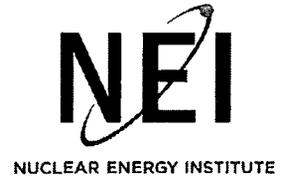


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May 15, 2017

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RULES & REGULATIONS
DIVISION
MAY 16 2017

Ms. Cindy K. Bladey
Chief, Rules, Announcements, and Directives Branch
Office of Administration
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: NEI Comments on NUREG-1122, Revision 3, "Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors" and NUREG-1123, Revision 3, "Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors." 82 FR 18018; Docket ID NRC-2017-0068

Project Number: 689

Dear Ms. Bladey:

On behalf of the nuclear energy industry, the Nuclear Energy Institute (NEI)¹ appreciates the opportunity to provide comments on the subject NUREG-1122, Revision 3, "Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors" and NUREG-1123, Revision 3, "Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors."

NEI's Licensed Operator Focus Group worked cooperatively with NRC staff throughout the revision process for both NUREG-1122 and NUREG-1123. We support the conceptual changes contained therein. Our attached comments recommend improvements in formatting and phrasing which promote consistency and enhance usability.

We appreciate the NRC staff's consideration of these comments. If you have any questions concerning this letter or the attached comments, please contact me.

¹ The Nuclear Energy Institute (NEI) is the organization responsible for establishing unified industry policy on matters affecting the nuclear energy industry, including the regulatory aspects of generic operational and technical issues. NEI's members include all entities licensed to operate commercial nuclear power plants in the United States, nuclear plant designers, major architect/engineering firms, fuel cycle facilities, nuclear materials licensees, and other organizations and entities involved in the nuclear energy industry.

Ms. Cindy K. Bladey

May 15, 2017

Page 2

Sincerely,

A handwritten signature in black ink, appearing to read "Gregory R. Cameron". The signature is fluid and cursive, with a long horizontal stroke extending to the right.

Gregory R. Cameron

Attachments

c: Ms. Nancy Salgado, NRR, NRC
NRC Document Control Desk

ATTACHMENT 1 | NEI Comments on NUREG-1122, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
1	General/Sections 3 and 4.	Recommend inserting page headers on all pages in the systems and EAPE sections. Specifically sections 3 and 4. Sections 5 and 6 are referenced infrequently by the end user and do not necessarily need headers on each page.	Page headers showing the system title/number or EAPE title/number have been removed from subsequent pages. They are very important for the end user of the catalog.
2	Section 1.15, fourth bullet, Page 1-11	Recommend removing "Fuel handling is not an RO license activity and will have N/A marked in the RO column."	There is no guidance which makes the fuel handling system specific to SROs. As noted below, the fuel handling system K/As should have two sets of IRs for all K/As. See Comment 14.
3	Summary of Significant Changes/xi	Number 6. states "...replaced with a single IR EXCEPT for the A2, G and fuel handling categories." Recommend replacing with "EXCEPT for the A2 and G categories."	Fuel Handling system also has single IRs for all but A2 KAs. Alternately, bring back RO and SRO ratings for each FH topic as noted in Comment 14.
4	Section 2, Generic KAs	Recommend designating the following K/As as "Operating Exam Preferred": 2.1.6, 2.1.9, 2.1.14, 2.1.17, 2.1.18, 2.1.19, 2.1.21, 2.1.30, 2.1.31, 2.1.38, 2.2.2, 2.4.47, 2.4.49, 2.4.50	During discussions between the industry and NRC regarding changes to the K/A catalogs, one of the points of agreement was that K/As which lend themselves to measurement during the scenarios and/or JPMs would be designated as such in the K/A catalogs.
5	General	The following K/A stem statements do not match between the PWR and BWR catalogs: Systems - K1, K4, A1, A4 EAPEs - E/AK1, E/AA1, E/AA2 Recommend matching 1122 with 1123.	PWR catalog has "and/or" (generally) and BWR catalog has "or". For consistency, remove the "and/" from these statements in the PWR catalog.
6	Section 1/	Recommend changing K1 Stem Statement to	Promote consistency between catalogs. The

