Enclosure 2 contains Security Related information - Withhold under 10 CFR 2.390.
Upon removal of Enclosure 2, this document is decontrolled.

FPL.

September 10, 2014

L-2014-289
10 CFR 50.90

U.S. Nuclear Regulatory Commission
Document Control Desk
Washington, D.C. 20555-0001

Re: St. Lucie Units 1 and 2
Docket Nos. 50-335 and 50-389
Response to Request for Additional Information Regarding License Amendment Request for Transition to 10 CFR 50.48(c) - NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Edition)

References:

1. FPL letter L-2013-099 dated March 22, 2013: Transition to 10 CFR 50.48(c) –NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Edition)
2. NRC letter dated December 26, 2013: Request for Additional Information on License Amendment Request to Adopt National Fire Protection Association Standard 805 Performance-Based Standard for Fire Protection (TAC Nos. MF 1373 and MF 1374)
3. FPL letter L-2014-056 dated February 24, 2014: 60-Day Response to Request for Additional Information Regarding License Amendment Request for Transition to 10 CFR 50.48(c) - NFPA 805
4. FPL letter L-2014-083 dated March 25, 2014: 90-Day Response to Request for Additional Information Regarding License Amendment Request for Transition to 10 CFR 50.48(c) - NFPA 805
5. FPL letter L-2014-109 dated April 25, 2014: 120-Day Response to Request for Additional Information Regarding License Amendment Request for Transition to 10 CFR 50.48(c) - NFPA 805
6. NRC letter dated September 8, 2014: St. Lucie Plant, Units 1 and 2 - Request for Additional Information on License Amendment Request to Adopt National Fire Protection Association Standard 805, Performance-Based Standard for Fire Protection (TAC Nos. MF1373 and MF1374)
7. FPL letter L-2014-203 dated July 14, 2014: Response to Request for Additional Information Regarding License Amendment Request for Transition to 10 CFR 50.48(c) - NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Edition)

Per Reference 1 above, Florida Power and Light Company (FPL) requested an amendment to the Renewed Facility Operating License (RFOL) for St. Lucie Units 1 and 2. The License

A006
NRR

Amendment Request (LAR) will enable FPL to adopt a new fire protection licensing basis which complies with the requirements in 10 CFR 50.48(a) and (c) and the guidance in Revision 1 of Regulatory Guide (RG) 1.205.

Per References 3, 4 and 5 FPL responded to specific requests for additional information received by FPL via Reference 2 to clarify aspects of the LAR submittal. By letter dated September 8, 2014 (Reference 6), the NRC Staff requested additional information regarding the LAR. The requests were divided into two groups. The enclosures to this letter provide the detailed response to the requests for additional information in the first group.

Additionally, Enclosure 1 includes a clarified response to SSA RAI 01.01.c to reference the feasibility criteria from FAQ 07-0030 instead of Appendix B.5.2 of NFPA 805. The original response to SSA RAI 01.01.c was submitted on July 14, 2014, via L-2014-203 (Reference 7).

The information provided in this submittal does not impact the 10 CFR 50.92 evaluation of "No Significant Hazards Consideration" previously provided in FPL letter L-2013-099. This letter makes no new commitments or changes to existing commitments.

FPL requests that Enclosure 2 to this letter, which contains security-related information, be withheld from public disclosure in accordance with 10 CFR 2.390. Upon removal of Enclosure 2, this document is decontrolled.

Should you have any questions regarding this application, please contact Mr. Eric Katzman, Licensing Manager, at 772-467-7734.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on September 10, 2014.

Respectfully submitted,

(ACTING)

Joseph Jensen
Site Vice President
St. Lucie Plant

JJ/rcs

Enclosures: 1. St. Lucie Units 1 and 2 NFPA 805 LAR RAI Response
2. St. Lucie Units 1 and 2 NFPA 805 LAR RAI Response - Withheld from Public Disclosure

cc: Ms. Cindy Becker, Florida Department of Health
USNRC Regional Administrator, Region II
USNRC Senior Resident Inspector, St. Lucie Units 1 and 2

Enclosure 1
St. Lucie Units 1 and 2 NFPA 805 LAR RAI Response

Response to Request for Additional Information Regarding License Amendment Request for Transition to 10 CFR 50.48(c) - NFPA 805 Performance-Based Standard for Fire Protection for Light Water Reactor Generating Plants (2001 Edition)

