Enclosure 2
Meeting Summary Handouts
of the February 16, 2011
ROP Public Meeting
Dated March 14, 2011

Open FAQs on NEI 99-02
Status Date: For 2/16/2011 ROP Public Meeting

No.	PI	Topic	Status	Plant/Co.	Point of Contact
09-10	EP02	Common EOF	Discussed status 9/15/10. Proposed resolution is to be discussed 1/20/11. Updated text was provided to NRC (Kahler, et.al.) on 1/14/11 and, we believe, captures agreements of NSIR and EOP Task Force reached since 9/15/10. Revised text and current status will be presented on 2/16/2011, per Marty Hug and Eric Schrader. *[Tentatively Approved 1/20/11]*[*]	Generic	Walt Lee (TVA), Marty Hug (NEI)
10-02	IE04	USwC	NRC feedback on the last mark-up was received on 1/19/11. NRC's revised mark-up of NEI 99-02 will be discussed. *[Discussed 1/20/11]*[*]	Generic	Jim Slider (NEI)for the ROP Task Force
10-06	MS	Cascading Unavailability	Introduced at October 20 ROP meeting. Discussed 12/1/10. NRC to provide feedback at 1/20/11 meeting. NRC's proposed mark-up of NEI 99-02 will be discussed. *[Tentatively Approved 1/20/11]*[*]	Generic	John Dowling (Ameren)
10-07	IE04	Vendor EOPs	Introduced at December 1 ROP meeting. ROP TF discussion draft of changes to NEI 99-02 will be presented. *[No discussion of contents 1/20/11]*[*]	Generic	Steve Vaughn (NRC)

Open FAQs on NEI 99-02
Status Date: For 2/16/2011 ROP Public Meeting

No.	PI	Topic	Status	Plant/Co.	Point of Contact
11-01	MS10	Cooling Water Boundary	Converted from white paper to draft FAQ. FAQ to be introduced at 1/20/11 meeting. Revised wording from ROP TF will be discussed 2/16/2011. *[Introduced and discussed 1/20/11]* *	Generic	Jim Peschel (NextEra) Steve Vaughn (NRC)
11-02	MS	MSPI Basis Document Updates	Converted from white paper to draft FAQ. FAQ to be introduced at 1/20/11 meeting. ROP TF revised wording will be presented 2/16/2011. *[Tentatively Approved 1/20/11]* *	Generic	Roy Linthicum (Exelon) Steve Vaughn (NRC)
11-03	USwC	Robinson Scram	Introduced 1/20/2011. *[Introduced, discussed and Tentatively Approved 1/20/11]* *	Generic	Garrett Sanders (Progress)
11-04	IE03	Power Changes Needed to Recover from Loss of Equipment	Converted from white paper to draft FAQ. Introduced at 1/20/11 meeting. ROP TF is reworking this and will not present on 2/16/2011. *[Introduced and discussed 1/20/11]* *	Generic	Robin Ritzman (First Energy) Jocelyn Lian (NRC)
11-05	MS08	Point Beach Pumps	Introduced 1/20/2011. NRC questions on revised wording and timeline to be discussed 2/16/2011. Revised wording will be presented. *[Introduced, discussed and Tentatively Approved 1/20/11]* *	NextEra	Carol Jilek (NextEra)
11-06 (Proposed)	MS	EDG Run Hours	To be introduced 2/16/2011.	Generic	Roy Linthicum (Exelon)

* *Bracketed remarks reflect NEI's notes from the January 20, 2011 ROP public meeting.*

NEI Contact: James E. Slider, 202-739-8015, jes@nei.org

NEI 99-02 FAQ TEMPLATE

Number 09-10, "Multiple Units at One or More Sites"

Revised February 15, 2011

Plant: Tennessee Valley Authority - Sequoyah

Date of Event: 10/19/2009

Submittal Date: Original – 11/9/2009

Licensee Contact: Walt Lee **Tel/email:** whlee@tva.gov

NRC Contact: **Tel/email:**

Performance Indicator:
NEI 99-02, Revision 6, Section 2.4, Emergency Preparedness Cornerstone, Indicator EP01- Drill and Exercise Performance; and Indicator EP02 – ERO Drill Participation.

Site-Specific FAQ (Appendix D)? No, FAQ is Generic.

FAQ requested to become effective: In the quarter following approval.

Question Section

NEI 99-02 Guidance needing interpretation (include page and line citation):
Page 50, Lines 3-13

> **Purpose**
>
> This indicator tracks the participation of ERO members assigned to fill Key Positions in performance enhancing experiences, and through linkage to the DEP indicator ensures that the risk significant aspects of classification, notification, and PAR development are evaluated and included in the PI process. This indicator measures the percentage of ERO members assigned to fill Key Positions who have participated recently in performance-enhancing experiences such as drills, exercises, or in an actual event.
>
> **Indicator Definition**
>
> The percentage of ERO members assigned to fill Key Positions that have participated in a drill, exercise, or actual event during the previous eight quarters, **as measured on the last calendar day of the quarter.** [bolding is in original]

Event or circumstances requiring guidance interpretation:

The event or circumstance involves utilities with common Emergency Operations Facilities (EOFs) where the functions of EOF Senior Manager, EOF Key Protective

Measures and EOF Communicator are assigned to Key Positions that support multiple nuclear sites. ERO members assigned to each function are grouped and monitored to ensure that each receives a "meaningful opportunity to gain proficiency". These opportunities are accounted for at the end of each quarter and reported through the ROP process.

Where an ERO member is assigned to fill a Key Position supporting multiple nuclear units, the ERO member is trained to support each unit served. Units may be at one site or multiple sites. ERO members receive initial and continuing training on site and unit-specific procedures, processes and protocols as well as involvement in a drill and exercise programs that support both. This ensures the skill sets needed are similar in application regardless of the nuclear unit involved.

The clarification being sought would allow granting of Participation Credit to an ERO member, assigned to fill a Key Position supporting multiple nuclear units, for all the sites served by that member when provided with a meaningful opportunity to gain proficiency during a drill or exercise at any of the supported nuclear units.

If licensee and NRC resident/region do not agree on the facts and circumstances explain

NRC does not agree with the current method for granting participation credit for common EOFs and has specified that participation credit can be provided only to the specific site involved in the drill or exercise.

Potentially relevant existing FAQ numbers: None identified.

Response Section

Proposed Resolution of FAQ

Revise NEI 99-02, Section 2.4, to provide the option of an alternate methodology that would allow participation credit for the common facility to be counted across all units or sites supported by that facility. The common facility could include an Emergency Operations Facility, Technical Support Center, or Operational Support Center. The alternate methodology could be elected for a common facility serving either multiple units or sites or serving units with different technologies, provided the following five conditions are met:

1. The functions of Classification, Protective Action Recommendations (PARs), Dose Assessment, and Emergency Notifications are performed similarly (an ERO member, assigned to fill a Key Position supporting multiple nuclear units may not perform all 4 functions, therefore this requirement only applies to the functions performed by that ERO member) for each unit served by the common facility.

2. The link between the Drill and Exercise Performance (DEP) indicator and the ERO Drill Participation indicator is maintained by granting DEP credit (both success and failure) from one drill or exercise to all units served by the common facility.
3. Lessons learned through the common facility are shared with all the nuclear units or sites that are supported by the common facility.
4. Corrective actions associated with Key Positions in the ERO are applied to each unit or site served by the common facility.
5. Initial and continuing position specific training is required for Key ERO positions to include at a minimum all position tasks associated with RSPS. Lesson plans, rosters, records, are available for NRC inspection.

~~5.~~6. An ERO member in a Key Position supporting multiple units is expected to participate with a different unit every two years.

If appropriate, provide proposed rewording of guidance for inclusion in next revision.

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[DRILL AND EXERCISE PERFORMANCE]

NEI 99-02 Revision 6, Section 2.4, page 45, "Clarifying Notes"

33 If credit for an opportunity is given in the ERO Drill Participation performance indicator, then
34 that opportunity must be included in the drill/exercise performance indicator. For example, if the
35 communicator performing the entire notification during performance enhancing scenario is an
36 ERO member in a Key Position, then the notification may be considered as an opportunity and, if
37 so, participation credit awarded to the ERO member in the Key Position.
38

[New text to be inserted at Line 38]

If an ERO member in a Key Position supports multiple units (at one or more sites), Drill/Exercise Performance (DEP) opportunities performed by the ERO member shall be credited to all sites potentially served by the ERO member, in addition to the specific site participating in the drill or exercise.

39 When a performance enhancing experience occurs before an individual is assigned to a Key
40 Position in the ERO, then opportunities for that individual that were identified in advance shall
41 contribute to the Drill/Exercise (DEP) metric at the time the member is assigned to the ERO.
42

FAQ 09-10

Multiple Units at One or More Sites

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[PARTICIPATION]

NEI 99-02 Revision 6, page 50, "Data Reporting Elements"

[New text to be inserted at Line 24]

The participation indicator may include participation in a facility that supports multiple units.

25 **Calculation**
26 The site indicator is calculated as follows:
27

NEI 99-02 Revision 6, page 51, "Clarifying Notes"

41 inspection.
42

[New text to be inserted at Line 42]

If an ERO member in a Key Position supports multiple units (at one or more sites) and demonstrates similar skill sets during a performance-enhancing experience, participation credit may be granted for all sites supported.

Negative performance credit as well as positive performance credit will be assigned to all units.

Drill Rotation

An ERO member in a Key Position supporting multiple units is expected to participate with a different unit every two years.

Similarity of Skill Sets

Skill sets are considered similar when the procedures, processes and protocols involved accomplish the same task or goal. Examples of similar skill sets are provided below:

Classification

~~For~~ Classification of Emergencies, are similar~~similar~~ when Emergency Action Level procedures, processes and protocols used by the ~~used by the~~ ERO member's in the Key Position are essentially the same (for example all units would use NEI 99-01 or in the case where a unit may be an advanced passive light water reactor is would be acceptable to utilize NEI 99-01 for existing technology and NEI 07-01 for passive technology). ~~.~~ Training for key ERO members performing this function is to include unit-specific and/or technology differences relating to Initiating Conditions / Emergency Action Levels (e.g., ISFSI, unique hazards, design considerations, etc.).

Protection Action Recommendations (PARs)

Protection Action Recommendations, when developed with the same protective action strategies, are similar provided that the procedures, processes and protocols for the development of the protective action recommendations are essentially the same. For example:

- Logic flow charts may differ (e.g., because of population differences among the sites), but should serve the same purpose and be used in the same way.
- Protective Action Zones may differ, but the process used to identify the action taken for the zones are the same.
- Implementation of potassium iodide (KI) strategies may differ based on the implementation strategies of responsible authorities at the State and/or Local level, but the procedures, processes and protocols used to determine if KI is warranted should be the same.
- PAR development discussion strategies should be the same for each site supported by the common facility.