ATTACHMENT 1 | NEI Comments on NUREG-1122, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
	Page 1-5	match NUREG-2103: "Knowledge of the physical or control/protection logic relationship between the [SYSTEM] and the following systems:"	"new" catalogs capture the idea of interaction between systems better than the "old" catalogs.
7	Section 1/ Page 1-5	Recommend changing K1 Basis statement to read: "K1 contains the systems that have a connection to the [SYSTEM]. The selected (systems) listed have either a plant protection/logic relationship or physical piping relationship to the [SYSTEM]. Electrical systems are addressed in K2. Controls and interlocks are addressed in K4. Cause and effect relationships from system interactions may be tested in K1, as appropriate. The operational implications of these relationships are addressed in K5."	The basis statement currently provided provides historical data without providing a helpful basis to the end user trying to author questions. The basis statements should simply provide an explanation for what is in the K/A.
8	Section 1/ Page 1-6	Recommend changing K5 basis statement to read: "K5 contains theoretical concepts related to the operation of the system and resulting operational implications."	Proposed basis statement contains historical information which is not relevant to its application. Historical information should be put in the revision log if desired.
9	Section 1/ Page 1-6	Recommend changing K6 basis statement to read: "K6 includes systems listed in K1 and K2 which will have an effect on the (SYSTEM) if the K6 listed system or component is not operating according to design. K6 also contains (SYSTEM) components whose failure can affect the operation of the (SYSTEM)."	Proposed basis statement contains historical information which is not relevant to its application. Historical information should be put in the revision log if desired.

ATTACHMENT 1 | NEI Comments on NUREG-1122, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
10	Section 1/ Page 1-6	Recommend changing A1 basis statement to read: "A1 includes parameters monitored to verify proper operation of the system or indications that the system is outside of normal operating bands."	Proposed basis statement contains historical information which is not relevant to its application. Historical information should be put in the revision log if desired.
11	Section 1/ Page 1-6	Recommend adding the (SYSTEM) name to the A4 statement: "A4. Ability to manually operate or monitor the (SYSTEM) in the control room.	Maintain consistency with all other stem statements which include the system name.
12	Section 1.10/ Page 1-7	Recommend adding the following to the paragraph begins "Section 4 of the ..." Add: "Note that an EAPE is a condition, event or symptom and not the procedure itself."	Supports the changes to the basis statements listed below.
13	Section 1, Table 4, Page 1-9 and 1-10	Recommend changing the basis statements for E/AK1, E/AK2, E/AK3, E/AA1 and E/AA2 as follows: E/AK1 Basis - Tests the operationally-based theoretical concepts applicable to the [EVENT]. These items may be addressed by procedure bases, PRA, operating experience, procedure notes, cautions or integrated system response. E/AK2 Basis - Tests how listed systems are impacted by the [EVENT]. E/AK3 Basis - Tests the reasons for taking the listed action/response during the [EVENT].	To avoid any confusion about what is allowed to be tested for EAPEs, clarification should be added to this section. As noted in section 1.10, EPEs are conditions, events or symptoms which leads to entry into an EOP. APEs are conditions, events or symptoms which lead to AOP entry. Note that definition of "evolution" in this context is "condition/event/symptom" as opposed to "procedure". The basis statements all contain the word "procedure" and most EAPE KAs do lend themselves to testing information contained within the related procedure but NOT all of the EAPE KAs allow for an item to be written to test procedure knowledge to meet the plain meaning

ATTACHMENT 1 | NEI Comments on NUREG-1122, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
		<p>E/AA1 Basis - Tests the ability to operate or monitor systems or components during the [EVENT]. This includes monitoring plant system response during all phases of the [EVENT].</p> <p>E/AA2 Basis - Tests the ability to monitor the listed condition or parameter and interpret its importance to the [EVENT] or the [EVENT] response.</p>	<p>of the KA.</p> <p>For example, there are many operator actions and many plant automatic responses which occur during the initial phases of an “emergency plant evolution” where “conditions/events/symptoms” are present but the procedure has not yet been entered.</p> <p>Rather than create a situation where entire classes of questions are systematically excluded (diagnostics, plant response to transients, basis for design features), guidance should allow questions which address all phases of emergency/abnormal conditions not just those which are contained in procedural guidance.</p> <p>For example, consider APE 056 “Loss of Offsite Power” and the AA1 KAs which test the ability to operate or monitor many, many different systems and components. If only the items listed in the “Loss of Offsite Power” procedure can be tested, then many of these AA1 KAs will be untestable and untested. This is, clearly, not the intent. The intent is to test as broadly as possible, testing knowledge within the procedures and also ensuring understanding of other impacts which may not be explicitly addressed therein.</p>