PRA RAI 01.d.01
PRA RAI 01.m.01
PRA RAI 04.c.01a and b
PRA RAI 15.01
PRA RAI 17.b.01
SSA RAI 01.01.c (clarification)

PRA RAI 01.d.01

In the letter dated April 25, 2014, the licensee responded to PRA RAI 01.d. This response states that the Fire PRA imposes a failure of an operator for any scenario in which all associated cues are lost due to fire damage. Clarify whether an action is considered failed upon loss of any required cue or if loss of all such cues is necessary to fail an action.

RESPONSE

An action is considered failed when all redundant cues are unavailable. Loss of some, but not all, redundant cues does not result in failure of the action. This approach is consistent with the guidance in NUREG-1921.

PRA RAI 01.m.01

In the letter dated April 25, 2014, the licensee responded to PRA RAI 01.m. This response indicates that all High Energy Arcing Fault (HEAF) and oil fire scenarios are assumed to result in an hot gas layer (HGL) in the associated fire zones without credit for suppression; however, the response to fire protection modeling (FM) RAI 01.p, which is referenced by the response to PRA RAI 01.m, indicates that HEAF scenarios in HGL multicompartment analysis (MCA) will be revised to address timing considerations in NUREG/CR-6850. Clarify this apparent discrepancy regarding the treatment of HEAF scenarios by the Fire PRA.

RESPONSE

The intent of the response to PRA RAI 01.m was not to indicate that all HEAF fires were assumed to cause a HGL but that the potential for a HEAF fire causing a HGL would be addressed in the analysis. The HGL analysis of HEAF fire scenarios credits manual suppression for precluding formation of a HGL associated with the post HEAF fire. The initial HEAF event is not considered to directly cause a HGL but the subsequent fire which is assumed to be at the ignition source's peak heat release rate at time zero is evaluated relative to the time to reach HGL temperature criteria with an associated manual non-suppression probability for an electrical fire applied. The electrical fire non-suppression probability applied is based on NUREG/CR-6850, Supplement 1, Chapter 14.

PRA RAI 04.c.01

In the letter dated February 24, 2014 (ADAMS Accession No. ML14070A097), the licensee responded to PRA RAI 04.c and states that a review of transient fire experience for the past 5 years revealed two potential violations of the licensee's transient combustible control program.

a. Characterize these violations in accordance with the guidance contained in the letter dated June 21, 2012 (ADAMS Accession No. ML12171A583), from Joseph Giitter to Biff Bradley, titled, "Recent Fire PRA Methods Review Panel Decisions and EPRI 1022993, 'Evaluation of Peak Heat Release Rates in Electrical Cabinets Fires,'" considering whether (1) these violations impact the transient fire heat release rate (HRR) determination and (2) whether they reflect isolated incidents or a more general pattern of violations.

b. Explain how the violations impacted the transient fire HRR determination and whether they reflect isolated incidents or a more general pattern of violations.

RESPONSE

During the five-year period that was reviewed for the response to PRA RAI 04.c, the transient controls in place limited transient combustibles to less than 100 pounds of Class A combustible without requiring additional fire protection requirements/controls. In addition, St. Lucie does not currently have any transient free zones or zones with restrictions more limiting than the general policy.

The review of plant records demonstrates the sensitivity of the St. Lucie staff in that very low levels of transients were reported. The plant records were searched for a five-year period by looking for key words involving transients, hot work, housekeeping, etc. These records were then examined to determine if the concern involved transient combustibles. This resulted in a number of potential candidates to be considered as violations of the transient control program. An evaluation of these records show that only two represented potential violations of the transient control program. Several of the records that were not considered as potential transient control violations identified conditions that were well within the limits of the program.