Dose Assessment

Dose assessment is similar when methodologies, applicable computer programs, and models are the same across sites and/or unit technologies served by the common facility. Definitions of what constitutes a radiological release during a classified emergency are the same. Training for key ERO members performing this function must include unit-specific differences in effluent monitors and release pathways, local meteorological regimes and topography impacts and how these differences impact the dose assessment.

Emergency Notifications

The emergency communicator functions are similar when procedures, processes and protocols are performed utilizing a similar emergency notification form design and content. Emergency communicators will be trained on all notification procedures, processes and protocol differences including, but not limited to, offsite contacts, form content, methods and equipment.

Link to Drill and Exercise Performance

Lessons learned (positive and negative) are shared to ensure that the benefits of the performance enhancing experience of the key ERO member(s) are applied across all units. Corrective actions from the performance of key ERO members performing DEP activities are shared with and applied to all key ERO members of all units. Similarly, corrective actions associated with common facility Key ERO member performance (e.g. training or qualification gaps, procedure deficiencies, equipment issues) are applied across all units corrective action programs. DEP opportunities performed shall be credited to all units, in addition to the unit participating in the drill or exercise.

43 Credit can be granted to Key Positions for ERO Participation for a Security related Drill or
44 Exercise as long as the Key Positions are observed evaluating the need to upgrade to the next

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FAQ TEMPLATE

Plant: Generic
Date of Event: NA
Submittal Date: January 21, 2010
Licensee Contact: Ken Heffner Tel/email: 919-270-5611/kmh@nei.org
NRC Contact: Nathan Sanfillipo Tel/email: 301-415-3951/nathan.sanfillipo@nrc.gov

Performance Indicator:
IE04 Unplanned Scrams with Complications

Site-Specific FAQ (Appendix D)? No

FAQ requested to become effective when approved

Question Section

NEI 99-02 Guidance needing interpretation (include page and line citation):

NEI 99-02 Revision 6, Page 20 lines 22 to 46, page 22 lines 35-45, and page 23 lines 1-10 discuss whether or not Main Feedwater was available following an unplanned scram.

Event or circumstances requiring guidance interpretation:

When FAQ # 467 was approved, the response section stated that the guidance in NEI 99-02 should be reviewed to see if it needs to be revised based on circumstances that might require the availability of feedwater beyond 30 minutes and whether consideration of the scram response time window remains an appropriate marker for judging a complication to recovery from an unplanned scram.

The purpose of this FAQ is to define what constitutes scram“ response” as opposed to scram “recovery.”

If licensee and NRC resident/region do not agree on the facts and circumstances explain

In FAQ #467, the plant’s recommendation was to change the guidance in two locations:

1. If operating prior to the scram, did Main Feedwater cease to operate and was it unable to be restarted during the reactor scram response? The consideration for this question is whether Main Feedwater could be used to feed the reactor vessel if necessary. When considering the availability of Main Feedwater, it should be able to be restarted within the first 30 minutes following the scram.

   The Senior Resident’s response was that this guidance change would not capture those events that are of higher safety significance because main feed is not available, even if it was not required to be used, and 30 minutes is a completely arbitrary number.

2. Operations should be able to start a Main Feedwater pump and start feeding the reactor vessel with the Main Feedwater System within 30 minutes of the initial scram transient. During startup conditions where Main Feedwater was not placed in service prior to the scram, the question would not be considered, and should be skipped.

   This Senior Resident's response to this proposed change was that even if the main feed steam supply is temporarily isolated, the PI should capture those events where main feed couldn't be restored in a relatively short time. "It might be different if the equipment was designed such that restoration was not possible

Potentially relevant existing FAQ numbers
467

Response Section

Proposed Resolution of FAQ

The first 30 minutes after the scram is considered scram response and Main Feedwater must be available in the event that it could be needed. After 30 minutes is considered scram recovery.

If appropriate, provide proposed rewording of guidance for inclusion in next revision.

Mark-up from Steve Vaughn 1/28/2011
For FAQ 10-02

UNPLANNED SCRAMS WITH COMPLICATIONS (USwC)

Purpose

This indicator monitors that subset of unplanned automatic and manual scrams that either require additional operator actions beyond that of the "normal" scram or involve the unavailability or inability to recover main feedwater. Such events or conditions have the potential to present additional challenges to the plant operations staff and therefore, may be more risk-significant than uncomplicated scrams.

Indicator Definition

The USwC indicator is defined as the number of unplanned scrams while critical, both manual and automatic, during the previous 4 quarters that require additional operator actions or involve the unavailability or inability to recover main feewater as defined by the applicable flowchart (Figure 2) during the scram response (see definition of *scram response* in the Definitions of Terms section)and the associated flowchart questions.

Data Reporting Elements

The following data are required to be reported for each reactor unit.

The number of unplanned automatic and manual scrams while critical in the previous quarter that required additional operator actionsresponse or involve the unavailability or inability to recover main feedwater as determined by the applicable flowchart criteria(Figure 2) during the scram response.

Calculation

The indicator is determined using the values reported for the previous 4 quarters as follows:

value = total unplanned scrams while critical in the previous 4 quarters that required additional operator response actions or involve the unavailability or inability to recover main feedwater as defined by the applicable flowchart and the associated flowchart questions(Figure 2) during the scram response.

Definition of Terms

Scram means the shutdown of the reactor by the rapid addition of negative reactivity by any means, e.g., insertion of control rods, boron, use of diverse scram switches, or opening reactor trip breakers.

Normal Scram means any scram that is not determined to be complicated in accordance with the guidance provided in the Unplanned Scrams with Complications indicator. A normal scram is synonymous with an uncomplicated scram.

Unplanned scram means that the scram was not an intentional part of a planned evolution or test as directed by a normal operating or test procedure. This includes scrams that occurred during the execution of procedures or evolutions in which there was a high chance of a scram occurring but the scram was neither planned nor intended.

Criticality, for the purposes of this indicator, typically exists when a licensed reactor operator declares the reactor critical. There may be instances where a transient initiates from a subcritical condition and is terminated by a scram after the reactor is critical—this condition would count as a scram.

Scram Response refers to the period of time which starts with the onset of the initiating event and concludes when operators have- completed the scram response EOP ~~actions~~ and the plant has achieved a stabilized condition in accordance with criteria in approved plant procedures.

For a PWR, the reactor is considered "stable" when all of the following are true:

- Pressurizer pressure is within the nominal operating pressure band
- Pressurizer level is within the no-load pressurizer band
- L~~The l~~evel and pressure of all steam generators is ~~between the bottom of the narrow range indication and 50%, including allowances for channel accuracies and reference leg process errors~~within the normal operating band. ~~and pressure is within the nominal operating pressure band.~~
- ~~The~~ RCS temperature is within the allowable RCS no-load temperature band (T_{ave} if any RCS pump running, T_{cold} if no RCS pumps running).
- [SJV1]

For a BWR, the reactor is considered stable when all of the following are true:

- No EOP entry conditions exist[s2]
- Reactor cooldown rates are less than 100 degrees F/hr
- Reactor water level is~~and pressure are~~ being maintained within the range specified by plant procedures

Clarifying Notes

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PWR FLOWCHART QUESTIONS (See Figure 2)
Did two or more control rods fail to fully insert?

…

Did the turbine fail to trip?

…

Was power lost to any ESF bus?

…

Was a Safety Injection signal received?

…

Was Main Feedwater unavailable or not recoverable using approved plant procedures ~~following the scram~~during the scram response?

If operating prior to the scram, did Main Feedwater cease to operate and was it unable to be restarted during the reactor scram response? The consideration for this question is whether Main Feedwater could be used to feed the steam generators if necessary. The qualifier of "not recoverable using approved plant procedures" will allow a licensee to answer "No" to this question if there is no physical equipment restraint to prevent the operations staff from starting the necessary equipment, aligning the required systems, or satisfying required logic using plant procedures approved for use and in place prior to the reactor scram occurring.

The operations staff must be able to start and operate the required equipment using normal alignments and approved emergency, normal, and off-normal operating procedures to provide the required flow to~~feed~~ the minimum number of steam generators required by the EOPs ~~to satisfy the heat sink criteria~~. Manual operation of controllers/equipment, even if normally automatic, is allowed if addressed by procedure. Situations that require maintenance or repair activities or non-proceduralized operating alignments require an answer of "Yes." Additionally, the restoration of Feedwater must be capable of feeding the Steam Generators in a reasonable period of time. Operations should be able to start a Main Feedwater pump and start feeding Steam Generators with the Main Feedwater System within about 30 minutes ~~post scram~~from the time it was recognized that Main Feedwater was needed. During startup conditions where Main Feedwater was not placed in service prior to the scram this question would not be considered and should be skipped. If design features or procedural prohibitions prevent restarting Main Feedwater under certain plant conditions, and MFW is free from damage or failure (i.e., capable of performing its intended function) and available for use, this question should be answered as "No."

Was the scram response procedure unable to be completed without entering another EOP?

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BWR FLOWCHART QUESTIONS (See Figure 2)

Did an RPS actuation fail to indicate / establish a shutdown rod pattern for a cold clean core?

…

Was pressure control unable to be established following the initial transient?

…

Was power lost to any Class 1E Emergency / ESF bus?

…

Was a Level 1 Injection signal received?

…

Was Main Feedwater not available or not recoverable using approved plant procedures during the scram response?

If operating prior to the scram, did Main Feedwater cease to operate and was it unable to be restarted during the reactor scram response? The consideration for this question is whether Main Feedwater could be used to feed the reactor vessel if necessary. The qualifier of "not recoverable using approved plant procedures" will allow a licensee to answer "NO" to this question if there is no physical equipment restraint to prevent the operations staff from starting the necessary equipment, aligning the required systems, or satisfying required logic circuitry using plant procedures approved for use that were in place prior to the scram occurring.

The operations staff must be able to start and operate the required equipment using normal alignments and approved emergency, normal and off-normal operating procedures. Manual operation of controllers/equipment, even if normally automatic, is allowed if addressed by procedure. Situations that require maintenance or repair activities or non-proceduralized operating alignments will not satisfy this question. Additionally, the restoration of Main Feedwater must be capable of being restored to provide feedwater to the reactor vessel in a reasonable period of time. Operations should be able to start a Main Feedwater pump and start feeding the reactor vessel with the Main Feedwater System within about 30 minutes from the time it was recognized that Main Feedwater was needed~~post scram~~. During startup conditions where Main Feedwater was not placed in service prior to the scram, this question would not be considered, and should be skipped.

Following initial transient, did stabilization of reactor pressure/level and drywell pressure meet the entry conditions for EOPs?

…

APPENDIX H

USwC Basis Document

The USwC PI will monitor the following six conditions that either have the potential to complicate the operators' scram ~~recovery~~ response actions or involve the unavailability or inability to recover main feedwater during the scram response.