ATTACHMENT 1 | NEI Comments on NUREG-1122, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
14	Section 3.8/ Pages 3.8-13 through 3.8-15	Recommend maintaining separate IRs for ALL Fuel Handling System KAs	All Fuel Handling system KAs are individually selectable on either RO or SRO outline. As such, each individual KA should have its own importance rating. This is especially important where some KAs might be <2.5 for one type of license but ≥ 2.5 for the other type. (If this recommendation is implemented, Comment #2 above should NOT be implemented.)
15	Sections 5 and 6	Recommend using a single IR for GFE KAs.	Since the same GFE exam is given to all, there is no benefit for maintaining two sets of IR for GFE KAs.
16	KA 007.K5.08 Page 3.5-4	Recommend adding the word "safety valves".	Currently states "Recognition of leaking PORVs/code"
17	Throughout	Evaluate use of ESAS and other vendor-specific terms and systems and determine applicability to other vendors or the equivalent systems from the other vendors. For example, if the ESAS system at BW performs the same function as the ESFAS system for Westinghouse, then the ESAS KAs should say ESAS/ESFAS. This is just one potential example. Others are EFIC, CEA, ICS, BWST, RWST, CFT, QSPDS, SPDS, CFT, SIT. Recommend adding a comprehensive list of equivalent systems to the catalog.	To eliminate confusion, correlating systems from different vendors should be added to the applicable KAs to ensure the catalog is applied consistently. One Westinghouse plant could receive an "ESAS" KA and ask for it to be replaced because they do not have ESAS. Another could write a question for ESFAS, assuming that the systems do the same thing only to have their question rejected as not meeting the KA. A third could ask for a replacement and be told to write an ESFAS question by their chief. Providing clear, concise, complete KAs helps ensure consistency in application. Recognizing that guidance is included on Page 1-12 that addresses this concern, it would still be helpful to have a more complete list of equivalent

ATTACHMENT 1 | NEI Comments on NUREG-1122, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Pressurized Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
			systems since exam authors with knowledge of a single vendor may not have sufficient knowledge to know what systems are called elsewhere.
18	KA 012.K4.01 Page 3.7-3	Recommend spelling out OOC (presumably out of commission? or out of calibration?)	OOO is not defined in the Acronym list and not used elsewhere in the catalog.
19	Pages 3.1-1, 3.1-23, 3.4-1, 3.4-15	Recommend designating the 053 system (Integrated Control System) as BW only in the KA catalog system section	NUREG-1021, Form ES-401-2 does NOT indicate that ICS is limited to BW only. In order to ensure that CE and W plants do not get ICS KAs on their sample plans, this system should be designated at BW only in the KA catalog and in the next revision of NUREG-1021. This will help ensure consistency in application.

ATTACHMENT 2 NEI Comments on NUREG-1123, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
1	General/Sections 3 and 4	Recommend placing page headers on all pages in the systems and E/APE sections (like Rev. 2). Specifically sections 3 and 4. Sections 5 and 6 are referenced infrequently by the end user and do not necessarily need headers on each page.	Page headers showing the system title/number or EAPE title/number have been removed from subsequent pages. They are very important for the end user of the catalog.
2	General/Sections 3 and 4	Recommend using Title Case for all system and E/APE names in Sections 3 and 4.	Greatly improves readability.
3	Summary of Significant Changes/xi	Number 6. states "...replaced with a single IR EXCEPT for the A2, G and fuel handling categories." Recommend replacing with "EXCEPT for the A2 and G categories."	Fuel Handling system also has single IRs for all but A2 K/As. Alternately, bring back RO and SRO ratings for each FH topic as noted in Comment 14 below.
4	Section 2, Generic KAs	Recommend designating the following K/As as "Operating Exam Preferred": 2.1.6, 2.1.9, 2.1.14, 2.1.17, 2.1.18, 2.1.19, 2.1.21, 2.1.30, 2.1.31, 2.1.38, 2.2.2, 2.4.47, 2.4.49, 2.4.50	During discussions between the industry and NRC regarding changes to the K/A catalogs, one of the points of agreement was that K/As which lend themselves to measurement during the scenarios and/or JPMs would be designated as such in the K/A catalogs.
5	General	The following K/A stem statements do not match between the PWR and BWR catalogs: Systems - K1, K4, A1, A4 EAPEs - E/AK1, E/AA1, E/AA2 Recommend matching 1122 (PWR) with 1123 (this catalog). Alternately, change the K/A stems here to match the PWR catalog.	Improve consistency among all catalogs.

ATTACHMENT 2 NEI Comments on NUREG-1123, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
6	Section 1/ Page 1-6	Recommend changing K1 Stem Statement to match NUREG-2103: "Knowledge of the physical or control/protection logic relationship between the [SYSTEM] and the following systems:"	Promote consistency among all catalogs. The "new" catalogs capture the idea of interaction between systems better than the "old" catalogs.
7	Section 1/ Page 1-6	Recommend changing K1 Basis statement to read: "K1 contains the systems that have a connection to the [SYSTEM]. The selected (systems) listed have either a plant protection/logic relationship or physical piping relationship to the [SYSTEM]. Electrical systems are addressed in K2. Controls and interlocks are addressed in K4. Cause and effect relationships from system interactions may be tested in K1, as appropriate. The operational implications of these relationships are addressed in K5."	The basis statement currently provided provides historical data without providing a helpful basis to the end user trying to author questions. The basis statements should simply provide an explanation for what is in the K/A and how to match it.
8	Section 1/ Page 1-6	Recommend changing K5 basis statement to read: "K5 contains theoretical concepts related to the operation of the system and resulting operational implications."	Proposed basis statement contains historical information which is not relevant to its application. Historical information should be put in the revision log if desired.
9	Section 1/ Page 1-6	Recommend changing K6 basis statement to read: "K6 includes systems listed in K1 and K2 which will have an effect on the (SYSTEM) if the K6 listed system or component is not operating according to design. K6 also contains (SYSTEM) components whose failure can affect the operation of the (SYSTEM)."	Proposed basis statement contains historical information which is not relevant to its application. Historical information should be put in the revision log if desired.