Of the two records representing potential violations of the transient control program, one occurred in the Unit 2 Electrical Equipment Room Exhaust Fan Room (Fire Area 2-G) in 2011. This involved storage of materials in excess of the 100 pound Class A limit without any fire protection review or additional fire protection controls. The material was not associated with any particular maintenance activity and consisted of wood, cardboard boxes with materials inside, spare flooring material and miscellaneous items. The materials were not concentrated (i.e. multiple locations within the room) and were not labeled or otherwise identified. The issue was identified by the plant staff. The material was in excess of 100 pounds and therefore a violation of the transient control program but was less than 500 pounds which was the limit that room had been analyzed for in the fire hazards analysis. The second issue occurred in 2008 and was an observation by the NRC on the number of waste receptacles in the plant. This was originally considered a potential violation of the transient control program. However, a review of this record shows that the waste receptacles were metal with tight fitting lids and at no time did the transients exceed the 100-pound limit. Therefore, while this was originally reported as a

potential violation of the transient control program, it is now not considered a potential violation. Therefore, only one violation of the transient control program was found in the past five years at St. Lucie, and this was an isolated incident.

Based on the above there is 1) no impact to the transient HRR determination, and 2) the incident is an isolated event and not part of a general pattern of violations. The information shows that the one violation is an isolated event and that St. Lucie continues to identify issues at a level much lower than the procedure limits. Therefore, administrative controls are expected to be effective in limiting transient combustibles in areas that have a reduced transient HRR in the fire PRA analysis.

PRA RAI 15.01

The American Society of Mechanical Engineers (ASME) and American Nuclear Society (ANS) standard ASME/ANS RA-Sa-2009, "Addenda to ASME/ANS RA-S-2008, Standard for Level 1/Large Early Release Frequency Probabilistic Risk Assessment for Nuclear Power Plant Applications," calls for a focused-scope peer review for PRA upgrades, where PRA upgrade is defined as:

> "The incorporation into a PRA model of a new methodology or significant changes in scope or capabilities that impact the significant accident sequences or the significant accident progression sequences."

The NRC staff observed the following:

- In the letter dated April 25, 2014, the licensee responded to RAI 01.o and stated that revisions made to the human reliability analysis (HRA) employ the same HRA methodology used for the internal events PRA model, and as such, a focused-scope peer review of the Fire PRA HRA is not warranted. The NRC staff noted that both fire- and nonfire-specific human failure event, however, have been updated in accordance with NUREG-1921, an accepted methodology for conducting a fire HRA not previously employed by either the internal events or Fire PRA.
- In the letter dated February 24, 2014, the licensee's response to PRA RAI 15.c indicates that the time-dependent damage accrual methodology described in response to PRA RAI 01.m and FM RAI 02.e is not a PRA upgrade; however, the NRC staff noted that even if consistent with accepted methods (e.g., Appendix H of NUREG/CR-6850), the use of this methodology in the Fire PRA and its associated impact on Fire PRA scenario development has yet to be peer-reviewed.
- In the letter dated February 24, 2014, the licensee responded to PRA RAI 15.c and stated that the update to fire scenario zones of influence (ZOIs) to address the effects of secondary combustibles through use of the FLASH-CAT model, an "NRC-validated data methodology," is not a PRA upgrade; however, the NRC staff noted that the use of this methodology in the Fire PRA and its associated impact on Fire PRA scenario development has yet to be peer-reviewed.

Describe the method that will be used to ensure that any PRA upgrade will be peer-reviewed prior to using the model for post-transition change evaluations.

RESPONSE

FPL is committed to perform a peer review for any PRA update(s) that is/are considered a "PRA Upgrade" consistent with the ASME PRA Standard as endorsed by RG 1.200. Existing FPL PRA Configuration Control and Model Maintenance Procedure calls for performing respective focused peer reviews for PRA areas to be significantly changed in scope or capability upon completing a model update, in a manner consistent with the "Upgrade" definition of ASME PRA Standard. If FPL PRA staff members qualify any PRA update to be considered as an "upgrade," the modified PRA model will not be used in production until a respective focused peer review is completed.

PRA RAI 17.b.01

In the letter dated March 25, 2014, the licensee's response to RAI 17.b indicated that some joint human error probabilities (HEP's) (including some from the internal events PRA) are assigned values less than 10^{-5}. It is not clear from the response if any of the joint HEPs with values less than 10^{-5} are included in the fire scenarios (including those from the internal events PRA). It is also not clear whether the single justification provided applies to all the joint HEPs and what the value being justified is.

a. Identify how many joint HEPs in the fire scenarios have values less than 10^{-5} and provide the range of values.

b. Summarize the different justifications (these may be grouped) used for these values.