1. Reactivity Control
2. Pressure Control (BWRs)/Turbine Trip (PWRs)
3. Power available to Emergency Busses
4. Need to actuate emergency injection sources
5. Availability of Main Feedwater
6. Utilization of scram recovery Emergency Operating Procedures (EOPs)

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H 1 PWR Flowchart Basis Discussion

H 1.1 Did two or more control rods fail to fully insert?

…

H 1.2 Did the turbine fail to trip?

…

H 1.3 Was power lost to any ESF bus?

…

H 1.4 Was a Safety Injection signal received?

…

H 1.5 Was Main Feedwater unavailable or not recoverable using approved plant procedures ~~following the scram~~during the scram response?

This section of the indicator is a holdover from the Scrams with Loss of Normal Heat Removal indicator which the USwC indicator ~~is~~ replaceding. Since all PWR designs have an emergency Feedwater system that operates if necessary, the availability of the normal or main Feedwater system, ~~s~~ as ~~is~~ a backup in emergency situations, can be important for managing risk following a reactor scram. This portion of the indicator is designed to

~~measure~~ assess that backup availability or ability to recover main feedwater as directed by approved plant procedures (e.g., the EOPs) on a loss of all emergency Feedwater.

It is not necessary for the main Feedwater system to continue operating following a reactor trip. Some plants, by design, have certain features to prevent main feedwater from continued operation or from allowing it to be restarted unless certain criteria are met. ~~The system must be free from damage or failure that would prohibit restart of the system if necessary.~~ Since some plant designs do not include electric driven main Feedwater pumps (steam driven pumps only) it may not be possible to restart main Feedwater pumps without a critical reactor. ~~Those plants should answer this question as "No" and move on.~~ ~~Some~~ Additionally, some other plant designs have interlocks and signals in place to prevent feeding the steam generators with main Feedwater unless reactor coolant temperature is greater than the no-load average temperature. In both cases these plants ~~should also answer this question as "No" and move on~~may be justified in answering this question as "No" if main feedwater is free from damage or failure (i.e., capable of performing its intended function) and available for use.

Licensees should rely on the material condition availability of the equipment to reach the decision for this question. Condenser vacuum, cooling water, and steam pressure values should be evaluated based on the requirements to operate the pumps and may be lower than normal if procedures allow pump operation at that lower value. As long as these support systems are able to be restarted (if not running) to support main feedwater restart within the estimated 30 minute timeframe they can be considered as available. These requirements apply until the completion or exit of the scram response. ~~procedure.~~

The availability of steam dumps to the condenser does NOT enter into this indicator at all. Use of atmospheric steam dumps following the reactor trip is acceptable for any duration.

Loss of one feed pump does not cause a loss of main feedwater. Only one is needed to remove residual heat after a trip. As long as at least one pump can still operate and provide Feedwater to the minimum number of steam generators required by the EOPs to satisfy the heat sink criteria, main feedwater should be considered available.

The failure in a closed position of a feedwater isolation valve to a steam generator is a loss of feed to that one steam generator. As long as the main feedwater system is able to feed the minimum number of steam generators required by the EOPs to satisfy the heat sink criteria, the loss of ability to feed other steam generators should not be considered a loss of feedwater. Isolation of the feedwater regulating or isolation valves does not constitute a loss of feedwater if nothing prevents them from being reopened in accordance with procedures.

A Steam Generator Isolation Signal or Feedwater Isolation Signal does not constitute a loss of main feedwater as long as it can be cleared and feedwater restarted. If the isolation signal was caused by a high steam generator level, the 30 minute estimate for restart time frame should start once the high level isolation signal has cleared.

The estimated 30 minute time frame for restart of main Feedwater was chosen based on restarting from a hot and filled condition. Since this time frame will not be measured directly it should be an estimation developed based on the material condition of the plants systems following the reactor trip. If no abnormal material conditions exist the 30 minutes should be met. If plant procedures and design would require more than 30 minutes, even if all systems were hot and the material condition of the plants systems following the reactor trip were normal, that routine time should be used in the evaluation of this question, provided SG dry-out cannot occur on an uncomplicated trip if the time is longer than 30 minutes. The ~~opinion~~ judgment of the on-shift licensed SRO during the reactor trip should be ~~accepted~~ used in determining if this timeframe was met.

H 1.6 Was the scram response procedure unable to be completed without entering another EOP?

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H 3 BWR Flowchart Basis Discussion

H 3.1 Did an RPS actuation fail to indicate / establish a shutdown rod pattern for a cold clean core?

…

H 3.2 Was pressure control unable to be established following the initial transient?

…

H 3.3 Was power lost to any Class 1E Emergency / ESF bus?

…

H 3.4 Was a Level 1 Injection signal received?

…

H 3.5 Was Main Feedwater not available or not recoverable using approved plant procedures during the scram response?

If operating prior to the scram, did Main Feedwater cease to operate and was it unable to be restarted during the reactor scram response? The consideration for this question is whether Main Feedwater could be used to feed the reactor vessel if necessary. The qualifier of “not recoverable using approved plant procedures” will allow a licensee to answer “NO” to this question if there is no physical equipment restraint to prevent the operations staff from starting the necessary equipment, aligning the required systems, or satisfying required logic

circuitry using plant procedures approved for use that were in place prior to the scram occurring.

The operations staff must be able to start and operate the required equipment using normal alignments and approved emergency, normal and off-normal operating procedures. Manual operation of controllers/equipment, even if normally automatic, is allowed if addressed by procedure. Situations that require maintenance or repair activities or non-proceduralized operating alignments will not satisfy this question. Additionally, the restoration of Main Feedwater must be capable of being restored to provide feedwater to the reactor vessel in a reasonable period of time. Operations should be able to start a Main Feedwater pump and start feeding the reactor vessel with the Main Feedwater System within about 30 minutes from the time it was recognized that Main Feedwater was neededpost scram. During startup conditions where Main Feedwater was not placed in service prior to the scram, this question would not be considered, and should be skipped.

H 3.6 Following initial transient, did stabilization of reactor pressure/level and drywell pressure meet the entry conditions for EOPs?

Since BWR designs have an emergency high pressure system that operates automatically between a vessel-high and vessel-low level, it is not necessary for the Main Feedwater System to continue operating following a reactor trip. However, failure of the Main Feedwater System to be available is considered to be risk significant enough to require a "Yes" response for this PI. To be considered available, the system must be free from damage or failure that would prohibit restart of the system. Therefore, there is some reliance on the material condition or availability of the equipment to reach the decision for this question. Condenser vacuum, cooling water, and steam pressure values should be evaluated based on the requirements to operate the pumps, and may be lower than normal if procedures allow pump operation at that lower value.

The estimated 30 minute time frame for restart of Main Feedwater was chosen based on restarting from a hot condition with adequate reactor water level. Since this time frame will not be measured directly, it should be an estimation developed based on the material condition of the plants systems following the reactor trip. If no abnormal material conditions exist, the 30 minutes should be capable of being met. If plant procedures and design would require more than 30 minutes, even if all systems were hot and the material condition of the systems following the reactor trip were normal, a routine time should be used in the evaluation of this question. The considered opinion judgment of an on-shift licensed SRO should be used in determining if in meeting this time frame is metacceptable.

When a scram occurs plant operators will enter the EOPs to respond to the condition. In the case of a routine scram the procedure entered will be exited fairly rapidly after verifying that the reactor is shutdown, excessive cooling is not in progress, electric power is available, and reactor coolant pressures and temperatures are at expected values and controlled. Once these verifications are done and the plant conditions considered "stable" (see guidance in the Definition of Terms section under *scram response*) operators will exit the initial procedure to another procedure that will stabilize and prepare the remainder of the plant for transition for

the use of normal operating procedures. The plant would then be ready be maintained in Hot Standby, to perform a controlled normal cool down, or to begin the restart process. The criteria in this question is used to verify that there were no other conditions that developed during the stabilization of the plant in the scram response related vessel parameters that required continued operation in the EOPs or re-entry into the EOPs or transition to a follow-on EOP. Maintaining operation in EOPs that are not related to vessel and drywell parameters do not count in this PI.

For example:
Suppression Pool level high or low require entry into an EOP on Containment Control. Meeting EOP entry conditions for this EOP do not count in this PI.

For October 20, 2010 ROP Public Meeting

Proposed FAQ 10-06

Plant:	**Callaway Plant**
Date of Event:	**2/6/10**
Submittal Date:	**Proposed as 10/20/10**
Licensee Contact:	**John Dowling, 314-225-1546, jdowling@ameren.com**
NRC Contact:	**Jeremy Groom**
Performance Indicator:	**Mitigating Systems**
Site Specific FAQ:	**No**

FAQ requested to become effective when approved.

Question Section:

The Licensee and Resident Inspectors request clarification in the guidance for what constitutes cascaded unavailability. NEI 99-02 section 2.2, Mitigating System Performance Index, pages 31-36, provide the guidance on how to properly administer and report this performance indicator. On page 34, under the Monitored Systems section, line 37 states explicitly "No support systems are to be cascaded onto the monitored systems, e.g., HVAC room coolers, DC power, Instrument Air, etc."

Appendix F section 2.1.3 provides guidance on how to define the boundaries of frontline system monitored components and support system components for the Unreliability element of MSPI. While this guidance could reasonably be extended to the unavailability section, there are no explicit statements regarding the definition of boundaries between frontline systems and support systems in the Unavailability element of MSPI.

What guidance should be used to define the frontline system and support system boundaries for the unavailability element of MSPI to ensure the "no cascading of unavailability" clause is met and unavailability is accurately reported?

Guidance needing clarification/interpretation:

Add a statement in Appendix F, section 1.2.1 regarding the establishment of boundaries between frontline and support system components for reporting unavailability consistent with the "No cascading of unavailability" clause from page 34.

Page F-6 "No Cascading of Unavailability" section should be clarified. Currently, all examples in this section refer to disabling a function of a monitored piece of equipment for protection when a support system is out of service. This could lead to an interpretation that these examples are the only conditions applicable to the "no cascading clause" on page 34.

Page F-29 "Failures and Discovered Conditions of Non-Monitored Structures, Systems, and Components" section does not appear to be consistent with the guidance of page 34 for no cascading of support systems onto monitored systems, specifically lines 20 – 23 … " An

example could be a manual suction isolation valve left closed which would have caused a pump to fail. This would not be counted as a failure of the pump. Any mis-positioning of the valve that caused the train to be unavailable would be counted as unavailability from the time of discovery." This example does not indicate whether the mis-positioned valve was inside or outside the monitored system boundary, which introduces confusion. This example should include a statement that the mis-positioned valve is inside the monitored system boundary.