ATTACHMENT 2 NEI Comments on NUREG-1123, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
10	Section 1/ Page 1-7	Recommend changing A1 basis statement to read: "A1 includes parameters monitored to verify proper operation of the system or indications that the system is outside of normal operating bands."	Proposed basis statement contains historical information which is not relevant to its application. Historical information should be put in the revision log if desired.
11	Section 1/ Page 1-7	Recommend adding the (SYSTEM) name to the A4 statement: "A4. Ability to manually operate or monitor the (SYSTEM) in the control room."	Maintain consistency with all other stem statements which include the system name.
12	Section 1.10/ Page 1-7	Recommend adding the following to the paragraph begins "Section 4 of the ..." Add: "Note that an EAPE is a condition, event or symptom and not the procedure itself."	Supports the changes to the basis statements listed below.
13	Section 1, Table 4, Page 1-9 and 1-10	Recommend changing the basis statements for E/AK1, E/AK2, E/AK3, E/AA1 and E/AA2 as follows: E/AK1 Basis - Tests the operationally-based theoretical concepts applicable to the [EVENT]. These items may be addressed by procedure bases, PRA, operating experience, procedure notes, cautions or integrated system response. E/AK2 Basis - Tests how listed systems are impacted by the [EVENT]. E/AK3 Basis - Tests the reasons for taking the listed action/response during the [EVENT].	To avoid any confusion about what is allowed to be tested for EAPes, clarification should be added to this section. As noted in section 1.10, EPEs are conditions, events or symptoms which leads to entry into an EOP. APEs are conditions, events or symptoms which lead to AOP entry. Note that definition of "evolution" in this context is "condition/event/symptom" as opposed to "procedure". The basis statements all contain the word "procedure" and most EAPE KAs do lend themselves to testing information contained within the related procedure but NOT all of the EAPE K/As allow for an item to be written to

ATTACHMENT 2 NEI Comments on NUREG-1123, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
		<p>E/AA1 Basis - Tests the ability to operate or monitor systems or components during the [EVENT]. This includes monitoring plant system response during all phases of the [EVENT].</p> <p>E/AA2 Basis - Tests the ability to monitor the listed condition or parameter and interpret its importance to the [EVENT] or the [EVENT] response.</p>	<p>test procedure knowledge to meet the plain meaning of the KA.</p> <p>For example, there are many operator actions and many plant automatic responses which occur during the initial phases of an “emergency plant evolution” where “conditions/events/symptoms” are present but the procedure has not yet been entered.</p> <p>Rather than create a situation where entire classes of questions are systematically excluded (diagnostics, plant response to transients, basis for design features), guidance should allow questions which address all phases of emergency/abnormal conditions not just those which are contained in procedural guidance.</p> <p>For example, consider APE 295003 “Partial or Complete Loss of AC Power” and the AA1 K/As which test the ability to operate or monitor many, many different systems and components. If only the items listed in the “Loss of Offsite Power” procedure can be tested, then many of these AA1 K/As will be untestable and untested. This is, clearly, not the intent. The intent is to test as broadly as possible, testing knowledge within the procedures and also ensuring understanding of other impacts which may not be explicitly addressed therein.</p>

ATTACHMENT 2 NEI Comments on NUREG-1123, Knowledge and Abilities Catalog for Nuclear Power Plant Operators: Boiling Water Reactors, Rev. 3

Comment #	Section/Page	Recommendation	Justification
14	Section 3.8/ Pages 3.8-7 through 3.8-9	Recommend maintaining separate IRs for ALL Fuel Handling System KAs	All Fuel Handling system KAs are individually selectable on either RO or SRO outline. As such, each individual KA should have its own importance rating for each license type. This is especially important where some KAs might be <2.5 for one type of license but ≥ 2.5 for the other type. (If this recommendation is implemented, Comment 3 above should NOT be implemented.)
15	Sections 5 and 6	Recommend using a single IR for GFE KAs.	Since the same GFE exam is given to all, there is no benefit for maintaining two sets of IR for GFE KAs.
16	Section 3.1, Page 3.1-20, 202001 Recirculation System.	Recommend adding A1.17 and A1.18 which are missing.	