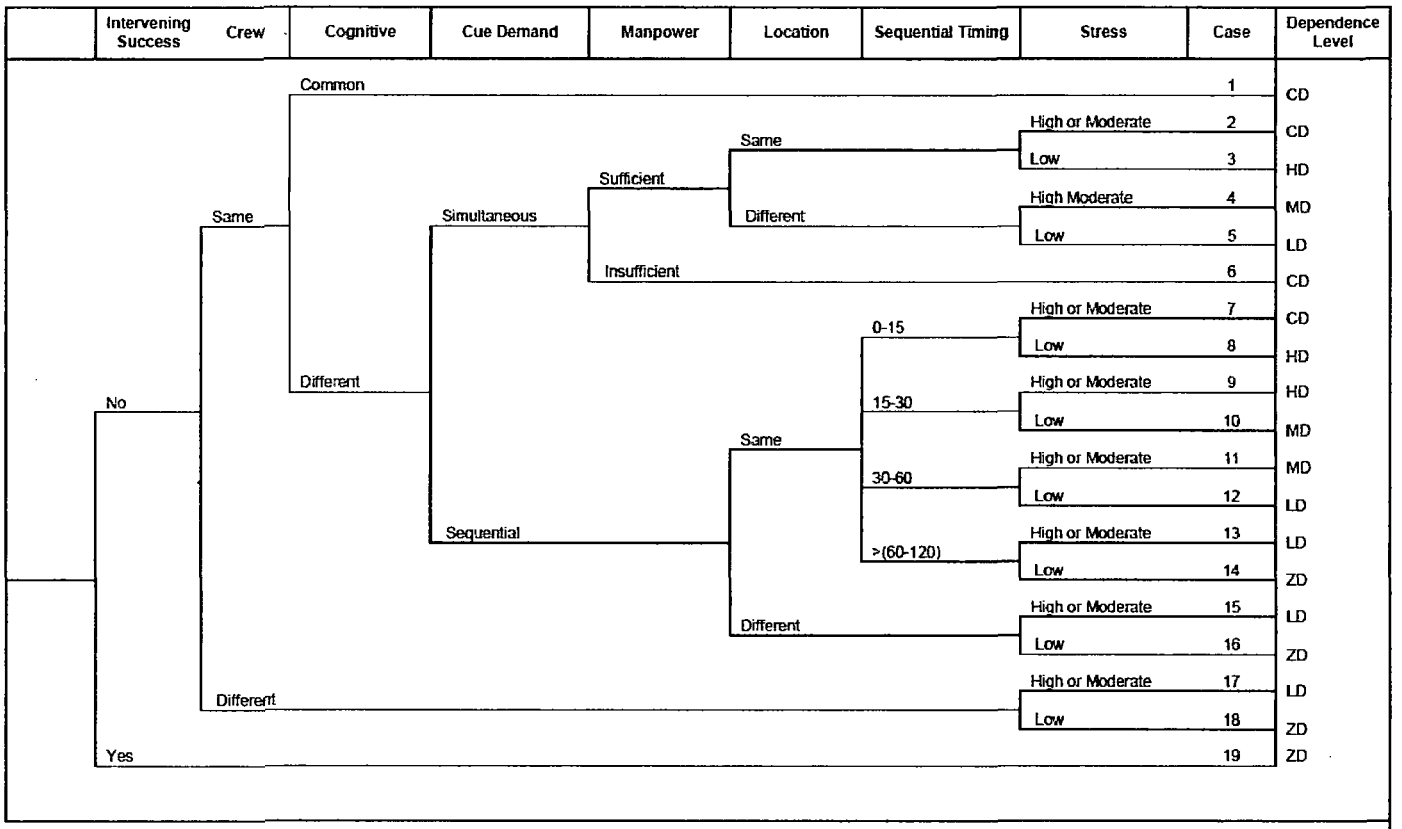
RESPONSE

In the recovery rules for the PSL1 and PSL2 fire PRA models, there are approximately a thousand combination events. These are applied to the non-recovered fire PRA cutsets to produce the final fire PRA cutsets.