Event requiring guidance interpretation:

On February 6, 2010 a DC power supply failed in cabinet SA036C, the ESFAS Channel 2 termination/logic cabinet. This power supply failure resulted in declaring the Turbine Driven Auxiliary Feedwater Pump inoperable in accordance with Tech Spec requirements. No actions were taken that removed the capability of the pump to flow water to the steam generators. Licensee did not count unplanned unavailability for the Turbine Driven Auxiliary Feedwater train because it was considered “cascaded” unavailability from the ESFAS system. This cabinet is not within the train boundary for the Turbine Driven Auxiliary Feedwater train as identified in the Callaway MSPI Basis Document. Referring to Figure F-4 on page F-58 of Appendix F of NEI 99-02, the ESFAS system is outside the Turbine Driven Pump boundary. The failed power supply does not meet the definition of a support component as defined in INPO 98-001 "Supporting components – A supporting component exists in the plant solely to support the operation of a single key component. If a component supports multiple key components, it should be considered a key component." The failed power supply, SA036C, supports actuation signals to the two steam admission valves to the Turbine Driven Auxiliary Feedwater Pump, the Turbine Driven Auxiliary Feedwater Pump (a monitored component) the Turbine Driven Pump loss of suction pressure signal (one of 3 logic) to other Auxiliary Feedwater pumps suction valves, and the Automatic Test Insertion function. The two steam admission valves are within the MSPI boundary for the TDAFP train (TRAIN T) but are outside the boundary for the Turbine Driven Auxiliary Feedwater Pump and are not monitored components. Since SA036C supports more than one component, with only one of those being a monitored component, it can not be considered a supporting control component, and thus is not included within the boundary of the Turbine Driven Auxiliary Feedwater pump per the guidance of F.2.1.3.

Licensee's interpretation of cascaded unavailability is: monitored train unavailability resulting from equipment failure or other unavailability of a support system outside the boundary of the monitored train. NEI 99-02 Revision 6 page 34 lines 37 and 38 states: No support systems are to be cascaded onto monitored systems, e.g., HVAC room coolers, DC power, instrument air, etc. Licensee interprets the referenced NEI 99-02 Appendix F pages and sections above as clarification and reinforcement of the no cascading clause on page 34. However, these references can lend themselves to varied interpretation.

It is the Licensee’s position that the “Failures and Discovered Conditions of Non-Monitored Structures, Systems, and Components" section on page F-29, refers only to those components within the frontline system boundary and not to those components outside the boundary or to

support system components. Any other interpretation would conflict with the general guidance against cascaded unavailability on page 34.

NRC Resident Inspector Position:

In the case of the failure of ESFAS Power Supply SA036C, the automatic start functions of the turbine driven auxiliary feedwater pump would be unavailable. Following the failure, the licensee did declare the turbine driven auxiliary feedwater pump inoperable. The resident inspectors believe the time associated with the failure of this power supply should count as unplanned unavailability for the turbine driven train of the auxiliary feedwater system. Unavailability is defined in NEI 99-02, Revision 6, Page 31, beginning on line 15.

> *Unavailability is the ratio of the hours the train/system was unavailable to perform its monitored functions (as defined by PRA success criteria and mission times) due to planned and unplanned maintenance or test during the previous 12 quarters while critical to the number of critical hours during the previous 12 quarters.*

NEI 99-02 (Page 31, Line 22-27) goes on to state that:

> *In any case where a monitored component has been declared inoperable due to a degraded condition, if the component is considered available, there must be a documented basis for that determination, otherwise a failure will be assumed and unplanned unavailability would accrue.*

While the ESFAS Power Supply SA036C is a unmonitored component in MSPI (in terms of the Unreliability Index) the inspectors believe the time associated with the power supply failure should be included in the Unavailability Index based on the guidance in NEI 99-02, Revision 6, Page F-29, (Beginning on Line 18.)

> *"Failures of SSCs that are **not included in the performance index** will not be counted as a failure or a demand. Failures of SSCs that would have caused an SSC within the scope of the performance index to fail will not be counted as a failure or demand. An example could be a manual suction isolation valve left closed which would have caused a pump to fail. This would not be counted as a failure of the pump. Any mis-positioning of the valve **that caused the train to be unavailable would be counted as unavailability from the time of discovery."***

The inspectors believe this guidance indicates that failures of SSCs that are not included in the performance index will not be counted as a failure or a demand in the Unreliability Index but should be counted as unavailability from the time of discovery.

If licensee and NRC resident/region do not agree on the facts and circumstances explain:

NA, there is agreement on facts and circumstances, but not on interpretation of the existing guidance as stated above.

Potentially relevant existing FAQ numbers: NA

Response Section:

Proposed Resolution of FAQ:
Provide a judgment as to the correct interpretation of NEI 99-02 guidance as it pertains to the question and event requiring guidance interpretation.

The licensee recommends incorporating the following proposed wording changes or changes with equivalent meaning into the next revision of NEI 99-02. The basis for this recommendation is to ensure consistency between NEI 99-02 section 2.2, Mitigating System Performance Index, pages 31-36, and NEI 99-02 and Appendix F Section's 1.2.1, 2.2.1 and 2.2.2 and provide explicit guidance as to the definition of boundaries between frontline systems and support systems in the Unavailability section.

Licensee proposed wording changes:

Bolded and underlined phrases indicate proposed changes, strike-throughs indicate deletions.

Page F-6

No Cascading of Unavailability: **There is no cascading of unavailability from support system components to frontline system monitored components. A failure of a support system component may require a monitored component to be declared Inoperable. If the monitored component is not rendered non-functional through tag out or physical plant conditions then no unavailable time should be accrued for the monitored component.**
In some cases plants will disable the autostart of a supported monitored system when the support system is out of service. For example, a diesel generator may have the start function inhibited when the service water system that provides diesel generator cooling is removed from service. This is done for the purposes of equipment protection. This could be accomplished by putting a ~~supported system~~ **monitored train** in "maintenance" mode or by pulling the control fuses of the ~~supported~~ **monitored** component~~.~~ If no maintenance is being performed ~~on a supported component~~ **within a monitored train** and it is only ~~disabled for equipment protection~~ **unavailable** due to a support system being out of service, no unavailability should be reported for the train/segment. If however, maintenance is performed on the monitored ~~component~~ train, then the unavailability must be counted. For example, if an Emergency Service Water train/segment is under clearance, and the ~~autostart of the~~ associated High Pressure Safety Injection (HPSI) pump is ~~disabled~~ **unavailable**, there is no unavailability to be reported for the HPSI pump. If a maintenance task to collect a lube oil sample is performed

and it can be performed with no additional tag out, no unavailability has to be reported for the HPSI pump. If however, the sample required an additional tag out that would make the HPSI pump unavailable, then the time that the additional tag out was in place must be reported as planned unavailable hours for the HPSI pump.

Page F-29
Failures and Discovered Conditions of Non-Monitored Structures, Systems, and Components (SSC)

This statement refers to Non-Monitored SSCs within the boundary of the frontline system.
Failures of SSCs that are not included in the performance index will not be counted as a failure or a demand. Failures of SSCs that would have caused an SSC within the scope of the performance index to fail will not be counted as a failure or demand. An example could be a manual suction isolation valve left closed which would have caused a pump to fail. This would not be counted as a failure of the pump. Any mis-positioning of the valve that caused the train to be unavailable would be counted as unavailability from the time of discovery. The significance of the mis-positioned valve prior to discovery would be addressed through the inspection process. (Note, however, in the above example, if the shut manual suction isolation valve resulted in an actual pump failure, the pump failure would be counted as a demand and failure of the pump.)

MITIGATING SYSTEM PERFORMANCE INDEX

Purpose

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Indicator Definition

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Unavailability is the ratio of the hours the train/system was unavailable to perform its monitored functions (as defined by the train/system boundaries, PRA success criteria and mission times) due to planned and unplanned maintenance or test during the previous 12 quarters while critical to the number of critical hours during the previous 12 quarters. (Fault exposure hours are not included; unavailable hours are counted only from the time of discovery of a failed condition to the time the train's monitored functions are recovered.) Time of discovery of a failed monitored component is when the licensee determines that a failure has occurred or when an evaluation determines that the train would not have been able to perform its monitored function(s). In any case where a monitored component has been declared inoperable due to a degraded condition, if the component is considered available, there must be a documented basis for that determination, otherwise a failure will be assumed and unplanned unavailability would accrue. If the component is degraded but considered operable, timeliness of completing additional evaluations would be addressed through the inspection process.

31

Data Reporting Elements

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Calculation

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Plant Specific PRA

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Definition of Terms

Risk Significant Functions*:* those at power functions, described in the Appendix F section "Additional Guidance for Specific Systems," that were determined to be risk-significant in accordance with NUMARC 93-01, or NRC approved equivalents (e.g., the STP exemption request). The risk significant system functions described in Appendix F, "Additional Guidance for Specific Systems" should be modeled in the plant's PRA/PSA. System and equipment performance requirements for performing the risk significant functions are determined from the PRA success criteria, mission times, and boundaries for the system.

33

 Received 2/14/11

Clarifying Notes

Documentation and Changes

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Changes to PRA coefficient:

…

Changes to non-PRA information:

…

Monitored Systems

Systems have been generically selected for this indicator based on their importance in preventing reactor core damage. The systems include the principal systems needed for maintaining reactor coolant inventory following a loss of coolant accident, for decay heat removal following a reactor trip or loss of main feedwater, and for providing emergency AC power following a loss of plant off-site power. One support function (cooling water support system) is also monitored. The cooling water support system monitors the cooling functions provided by service water and component cooling water, or their direct cooling water equivalents, for the four front-line monitored systems. Other~~No~~ support systems (e.g., HVAC room coolers, DC power, instrument air, etc.) ~~are to~~will not be cascaded onto the monitored systems'~~, e.g., HVAC room coolers, DC power, instrument air, etc.~~ unavailability or reliability data. For the purposes of MSPI, a failure of a support system component that is outside the system and train boundary of a monitored system will not result in unavailability of a monitored train or failure of a monitored component.

34

Diverse Systems

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Use of Plant-Specific PRA and SPAR Models

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APPENDIX F

METHODOLOGIES FOR COMPUTING THE UNAVAILABILITY INDEX, THE UNRELIABILITY INDEX AND COMPONENT PERFORMANCE LIMITS

This appendix provides the details of three calculations: the System Unavailability Index, the System Unreliability Index, and component performance limits.

F 1. System Unavailability Index (UAI) Due to Train Unavailability

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F 1.1. Identification of System Trains

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F 1.1.1. Monitored Functions and System Boundaries

The first step in the identification of system trains is to define the monitored functions and system boundaries. Include all components within the system boundary that are required to satisfy the monitored functions of the system. Support systems (e.g., HVAC room coolers, DC power, instrument air, etc.) may be needed to satisfy a monitored function; however, if the failure of a support system component is outside of the system and train boundary of the monitored system, no unavailability or failure should be cascaded onto the monitored train or component respectively.

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System Interface Boundaries

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Water Sources and Inventory

Water tanks are not considered to be monitored components. As such, they do not contribute to URI. However, since tanks can be in the train boundary, periods of insufficient water inventory contribute to UAI if they result in loss of the monitored train function for the required mission time. If additional water sources are required to satisfy train mission times, only the connecting active valve from the additional water source is considered as a monitored component for calculating UAI. If there are valves in the primary water source that must change state to permit use of the additional water source, these valves are considered monitored and should be included in UAI for the system.

