Digital CCF postulation is "within the range of assumptions previously considered in the licensing basis."</p> <p><u>This issue is related to Concern No. 12 as expressed by the NRC on October 9, 2014.</u></p> <p><u>NEI should include a statement that if a modification includes aspects that were previously not considered in the FSAR, then the licensee should use the range of assumptions that would be typically considered in licensing those aspects.</u></p>	"CCF Unlikely" terminology has been deleted.
<p>17 CCF Unlikely &amp; Not Unlikely (9/7/16)</p>	2.3 (1), CCF Unlikely	<p>"CCF Unlikely" is contrary to SRM 93-097 Item No. II.C which does not provide this option. The SRM is the Commission's position of what it takes to meet the GDCs or PDCs for digital instrumentation (i.e. a way to determine if diversity has been used to the extent practical). Please recall that BTP 7-19 introduced</p>	<p>NEI should arrange coordinate technical discussions with the NRC to establish a plan on how to demonstrate to the NRC staff the acceptability of alternative ways to eliminate</p>	"CCF Unlikely" terminology has been

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		two ways to eliminate consideration of CCF (see Section 1.9). In the NRC staff's "Summary of Concerns," <a href="#">ML 13298A787</a> , issue no. 9, the staff pointed to the inappropriate implication that if a CCF can be shown to be sufficiently unlikely then a D3 analysis need not be performed.	consideration of CCF	deleted.
18 CCF Unlikely & Not Unlikely (6/14/16) (9/7/16)	Section 2.3(1)&(2)	<p>"CCF Unlikely" and "CCF Not Unlikely" are "Technical Conclusions" defined in this licensing document (The term <a href="#">NEI 96-07</a> uses is "<i>credible common mode failure</i>").</p> <p><a href="#">NEI 96-07</a> Section 4.3.2 states:</p> <p>"if failures were previously postulated on a train level because the trains were independent, a proposed activity that introduces a cross-tie or <i>credible common mode failure</i> (e.g., as a result of an analog to digital upgrade) should be evaluated further to see whether the likelihood of malfunction has been increased."</p> <p><a href="#">NEI 96-07</a> Section 4.3.6 states:</p> <p>"An example of a change that would create the possibility for a malfunction with a different result is a substantial modification or upgrade to control station alarms, controls, or displays that are associated with SSCs important to safety that creates a new or common cause failure that is not bounded by previous analyses or evaluations.</p> <p>...</p> <p>if failures were previously postulated on a train level because the trains were independent, a proposed activity that introduces a cross-tie or <i>credible common mode failure</i> (e.g., as a result of an analog to digital upgrade) should be evaluated further to see whether new outcomes have been introduced."</p> <p>By focusing on "CCF Unlikely" and "CCF Not Unlikely" as a key LICENSING concern, one becomes less focused on the adequacy of the diversity and defense in depth aspects of the I&amp;C systems that is provided in the FSAR. The last sentence of GDC 22 emphasizes the diversity aspects of the design.</p>	<p>The D3 analysis for CCF should always be implemented for RTS and ESFAS with the exception of sufficiently simple and deterministic performance based devices.</p> <p>NEI should compare and contrast the two terms (i.e., "CCF Unlikely" and "CCF Not Unlikely") used in Appendix D with the three levels (i.e., 0, 1, &amp; 2) used in the EPRI document.</p> <p>What other guidance document uses these two terms?</p> <p>NEI should consider using the term "credible CCF" which is consistent with the terminology used in <a href="#">NEI 96-07</a>.</p>	"CCF Unlikely" terminology has been deleted.
19 Internal Consistency  HIS  Inconsistent Terminology	2.3(2)	<p>Section 2.3(2) defines the term "CCF Not Unlikely":</p> <p>"Obtained from the CCF Susceptibility Analysis, a technical conclusion of "CCF not unlikely" is equivalent to a licensing condition of credible and/or as likely to happen as those malfunctions described in the UFSAR."</p> <p><a href="#">NEI 96-07</a> Section 4.3.5 states:</p> <p>"The possible accidents of a different type are limited to those that are as</p>	NEI should ensure the proposed guidance and examples are consistent with 96-07, or justify the need to use alternate criteria and guidance for DI&C.	"CCF Unlikely" terminology has been deleted.