a. In the recovery rule file for the PSL1 fire PRA model, there are 458 combination events. Of these combinations, 331 have a probability greater than or equal to 1.0E-05, and 127 have a probability of less than 1E-05. Those combinations with a probability of greater than 1.0E-05 range in probability from 1.45E-01 to 1.0E-05. Those combinations with a probability of less than 1.0E-5 range in probability from 9.42E-06 to 1.98E-10. In the recovery rule file for the PSL2 fire PRA model, there are 897 combination events. Of these combinations, 757 have a probability greater than or equal to 1.0E-05, and 140 have a probability of less than 1E-05. Those combinations with a probability of greater than 1.0E-05 range in probability from 1.43E-02 to 1.0E-05. Those combinations with a probability of less than 1.0E-5 range in probability from 9.20E-06 to 1.02E-07.

b. All of the combination event probabilities are calculated using the THERP decision tree (shown below). The level of dependency between successive operator actions in a combination event is determined using several factors: whether there has been an intervening success between the actions, whether the same crew is performing both actions, whether the operator actions share a common cue, the proximity in timing of the operator actions, whether sufficient manpower exists to perform the actions, whether the locations where the actions are performed are the same, and the stress associated with the accident sequence. The dependency level is either complete, high, moderate, low, or zero, in order of decreasing probability. The probability for complete dependence is 1.0, and the probability for zero dependence is the independent failure probability of the later operator action. The combination event probability is the product of the failure probability of the first (chronologically) operator action and the successive dependent failure probabilities of the ensuing operator actions. The justification for all of the combination event probabilities lies in their path through the decision tree.

Long-term operator actions, e.g., transfer to opposite-unit CST, typically have low or zero dependency, due to the separation in time from the previous operator action in the sequence, and the difference in cues. Therefore, combinations with these operator actions often have lower probabilities.



Dependency Decision Tree

Clarified Response to SSA RAI 01.01.c

In a letter dated February 24, 2014, the licensee responded to SSA RAI 01 (ADAMS Accession No. ML14070A097), and indicated that there are a diverse number of operator actions defined as Primary Control Station (PCS) actions for alternate shutdown.

The licensee stated that their analysis regarding Primary Control Stations was done in accordance with Regulatory Guide 1.205 and FAQ 07-0030.

Based on its review the NRC staff could not determine whether all the actions the licensee defined as PCS enabling actions for alternate shutdown meet the feasibility criteria as described in FAQ 07-0030, "Establishing Recovery Actions," (ADAMS Accession No. ML110070485) which states that the actions must be feasible and take place in sufficient time to allow the primary control station(s) to be used to perform the intended function.

Due to the total number of required actions and the numerous locations of those actions, provide the following information:

c) A justification for high confidence that all required actions can be completed within the required time. In particular, provide details of the fire protection program (for example training, component labeling, etc.) that support this conclusion.

In a letter dated July 14, 2014, FPL responded to SSA RAI 01.01.c. FPL is clarifying the response to SSA RAI 01.01.c to reference the feasibility criteria from FAQ 07-0030 instead of Appendix B.5.2 of NFPA 805. While the actions in question are not recovery actions per the definition in FAQ 07-0030, FPL will document the feasibility for recovery actions including how the training and JPMs meet the drill criteria of the feasibility criteria.

CLARIFIED RESPONSE

A high degree of confidence exists that all these actions identified in Tables 1 and 2 of the initial response to SSA RAI 01.01 can be completed within the required time based on the following feasibility criteria attributes outlined in FAQ 07-0030 for Recovery Actions. Additionally, since these actions are taken at the primary control station, and therefore not considered Recovery Actions, their feasibility is also addressed by the plant specific procedure for validation of off normal procedures, i.e. PSL Time Critical Action Program (Ref. FAQ07-0030). Table B, *Feasibility Criteria-Recovery Actions*, from FAQ 07-0030 is reproduced for convenience.