Unit Cross-Tie Capability

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Common Components

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F 1.1.2. IDENTIFICATION OF TRAINS WITHIN THE SYSTEM

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Cooling Water Support Systems and Trains

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Unit Swing trains and components shared between units

…

Maintenance Trains and Installed Spares

…

Trains or Segments that Cannot Be Removed from Service

…

F 1.2. COLLECTION OF PLANT DATA

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F 1.2.1. Actual Train Unavailability

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Unplanned unavailable hours: These hours include elapsed time between the discovery and the restoration to service of an equipment failure or human error (such as a misalignment) that makes the train unavailable. Time of discovery of a failed monitored component is when the licensee determines that a failure has occurred or when an evaluation determines that the train would not have been able to perform its monitored function(s). In any case where a monitored component has been declared inoperable due to a degraded condition, if the component is considered available, there must be a documented basis for that determination, otherwise a failure will be assumed and unplanned unavailability would accrue. If the component is degraded but considered operable, timeliness of completing additional evaluations would be addressed through the inspection process. Unavailable hours to correct discovered conditions that render a monitored ~~component~~ train incapable of performing its monitored function are counted as unplanned unavailable hours. An example of this is a condition discovered by an operator on rounds, such as an obvious oil leak, that was determined to have resulted in the equipment being non-functional even though

no demand or failure actually occurred. Unavailability due to mis-positioning of components that renders a train incapable of performing its monitored function~~s~~ is included in unplanned unavailability for the time required to recover the monitored function.

No Cascading of Unavailability Between Two Monitored Systems: In some cases plants will disable the autostart of a supported monitored system when the support monitored system is out

of service. For example, a diesel generator may have the start function inhibited when the service water system that provides diesel generator cooling is removed from service. This is done for the purposes of equipment protection. This could be accomplished by putting a ~~supported system~~monitored train in "maintenance" mode or by pulling the control fuses of the ~~supported~~ monitored component. If no maintenance is being performed ~~on a supported component~~within a monitored train and it is only ~~disabled for equipment protection~~unavailable due to another monitored system ~~support system~~ being out of service (i.e., service or cooling water), no unavailability should be reported for the train/segment. If, however, maintenance is performed on the monitored ~~component~~train such that the train is rendered unavailable, then the unavailability must be counted.

For example, if an Emergency Service Water train/segment is under clearance, and the autostart of the associated High Pressure Safety Injection (HPSI) pump is ~~disabled~~unavailable, there is no unavailability to be reported for the HPSI pump. If a maintenance task to collect a lube oil sample is performed and it can be performed with no additional tag out, no unavailability has to be reported for the HPSI pump. If however, the sample required an additional tag out that would make the HPSI pump unavailable, then the time that the additional tag out was in place must be reported as planned unavailable hours for the HPSI pump.

Additional guidance on the following topics for counting train unavailable hours is provided below.

- Short Duration Unavailability
- Credit for Operator Recovery Actions to Restore the Monitored Function

F-6

Short Duration Unavailability

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Credit for Operator Recovery Actions to Restore the Monitored Functions

…

Counting Unavailability when Planned and Unplanned Maintenance are Performed in the Same Work Window

...

Failures and Discovered Conditions of Non-Monitored Structures, Systems, and Components (SSC)

Failures of SSCs that are not included as monitored components in the performance index will not be counted as a failure or a demand. Failures of non-monitored SSCs that would have caused a monitored component~~n SSC~~ within the scope of the performance index to fail will not be counted as a failure or demand of the monitored component. An example could be a manual suction isolation valve left closed which would have caused a pump to fail. In this case, the

manual suction valve is with in the train boundary but is not a monitored component. The~~is~~ closed manual isolation valve would not be counted as a failure of the pump; however, a~~. A~~ny mis-positioning of the valve that caused the train to be unavailable would be counted as unavailability from the time of discovery. The significance of the mis-positioned valve prior to discovery would be addressed through the inspection process. (Note, however, in the above example, if the shut manual suction isolation valve resulted in an actual pump failure, the pump failure would be counted as a demand and failure of the pump.)

F-29

PWR Auxiliary Feedwater Systems

Scope

The function of the AFW system is to provide decay heat removal via the steam generators to cool down and depressurize the reactor coolant system following a reactor trip. The mitigation of ATWS events with the AFW system is not considered a function to be monitored by the MSPI. (Note, however, that the FV values will include ATWS events).

The function monitored for the indicator is the ability of the AFW system to take a suction from a water source (typically, the condensate storage tank and if required to meet the PRA success criteria and mission time, from an alternate source), and to inject into at least one steam generator~~.~~ [s1] after receiving an auto actuation signal.

The scope of the auxiliary feedwater (AFW) or emergency feedwater (EFW) systems includes the pumps and the components in the flow paths from the condensate storage tank [s2] and, if required, the valve(s) that connect the alternative water source to the auxiliary feedwater system. The flow path for the steam supply to a turbine driven pump is included from the steam source (main steam lines) to the pump turbine. Pumps included in the Technical Specifications (subject to a Limiting Condition for Operation) are included in the scope of this indicator. Some initiating events, such as a feedwater line break, may require isolation of AFW flow to the affected steam generator to prevent flow diversion from the unaffected steam generator. This function should be considered a monitored function if it is required.

F-50

Train Determination

…

FAQ 10-07

USwC and Vendor Differences in Emergency Operating Procedures

ROP TF Discussion Draft

Plant: Generic
Date of Event: N/A
Submittal Date: 12/1/2010
Licensee Contact: Jim Slider Tel/email: 202.739.8015/jes@nei.org
NRC Contact: Steve Vaughn Tel/email: 301.415.3640/Stephen.Vaughn@nrc.gov

Performance Indicator: USwC – IE04

Site-Specific FAQ (Appendix D)? No

FAQ requested to become effective when approved

Question Section

NEI 99-02 Guidance needing interpretation (include page and line citation):

Page 21, lines 5-13; Page 23, line 15-23; H-5, line 39-46; H-6, lines 1-12; H-20, lines 21-46; H-21, line 1-11;

Event or circumstances requiring guidance interpretation:

As stated in FAQ 10-05 (ID #475), Palo Verde proposed additional wording to Appendix D of NEI 99-02 that would relieve Combustion Engineering (CE) plants from reporting a complicated scram for loss of forced cooling (LOFC) events as long as the LOFC event was not caused by a loss of off-site power (LOOP). The guidance in NEI 99-02 was clear and did not result in a question of interpretation; rather, the licensee sought relief from the reporting guidance. The NRC determined that the LOFC at Palo Verde counted as a complicated scram because more than one EOP was entered while the operators responded to the event. However, representatives from Palo Verde expressed concern that Westinghouse plants were at an unfair advantage because the structure of their EOPs would lead to a different determination under the PI guidance for the same scram. For example, a scram at a Westinghouse plant might result in only one EOP entry, while the same scram at a CE plant might result in entering multiple EOPs. The ROP Working Group agreed to initiate a generic FAQ to evaluate the potential disparity among vendor designs and recommend changes to "level the playing field."

If licensee and NRC resident/region do not agree on the facts and circumstances explain
N/A

Potentially relevant existing FAQ numbers
FAQ 10-05 (ID #475)

Response Section
Proposed Resolution of FAQ: Revise the guidance to ensure that a similar scram experienced at different vendor sites will result in consistent implementation.
Proposed Changes to NEI 99-02

Page 21, lines 5-13:

The response to the scram must be completed without transitioning to an additional EOP after entering the scram response procedure (e.g., ES01 for Westinghouse). This step is used to determine if the scram was uncomplicated by counting if additional procedures beyond the normal scram response required entry after the scram. A plant exiting the normal scram response procedure without using another EOP would answer this step as "No". Approved exceptions to this requirement include: 1) the discretionary use of the lowest level Function Restoration Guideline (Yellow Path) by the operations staff, 2) use of the Re-diagnosis Procedure by Operations unless a transition to another EOP is required, and 3) **entry into another EOP** when securing forced circulation if maintenance of natural circulation is addressed in the separate EOP.

Page H-6, lines 5-12:

There are some EOPs that are used specifically at the operator discretion and are not required to be used. In the Westinghouse EOP suite these are Yellow Path functional restoration procedures and the re-diagnosis procedures. These procedures typically verify that the operator is taking the correct action (re-diagnosis) or the stabilization of some minor plant parameters (Yellow path). Use of these procedures is an allowed exception to this step.

In addition, the scope of the Westinghouse normal scram response procedure (ES01) encompasses loss of forced circulation events, whereas other PWR EOP schemes may require entry into a separate EOP. Loss of forced circulation events, in themselves, do not result in complications for the operator nor are they risk-significant unless required in response to an event such as Loss of Offsite Power. Therefore, in order to treat events of similar type consistently, entry into an additional EOP specific to a loss of forced circulation event is likewise an allowed exception to this step. Maintenance of the plant in Mode 3 on natural circulation requires monitoring of temperatures that are already monitored. This does not involve additional challenges to plant safety functions or the control staff. If the EOP scheme has the control room operator exit the normal scram procedure for a Loss of Forced Circulation and the EOP was exited upon restoration of forced circulation without commencing a plant cool down, then the use of an additional EOP to address the Loss of Forced Circulation shall not require counting under this criterion. If the EOP was used in response to an event such as a Loss of Off-site Power, this exception cannot be used.

Other than the above described exceptions, transition out of these procedures to an EOP different from the current procedure in effect, i.e. a new procedure or the base procedure, would count as a complication.

FAQ TEMPLATE

FAQ 11-01: Cooling Water Boundary (Generic)

Updated 2/15/2011

Plant:	Generic
Date of Event:	NA
Submittal Date:	01/20/11
Licensee Contact:	Jim Peschel, Tel/email: 603.773.7194/james_peschel@nexteraenergy.com
NRC Contact:	Steve Vaughn, Tel/email: 301.415.3640/stephen.vaughn@nrc.gov

Performance Indicator: MS-10, Mitigating System Performance Index (Cooling Water Systems)

Site Specific FAQ (Appendix D)? No

FAQ requested to become effective: October 1, 2011

Question Section

NEI 99-02, Rev. 6, provides guidance for the cooling water system scope on pages F-52 and F-53. The text from page F-53, lines 2 through 7, highlighted in italics below, indicates that only the last valve in a cooling water system line is included in the boundary of the monitored component. While this may be correct in most applications, there are plant configurations where a cooling water system line running to a monitored system (EDG for example) has more than one isolation valve (e.g., manual isolation valve(s)). If the isolation valve(s) were closed it would only result in supported train unavailability and would not affect the availability of the cooling water system. However, the guidance on page F-53, lines 2 through 7, could lead one to the opposite conclusion and suggest that the cooling water system would be unavailable.