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<p>Consistency w/ NEI 96-07 (6/14/16) (9/7/16)</p>		<p><u>likely to happen as those previously evaluated in the UFSAR.</u></p> <p>By using these two statements, one can conclude that a determination of CCF Not Unlikely would require a LAR. However, examples 2, 3, 5, &amp; 6 reach a conclusion of "CCF Not Unlikely" and do not require a LAR under Questions 5 because:</p> <p>2 A digital recorder cannot cause an accident. However, this example neglects how bad information can cause a problem through inappropriate operator Action.</p> <p>3, 5 A Safety System mitigate accidents; therefore cannot cause an accidents of a different type. However, this rational is based on a different meaning of the term "accident" than is defined in <u>NEI 96-07</u> Section 4.3.1.</p> <p>6 Even though a SW CCF is Not Unlikely, a bounding assessment is used to support that there are no new types of accidents; however, bounding assessments are the subject of Question 6 not 5.</p>		
<p>20 Inconsistent Terminology (9/7/16)</p>	<p>2.8, Hazard Analysis page 10</p>	<p>The definition of "Hazard Analysis," is not consistent with:</p> <p>(1) In 1966 (See <u>31 FR 832</u>), the NRC issued a proposed rulemaking where the term "Hazard Summary Report" would be replaced with "Safety Analysis Report," and "Hazard Analysis" would be replaced with "Safety Analysis."</p> <p>(2) Both IEEE 279-1968 &amp; -1971, as well as IEEE 603-1991 explicitly require consideration of conditions (or events) which require protective action.</p> <p>(3) <u>RIL-1101</u>, "Technical Basis to Review Hazard Analysis of Digital Safety Systems," provides useful information on the topic of Hazard Analysis.</p> <p>(4) IEEE 7-4.3.2-2016, see definition of Hazard Analysis.</p> <p>In summary, although there is no longer a regulatory requirement for a document called a Hazards Summary Report or explicit regulatory requirements regarding Hazard Analysis, one cannot meet regulatory requirements without explicit consideration of hazards; one cannot demonstrate adequate safety without consideration of hazards.</p>	<p>NEI should use a more recent definition (e.g., use the definition in IEEE 7-4.34.2-2016): A process of examining a system to identify inherent hazards and incorporating appropriate requirements, design, and other constraints to eliminate, prevent, or control the identified hazard.</p>	<p>"Hazard Analysis" terminology has been deleted.</p>
<p>21 Consistency w/ NEI 96-07  Inconsistent Terminology (5/31/16) (9/7/16)</p>	<p>2.10, "Layers of Design"</p>	<p>During the April 28, 2016, public meeting on Appendix D, NEI explained that the term "Layers of Design" was necessary because it was a licensing concept and different than the design concept of "defense-in-depth." However the term "Layers of Design" is not used in <u>NEI 96-07</u>.</p>	<p>NEI should expand the definition of this term to explain how this term is different than defense in depth and why it is needed.</p> <p>NEI should also include an explanation how this term relates to the concepts in <u>NEI 96-07</u> in</p>	<p>"Layers of Design" terminology has been deleted.</p>

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			which this term is not used.	
22 Consistency w/ NEI 96-07  Inconsistent Terminology (6/14/16) <b>9/7/16</b>	2.11, "Variety"	<p>During the April 28, 2016, public meeting on Appendix D, NEI explained that the term "Variety" was necessary because it was a licensing concept and different than the design concept of "diversity." However the term "Variety" is not used in <a href="#">NEI 96-07</a>; therefore, in this respect Appendix D is not consistent with <a href="#">NEI 96-07</a>.</p> <p>When used in conjunction with another NEW term, "layers of design," it is not clear what is meant (i.e., "variety and/or layers of design"). How does this concept (i.e., variety and layers of design) differ from diversity and defense-in-depth?</p>	<p>NEI should:</p> <p>(1) expand the definition of this term to include an explanation of how this term is different than diversity and why it is needed.</p> <p>(2) include an explanation how this term relates to the concepts in <a href="#">NEI 96-07</a> where this term is not used.</p> <p>(3) explain meaning of the phrase "variety and/or layers of design."</p>	"Variety" terminology has been deleted.