Table B-TBD Feasibility Criteria – Recovery Actions	
1	**Demonstrations** The proposed recovery actions should be verified in the field to ensure the action can be physically performed under the conditions expected during and after the fire event. *a) Simulator training is provided every 2 years regarding plant control from the HSCP.* *b) Job Performance Measures (JPM) are implemented for all the actions.*
2	**Systems and Indications** Consider availability of systems and indications essential to perform the recovery action. *No systems or indications are essential to performing the actions taken at the primary control station that are the subject of this RAI. The actions are taken immediately following Control Room evacuation to enable, and transfer plant control to the primary control station.*
3	**Communications** The communications system should be evaluated to determine the availability of communication, where required for coordination of recovery actions. *The actions taken to enable and transfer plant control to the primary control station are simple, independent actions which do not require coordination between the operators, therefore communications are not required to accomplish the actions. Face-to-face communications are relied upon to communicate the completion of the actions to the Hot Shutdown Control Panel operator.*
4	**Emergency Lighting** The lighting (fixed and/or portable) should be evaluated to ensure sufficient lighting is available to perform the intended action. *All actions and access/egress thereto are provided with 8-hour backed emergency lighting, correct aiming for the lights is procedurally checked monthly.*
5	**Tools-Equipment** Any tools, equipment, or keys required for the action should be available and accessible. This includes consideration of SCBA and personal protective equipment if required. (This includes staged equipment for repairs). *All breakers and switches are easily accessible, require no special tools, and do not require access to energized compartments nor transit through the fire affected area. Some switches are key operated. The keys are obtained from the Control Room during evacuation, or obtained locally in dedicated storage locations adjacent to the respective switches.*

Table B-TBD Feasibility Criteria – Recovery Actions	
6	**Procedures** Written procedures should be provided. *All required actions are contained in procedures 1 / 2-ONP-100.02, Control Room Inaccessibility (CRI).*
7	**Staffing** Walk-through of operations guidance (modified, as necessary, based on the analysis) should be conducted to determine if adequate resources are available to perform the potential recovery actions within the time constraints (before an unrecoverable condition is reached), based on the minimum shift staffing. The use of essential personnel to perform actions should not interfere with any collateral industrial fire brigade or control room duties. *a) The actions are concurrently performed by four operators who are part of the minimum staff contingent and not assigned to perform any other duties immediately following Control Room evacuation, all locations are in close proximity to each other, and most are in adjacent areas.* *b) The PSL Time Critical Action Program confirms that all of the manual actions have been subjected to timed walkdowns and can be accomplished within the required time. This activity has recently been completed.*
8	**Actions in the Fire Area** When recovery actions are necessary in the fire area under consideration or require traversing through the fire area under consideration, the analysis should demonstrate that the area is tenable and that fire or fire suppressant damage will not prevent the recovery action from being performed. *All breakers and switches are easily accessible and do not require access to energized compartments nor transit through the fire affected area/room/zone. The employment of fire suppressant agent(s) will not damage equipment associated with the actions or otherwise prevent the actions from being taken.*
9	**Time** Sufficient time to travel to each action location and perform the action should exist. The action should be capable of being identified and performed in the time required to support the associated shutdown function(s) such that an unrecoverable condition does not occur. Previous action locations should be considered when sequential actions are required. *a) The actions are concurrently performed by four operators not assigned to any other duties immediately following Control Room evacuation.* *b) All locations are in close proximity to each other, and most are in adjacent areas.* c) *The PSL Time Critical Action Program confirms that all of the actions have been subjected to timed walkdowns and can be accomplished within the required time. This activity has recently been completed.* *d) Completion of the actions within the specified timeline is confirmed approximately every 2 years as part on the simulator training on the HSCP*

Table B-TBD Feasibility Criteria – Recovery Actions	
10	**Training** Training should be provided on the post-fire procedures and implementation of the recovery actions. *Attributes of the training program specific to the actions taken at the primary control station are identified below.* *a) Classroom training is provided every 4 years. This training includes the entire process applicable to safe shutdown to cold shutdown conditions from the HSCP.* *b) Simulator training is provided every 2 years regarding plant control from the HSCP. This may include timed field walkdowns of the actions.* c) *Job Performance Measures (JPM) are implemented for all the actions.*
11	**Drills** Periodic drills that simulate the conditions to the extent practical (e.g., communications between the control room and field actions, the use of SCBAs if credited, the appropriate use of operator aids). *Simulator use every 2 years of the HSCP which includes all actions taken to enable and transfer control to the HSCP as well as actions taken at the HSCP to stabilize the plant. No SCBAs are required.*

Component Labeling- All of the switches and breakers are uniquely identified by pink "CRI Tags". The CRI Tag number is identified for each switch or breaker in the CRI procedure.