NEI 99-02, Rev. 6, Page F-53, lines 1 through 9:

> Systems that provide this function typically include service water and component cooling water or their cooling water equivalents. *Pumps, valves, heat exchangers and line segments that are necessary to provide cooling to the other monitored systems are included in the system scope up to, but not including, the last valve that connects the cooling water support system to components in a single monitored system. This last valve is included in the other monitored system boundary. If the last valve provides cooling to SSCs in more than one monitored system, then it is included in the cooling water support system.* Service water systems are typically open "raw water" systems that use natural sources of water such as rivers, lakes or oceans. Component Cooling Water systems are typically closed "clean water" systems.

Question - Should a cooling water system isolation valve(s) in a line supplying a single monitored component be included in the monitored train's system boundary?

The industry and the NRC agree on the issue and question as described above.

Response Section

Response - Yes. A cooling water system isolation valve(s) in a line supplying a single monitored train should be included in the monitored train's system boundary.

Revise NEI 99-02, Rev. 6, Page F-53, lines 1 through 9, to read as follows:

> Systems that provide this function typically include service water and component cooling water or their cooling water equivalents. Pumps, valves, heat exchangers and line segments that are

necessary to provide cooling to the other monitored ~~systems~~ trains or segments are included in the cooling water system scope up to, but not including, the ~~last~~ isolation valve(s) that connect(s) the cooling water support system to components in a single monitored ~~system~~ train or segment. This~~/these~~ ~~last~~ isolation valve~~s~~ is~~/are~~ included in the other monitored ~~system~~ train or segment boundary. If the last valve provides cooling to SSCs in more than one monitored ~~system or train~~train or segment, then ~~it~~ the valve is included in the cooling water support system. If the cooling water line to a single monitored ~~component or train~~train or segment contains components (e.g., manual isolation valves or motor operated valves (MOVs)) that would only affect the monitored ~~component or train~~train or segment, those components are included in the ~~other system~~monitored train or segment boundary. Figure F-~~1~~ 6 depicts the treatment of multiple isolation valves. Service water systems are typically open "raw water" systems that use natural sources of water such as rivers, lakes or oceans. Component Cooling Water systems are typically closed "clean water" systems.

###

Cooling Water System Boundary

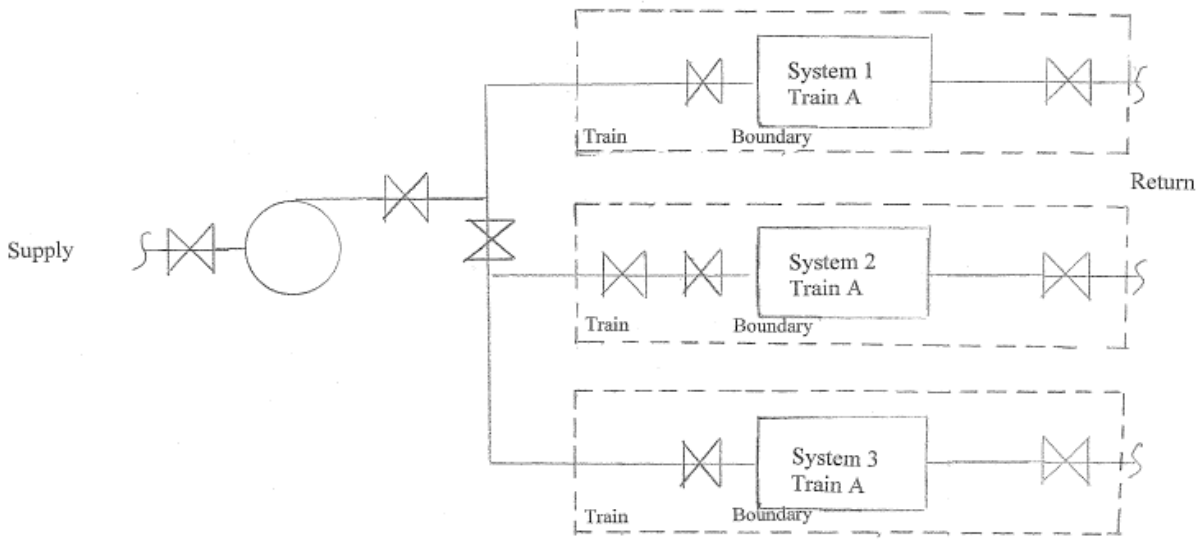

Figure F-6

FAQ TEMPLATE

FAQ 11-02 Updated for 02/16/2011 ROP Meeting

MSPI Basis Document Updates

Plant:	**Generic**
Date of Event:	**N/A**
Submittal Date:	**1/20/11**
Licensee Contact:	**Roy Linthicum, 630-657-3846, roy.linthicum@exeloncorp.com**
NRC Contact:	**Steve Vaughn**
Performance Indicator:	**Mitigating Systems**
Site Specific FAQ:	**No**

FAQ requested to become effective ~~when approved~~: October 1, 2011.

Question Section:

NEI 99-02 section 2.2, Mitigating System Performance Index, pages 33-34, provide the guidance on when an MSPI Basis Document Revision is required and also provides guidance on reporting changes to the MSPI Basis Document and CDE as part of the quarterly data submittals. The current requirements have led to multiple interpretations of when to make these changes and do not discuss the level of detail required in reporting changes to either the basis document or MSPI coefficients.

Guidance needing clarification/interpretation:

Add clarification to NEI 99-02 section 2.2 to provide details on when an MSPI basis document change is required and the level of detailed required to be supplied via comments in CDE when changes to either the basis document or CDE are made.

Event requiring guidance interpretation:

N/A. This FAQ is for general guidance improvement and does not address a specific event.

NRC Resident Inspector Position:

The NRC is in agreement with the need to provide additional guidance on MSPI Basis Document Changes

If licensee and NRC resident/region do not agree on the facts and circumstances explain:

NA.

Potentially relevant existing FAQ numbers: NA

Response Section:

Proposed Resolution of FAQ:
It is recommended that the following proposed wording changes or changes with equivalent meaning be incorporated into NEI 99-02.

Licensee proposed wording changes:

Bolded and underlined phrases indicate proposed changes, strike-throughs indicate deletions.

Page ~~F~~ 33 & 34

Clarifying Notes

Documentation and Changes

Each licensee will have the system boundaries, monitored components, and monitored functions and success criteria which differ from design basis readily available for NRC inspection on site. Design basis criteria do not need to be separately documented. Additionally, plant-specific information used in Appendix F should also be readily available for inspection. An acceptable format, listing the minimum required information, is provided in Appendix G**. As stated in the Introduction section of NEI 99-02, plant-specific comments should be provided in the data submittal when either the MSPI basis document or an MSPI coefficient is changed. Changes to the site PRA of record, the site basis document, and the CDE database should be made in accordance with the following:**

~~Changes to PRA coefficient~~PRA Model Revisions: Updates to the MSPI coefficients ~~developed from the plant specific PRA will be made as soon as practical following an update to the plant specific PRA~~**(which are directly obtained from the plant specific PRA) will be made in the quarter following approval of an update to the plant specific PRA of record**. ~~The revised coefficients will be used in the MSPI calculation the quarter following the update.~~ Thus, the ~~PRA~~ **MSPI** coefficients in use at the beginning of a quarter will remain in effect for the remainder of that quarter. **In addition, ~~C~~c**hanges to the CDE database and MSPI basis document that are necessary to reflect changes to the plant specific PRA of record should be incorporated **prior to the next quarter's data submittal** ~~as soon as practical but need not be completed prior to the start of the reporting quarter in which they become effective~~. ~~The quarterly data submittal should include a comment that provides a summary of any changes to the MSPI coefficients. The comments automatically generated by CDE when PRA coefficients are changed do not fulfill this requirement. The plant must generate a plant-specific comment that describes what was changed. Any PRA model changes will take effect the following quarter (model changes include error, corrections, updates, etc.).~~ For example, if a plant's PRA model of record is approved on September 29 (3rd quarter), MSPI coefficients based on that model of record should be used for the 4th quarter. **Updates to the MSPI basis document and the** ~~The calculation of the new coefficients should be completed (including a revision of the MSPI basis document if required by the plant specific processes) and input to~~ CDE **database should be made** prior to reporting the 4th quarter's data (i.e., completed by January 21).

Changes to non-PRA information: Updates to information that is not directly obtained from the PRA (e.g., unavailability baseline data, estimated demands/run hours) **can affect both the MSPI basis document and the ~~MPSI~~ MSPI inputs into the CDE database**. **Changes to the MSPI basis document and MSPI inputs into the CDE database that are needed to reflect changes to non-PRA information will be made prior to the next quarterly data submittal. This does not imply that any change to estimated demands/run hours is required to be reflected in the MSPI Basis Document or CDE (Appendix F Section F.2.2.1 for requirements on when MSPI Basis Document and CDE changes are required for estimated demands/run hours).** ~~will become effective in the quarter following an approved revision to the site MSPI basis document. Changes to the CDE database that are necessary to reflect changes to the site basis document should be incorporated as soon as practical but need not be completed prior to the start of the reporting quarter in which they become effective.~~ The quarterly data submittal should include a comment that provides a summary of any changes to the **MSPI** basis document **and inputs to the CDE database**. The comments automatically generated by CDE when PRA coefficients are changed do not fulfill this requirement. ~~The plant must generate a plant-specific comment that describes what was changed~~ **For example, changes to planned unavailability baseline that do not require a change to the PRA model must be documented in an MSPI basis document revision in the quarter prior to the revised values being used as inputs into the CDE database.**

Plant Modifications: **Any changes to the plant should be evaluated for their impact on the MSPI basis document, MSPI inputs into the CDE database, and the PRA of record. Plant modifications have the potential to involve both changes to the PRA model and non-PRA information, while some modifications may be limited to either the PRA model or non-PRA information. Modifications to the plant design that result in a change to segment or train boundaries, monitored components, or affect monitored functions or success criteria, shall be reflected in the MSPI basis document the quarter following the completed implementation. Additionally, if modifications are made to sub-components within the boundary of a monitored component (such as the replacement of an emergency AC voltage regulator with a different type) and that sub-component is described in the basis document, the basis document should be updated to reflect the sub-component modification the quarter following the completed implementation.**

If the plant modification has the potential to impact the PRA model in a manner that affects MSPI results, the modification shall be evaluated ~~against the following criteria:~~ to determine if it ~~.~~

~~1)~~ ~~If a change~~ results in a factor of ~~3~~ three change in the corrected Birnbaum value of an MSPI monitored train or component. If~~, and~~ the new Birnbaum value is greater than 1E-6, the MSPI basis document shall be updated to reflect the new Birnbaum values the quarter following the completed implementation. Note that

~~2)~~ ~~The~~ the use of supplemental evaluations to estimate the revised MSPI inputs for pending PRA model changes is allowed as an interim alternative until the PRA model of record is updated.

Example CDE Comments:

Following a periodic update to a PRA model, the following CDE comment would be appropriate:

> **The XYZ PRA Model Revision 6 was approved on 7/6/10 with a corresponding MSPI Basis Document Revision 3 approved on 12/21/10. The PRA model revision was a periodic update to the model which included a data update, incorporation of an Auxiliary Feedwater Crosstie between Units and a change in Human Error Probabilities using the EPRI HRA calculator. As a result of the PRA model change, the CDF, Fussel-Vesely and Basic Event Probabilities for all monitored trains and components were revised.**

Following a change to baseline unavailability, the following CDE comments would be appropriate:

> **Scenario 1: Change Results in Negligible (≤1E-8) Increase in Train Birnbaum**
>
> **The planned unavailability baseline for the Residual Heat Removal was system was increased by 30 hours per 3 years as a result of a new preventive maintenance task. The increase in planned unavailability baseline was evaluated in the MSPI basis document Revision 3, dated 3/23/11 and concluded that it resulted in a negligible ~~impact to CDF~~increase in Train Birnbaum values. Therefore, the revised values were incorporated into CDE effective the 2nd quarter 2011.**
>
> **Scenario 2: Change Results in Significant (>1E-8) Increase in Train Birnbaum Values**
>
> **The planned unavailability baseline for the Residual Heat Removal was system was increased by 30 hours per 3 years as a result of a new preventive maintenance task. The increase in planned unavailability baseline was evaluated in the MSPI basis document Revision 3, dated 3/23/11 and concluded that a revision to the PRA model was required prior to implementing the change. The approved PRA model Revision 4 to reflect this change in planned unavailability was approved on 2/15/11. The revised values were incorporated into CDE effective the 2nd quarter 2011.**

Following a design change that has a significant impact ~~on the MSPI inputs~~(≥ factor of three increase) on Birnbaum values:

> **A modification was completed on 1/15/11 that removed ~~eliminated~~ a monitored MOV in the Residual Heat Removal system. The MSPI basis document Revision 2 was approved on 3/12/11 to account for this impact. As removal of the MOV had a negligible impact on the overall CDF, the PRA model was not updated to reflect this change. The MSPI Basis Document Revision includes an evaluation of the impact on MSPI inputs which will be used until the next revision of the PRA model is completed.**

Plant: H. B. Robinson Steam Electric Plant, Unit No. 2
Date of Event: October 7, 2010
Submittal Date: TBD
Licensee Contact: Garrett Sanders **Tel/email:** 843-857-1427 / garrett.sanders@pgnmail.com
NRC Contact: James Hickey **Tel/email:** 843-857-1301 / james.hickey@nrc.gov

Performance Indicator: Unplanned Scrams with Complications

Site-Specific FAQ (Appendix D)? No

FAQ requested to become effective when approved.

Question Section

NEI 99-02 Guidance needing interpretation (include page and line citation):

NEI 99-02, Revision 6, Page 20, Lines 22 – 42
NEI 99-02, Revision 6, Appendix H, Section 1.5

Event or circumstances requiring guidance interpretation:

Background

A. Event

At approximately 0013 hours on October 7, 2010, an automatic trip occurred at H. B. Robinson Steam Electric Plant (HBRSEP), Unit No. 2. An electrical fault on the motor for Reactor Coolant Pump (RCP) 'C' resulted in the Single Loop Low Flow reactor protection function and a subsequent reactor trip. Following the trip, the Auxiliary Feedwater system automatically actuated due to low steam generator water level and provided feedwater to the steam generators. Main Feedwater (MFW) Pump 'B' tripped on low suction flow. The trip of Reactor Coolant Pump 'C' resulted in pressure in Steam Generator 'C' being below the pressure in the other two steam generators. This caused Auxiliary Feedwater (AFW) flow predominantly to Steam Generator 'C.' Level continued to rise until Main Feed Pump 'A' tripped, as designed, due to a Feedwater Isolation Signal (FWIS).

At approximately 0405 hours, during post-trip recovery actions about four hours after the trip, the AFW system actuated due to a trip of MFW Pump 'A' while attempting to restore MFW by starting MFW Pump 'A' in accordance with procedure GP-004, "Post Trip Stabilization." The reason for the MFW Pump 'A' trip was that the FWIS was still active. The AFW system actuation signal caused motor-driven AFW Pump 'B' to start, motor-driven AFW Pump 'A' was already in operation due to the post-trip condition.

The AFW system was adequately handling SG levels and MFW was not required at the time.

At approximately 1018 hours, feedwater isolation key switches were placed and maintained in the Override/Reset position by the operations staff in order to restore MFW by starting MFW Pump 'A.' Placing the key switches in the Override/Reset position resulted in the disabling of the feedwater isolation function at the same time the feedwater regulating bypass valves were open.

At approximately 1315 hours, following approximately three hours of effective MFW operation, the operations staff recognized that actions taken at 1018 hours had unknowingly placed the plant in a condition prohibited by the Technical Specifications and took the appropriate action to close the MFW regulating bypass valves at approximately 1329 hours.

B. Timeline for October 7, 2010, Plant Trip

Time	Description
0013	Automatic reactor trip due to an electrical fault on the RCP 'C' motor. MFW Pump 'B' tripped. AFW system in operation.
0024	MFW Pump 'A' trips on high SG 'C' level.
0104	AFW Pump 'B' secured. AFW Pump 'A' running to support SG levels.
0203	Exited scram EOP and entered GP-004.
0405	AFW system actuated due to a trip of MFW Pump 'A' while attempting to restore MFW by starting MFW Pump 'A.' The AFW system actuation signal caused motor-driven AFW Pump 'B' to start, motor-driven AFW Pump 'A' was already in operation.
0409	Walkdown of MFW Pump 'A' completed with no abnormalities noted. Trip of MFW Pump 'A' had occurred due to the FWIS still present at the time of the start attempt.
1018	Feedwater isolation key switches were placed and maintained in the Override/Reset position by the operations staff in order to restore MFW by starting MFW Pump 'A.'
1020	AFW Pump 'A' secured.
1329	Closed MFW regulating bypass valves. SG levels maintained using AFW pumps.

C. Plant Design

To reset the FWIS for a Steam Generator (and allow restoration of MFW), the initiating signal(s) (e.g., Hi-Hi Steam Generator level) must be cleared, the Reactor Trip Breakers must be closed, and the feedwater isolation signal must be reset by momentarily placing the key switch in the Reset/Override position and then returning the key switch to the Normal position. These actions are provided in OP-403, "Feedwater System," Section 8.4.4. The guidance to override the FWIS to restore MFW is included in emergency procedure FRP-H.1, "Response to Loss of Secondary Heat Sink."

D. Applicable Procedures

GP-004, "Post Trip Stabilization," provides instruction for stabilizing conditions and shutting down components following a plant trip.

OP-403, "Feedwater System," includes instructions for startup and infrequent operation of the Feedwater System, including instructions for restoration of feedwater after a plant trip. Actions to reset the FWIS for a Steam Generator (and allow restoration of MFW) are provided in Section 8.4.4.

Emergency procedure FRP-H.1, "Response to Loss of Secondary Heat Sink," includes actions to respond to a loss of secondary heat sink in all Steam Generators, including instructions for overriding the Feedwater Isolation Signal (FWIS) to restore MFW (Step 16).

E. Applicable NEI 99-02 Guidance

From NEI 99-02, Revision 6, Page 20, Lines 22 – 42:

> Was Main Feedwater unavailable or not recoverable using approved plant procedures following the scram? (Lines 22-24)
>
> If operating prior to the scram, did Main Feedwater cease to operate and was it unable to be restarted during the reactor scram response? The consideration for this question is whether Main Feedwater could be used to feed the steam generators if necessary. (Lines 25-27)
>
> The qualifier of "not recoverable using approved plant procedures" will allow a licensee to answer "No" to this question if there is no physical equipment restraint to prevent the operations staff from starting the necessary equipment, aligning the required systems, or satisfying required logic using plant procedures approved for use and in place prior to the reactor scram occurring. (Lines 27-32)

The operations staff must be able to start and operate the required equipment using normal alignments and approved normal and off-normal operating procedures to feed the minimum number of steam generators required by the EOPs to satisfy the heat sink criteria. (Lines 34-37)

Additionally, the restoration of Feedwater must be capable of feeding the Steam Generators in a reasonable period of time. Operations should be able to start a Main Feedwater pump and start feeding the Steam Generators with the Main Feedwater System within 30 minutes. (Lines 39-42)

F. Event Root Cause Evaluation

Root Cause Evaluation 425643 investigated the reasons that the operating crew was unable to reset the FWIS and restore the feed water supply from the MFW pumps on their first attempt. This investigation found that GP-004 was inadequate in that it did not provide appropriate guidance for resetting the Feed Water Isolation Signal (FWIS). Knowledge deficiency for Operators regarding the method for properly resetting the Feedwater Isolation Logic was also identified as a contributing cause.

Analysis

The NEI 99-02 guidance provided in Item E above can be broken down into six questions:

(1) *Could Main Feedwater be used to feed the steam generators if necessary?*

Yes. As stated in NEI 99-02, Appendix H, "Licensees should rely on the material condition availability of the equipment to reach the decision for this question." The MFW system was free of damage or failure that would prevent restart of the system to feed the steam generators if there was a loss of all AFW.

In fact, as noted in Question 2 below, MFW Pump 'A' was started and operated effectively on the day of and day following the scram and operated effectively without the need for any maintenance.

2) *Was there a physical equipment restraint that prevented the operations staff from recovering Main Feedwater by starting the necessary equipment, aligning the required systems, or satisfying required logic using existing plant procedures?*

No. The MFW system material condition was in a state of readiness for startup and operation via MFW Pump 'A' and Feedwater regulating bypass valves. MFW Pump 'A' was started by the operations staff at 1018 hours on the day of the trip and at 0201 hours on the day after the trip. In both cases, MFW operated effectively without the need for any maintenance.

Throughout the event, the MFW system was available and recoverable using existing plant procedures. The event investigation concluded that GP-004, Post Trip Stabilization, did not provide sufficiently detailed guidance to ensure the FWIS was effectively reset given plant conditions at 0405 hours on the day of the trip. Normal operating procedure OP-403 did provide appropriate and sufficiently detailed guidance to effectively reset the FWIS, had the operations staff referred to the procedure at the time.

NEI 99-02 states that isolation of the feedwater regulating or isolation valves does not constitute a loss of feedwater if nothing prevents them from being reopened in accordance with procedures. Also, a Steam Generator Isolation Signal or FWIS does not constitute a loss of MFW as long as it can be cleared and feedwater restarted. (See NEI 99-02, Appendix H, Page H-5.)

In addition, NEI 99-02, Appendix H, Section H 1.5 states that "this portion of the indicator is designed to measure that backup availability [of MFW] directed by EOPs on a loss of all emergency Feedwater." Emergency response procedure FRP-H.1 provided sufficient guidance to override the FWIS, if necessary, so that MFW could be restored if there was a loss of all AFW and MFW was required. Had emergency response procedure FRP-H.1 use been required during the event due to a loss of all AFW, this trip would have been considered an Unplanned Scram with Complications.

(3) *Were plant procedures for recovering Main Feedwater approved for use and in place prior to the reactor scram occurring?*

Yes. Procedure OP-403 was available and approved for use prior to the plant trip. Also, procedure FRP-H.1 was available and approved for use prior to the plant trip. Had emergency response procedure FRP-H.1 use been required during the event due to a loss of all AFW, this trip would have been considered an Unplanned Scram with Complications.

(4) *Was the operations staff able to start and operate the required equipment using normal alignments and approved normal and off-normal operating procedures?*

Yes. As noted earlier, while GP-004 did not provide sufficiently detailed guidance to ensure the FWIS was effectively reset given plant conditions at 0405 hours on October 7, 2010, normal operating procedure, OP-403, "Feedwater System," provided appropriate and sufficiently detailed guidance to effectively reset the FWIS, but the operators did not refer to this procedure at the time.

It is important to note that the system was capable of being started and operated using normal alignments and approved normal and off-normal operating procedures. As stated in NEI 99-02, Appendix H:

> "This section of the indicator is a holdover from the Scrams with Loss of Normal Heat Removal indicator which the USwC indicator is

> replacing. Since all PWR designs have an emergency Feedwater system that operates if necessary, the availability of the normal or main Feedwater systems is a backup in emergency situations. This portion of the indicator is designed to measure that backup availability directed by the EOPs on a loss of all emergency Feedwater."

This implies that the indicator is not intended as a measure of operations staff performance. For this event, Operations staff performance was evaluated and factored into the Reactor Oversight Process via NRC inspection activities. The operations staff actions during this event were identified as part of a Green Non-Cited Violation in NRC Inspection Report 05000261/2010012. The report states, "Contrary to procedure OP-403, Feedwater System, control room operators overrode the feedwater isolation safety function by placing the feedwater logic switches in 'Override/Reset,' and leaving them in that position for three hours and twenty minutes."

(5) *Were the operations staff able to start and operate the required equipment using normal alignments and approved normal and off-normal operating procedures to feed the minimum number of steam generators required by the EOPs to satisfy the heat sink criteria?*

Yes. As noted above, while GP-004 did not provide sufficiently detailed guidance to ensure the FWIS was effectively reset given plant conditions at 0405 hours on October 7, 2010, normal operating procedure OP-403 provided appropriate and sufficiently detailed guidance to effectively reset the FWIS, but the operators did not refer to this procedure at the time.

(6) *Were the operations staff able to start a Main Feedwater pump and start feeding the Steam Generators with the Main Feedwater System within 30 minutes?*

Design features and procedural requirements at HBRSEP, Unit No.2, can delay normal resetting of the FWIS during non-emergency conditions such that it may take much longer than 30 minutes to restore MFW. Following an uncomplicated trip, the following steps must be completed prior to resetting the FWIS and restoring MFW:

1. Ensuring that Steam Generator levels are less than 75%

2. Ensure the Reactor Trip Breakers are Closed or Close them as follows:
   a. Determine if applicable surveillances tests are within their required periodicity.
   b. If not, perform the necessary surveillance tests.
   c. Close the Reactor Trip Breakers.

3. Reset the FWIS on the appropriate Steam Generator(s), by momentarily placing the key switch(es) for the applicable Steam Generator(s) in the Override/Reset position and returning the switch(es) to the Normal position.

Had there been a loss of all AFW that would have required a more immediate restoration of MFW, emergency response procedure FRP-H.1 provided sufficient guidance to override the FWIS, so that MFW could be restored. Had emergency response procedure FRP-H.1 use been required during the event due to a loss of all AFW, this trip would have been considered an Unplanned Scram with Complications.

Conclusion

Based on the above, HBRSEP, Unit No. 2, concludes that it is appropriate to answer "No" to the question: "Was Main Feedwater unavailable or not recoverable using approved plant procedures following the scram?"

If licensee and NRC resident/region do not agree on the facts and circumstances explain

Licensee Conclusion

As stated above, HBRSEP, Unit No. 2, has determined that the answer to the question "Was Main Feedwater unavailable or not recoverable using approved plant procedures following the scram?" is "No," based on the guidance provided in NEI 99-02, Revision 6, Page 20, Lines 22 -42.

NRC Resident Inspector Perspective

The Resident Inspector disagrees with the licensee's conclusion that it is appropriate to answer "No" to the question: "Was Main Feedwater unavailable or not recoverable using approved plant procedures following the scram?"

From NEI 99-02, Revision 6, Page 20, Lines 34-37:

The operations staff must be able to start and operate the required equipment using normal alignments and approved normal and off-normal operating procedures to feed the minimum number of steam generators required by the EOPs to satisfy the heat sink criteria.

The resident inspector position is that the licensee's operators were not able to start and operate the required equipment using normal alignments and approved normal and off-normal operating procedures to feed the minimum number of steam generators required by the EOPs to satisfy the heat sink criteria. This position is supported by the actual sequence of events which included an unsuccessful attempt to reset the Feedwater Isolation signal and later defeating the Technical Specification required Feedwater Isolation signal. As described in the licensee's timeline, the restoration of Main Feedwater was untimely in that the scram recovery demonstrated the staff was not able to start and operate the required equipment using approved normal operating procedure, GP-004, "Post Trip Stabilization."

The licensee noted that 4 hours after the scram the night shift control room crew attempted to reset the Feedwater Isolation signal and restore Main Feedwater. The licensee identified 6 hours later that the day shift control room crew had restored Main Feedwater by overriding the active

Feedwater Isolation signal and defeating a Technical Specification required safety function. This action was performed independent of the night shift and with the support of a fully staffed Outage Command Center, including representatives from Engineering, Operations, Maintenance and Work Controls. The failure to successfully reset the feedwater isolation signal and start and operate the required equipment using normal alignments and approved normal operating procedure, in this case GP-004, "Post Trip Stabilization," complicated the scram response.

From NEI 99-02, Revision 6, Page 20, Lines 39-42:

Additionally, the restoration of Feedwater must be capable of feeding the Steam Generators in a reasonable period of time. Operations should be able to start a Main Feedwater pump and start feeding the Steam Generators with the Main Feedwater System within 30 minutes.

The sequence of events did not demonstrate a timely restoration of Main Feedwater. The plant specific design features which must be accounted for, specifically the pre-requisites for closing the reactor trip breakers were accomplished within 1 hour once started. Taking into consideration that the plant was stable and the operating crew was progressing in a deliberate manner, the resident inspectors' concluded that the length of time to restore Main Feedwater was excessive from both the time to reset the reactor trip breakers and coordination with the operating crews.

The Resident Inspectors' concluded is that it is appropriate to answer "Yes" to was Main Feedwater unavailable or not recoverable using normal alignments and an approved normal operating procedure following the scram. As provided in the NEI guidance document, the re-establishment of Main Feedwater following an uncomplicated scram must be accomplished using normal alignments and approved normal operating approved procedures. In this instance the operators were not successful in reestablishing Main Feedwater although they were following the appropriate approved procedure.

Potentially relevant existing FAQ numbers

FAQ 474

Response Section

Proposed Resolution of FAQ

Based on the fact that Main Feedwater was free from damage or failure that would prevent restart of the system to feed the steam generators if there was a loss of all AFW, that the MFW system was always available to be restarted, that the plant was no longer in scram response but in scram recovery, and approved procedures were in place for recovering MFW if needed, this event does not count as an Unplanned Scrams with Complications. Such a resolution is consistent with NEI 99-02, including Appendix H, which clearly states that this portion of the indicator is designed to measure the backup availability of MFW directed by the EOPs on a loss of all AFW.

It is also consistent with the precedence set by the NRC in FAQ 474. The NRC Senior Resident Inspector position was:

> "However, if procedure EMG FR H1 was used on April 28, 2009, the main feedwater portion of the procedure would not have been successful because all three main feedwater pumps required maintenance (speed switch, servo valve, and a circuit breaker). Consistent with page 19 of NEI 99-02, Revision 6 and page H-4, lines 24 to 29, the PI monitors the ability of main feedwater to be used to feed the steam generators if necessary in emergency operating procedures. On April 28, 2009, Wolf Creek did not have the ability to restore and use main feedwater in normal or emergency operating procedures because all three main feedwater pumps needed maintenance, and not because of isolation signals."

The basis for the NRR final position that FAQ 474 was a complicated scram was:

> "Any active design features (e.g., interlocks or signals that isolate MFW after a reactor trip) used as the basis in answering No to the question "Is MFW Unavailable?" is applicable only if the MFW system is free from damage and does not need repair or maintenance (i.e., the MFW system is capable of performing its intended function if called upon)."

Because the Robinson MFW system was free from damage and the plant would have been able to restore and use MFW in an emergency operating procedure, this is not an Unplanned Scram with Complications.

If appropriate, provide proposed rewording of guidance for inclusion in next revision.

N/A

FAQ TEMPLATE
FAQ 11-05: Point Beach AFW Pumps
Introduced 01/20/2011

Plant:	Point Beach Units 1 and 2
Date of Event:	NA
Submittal Date:	January 20, 2011
Licensee Contact:	Carol Jilek, 920-755-7345, carol.jilek@nexteraenergy.com
NRC Contact:	NA

Performance Indicator: MS-08, Heat Removal Systems

Site Specific FAQ (Appendix D)? Yes

FAQ requested to become effective upon Point Beach implementation of the new technical specification for the Auxiliary Feedwater (AFW) Pumps in the second quarter of 2011. Reference NEI 99-02, Appendix E, page E-1, lines 18-19.

Question Section

Issue: Point Beach is upgrading the Unit 1 and 2 auxiliary feedwater systems (AFW) during the 2011 Unit 2 outage. The current AFW design has two motor driven AFW pumps that are shared between the two units. In the current configuration, the operating unit has planned unavailability during the other unit's refueling outage. After the upgrade modifications are completed, the AFW system will have one new motor driven pump dedicated to each unit and will no longer have planned unavailability during the alternate unit's refueling outage. The new pumps will be will have the same model casing as the old pumps, but will have a different impeller, resulting in a higher flow rate, and will be powered by 4160V versus 480V. The preventive maintenance activities for the new pumps will be essentially the same as the old pumps. This change will reduce the number of motor driven AFW trains from two to one per unit and will change the generic common cause failure adjustment value from 1.25 to 1.0 in NEI 99-02, Appendix F, Table 7.

The refueling outage is scheduled to be completed during the second quarter of 2011. As the units will be putting the new AFW pumps in service during the middle of a quarter, the device records in CDE will be updated upon entry into MODE 4 ascending for Unit 2 and when the new AFW pump is placed in service for Unit 1. However, CDE and the MSPI Basis Document will not be updated until the end of the second quarter to reflect the new PRA and the new train definitions.

The completion of the modification during the middle of a quarter will result in the inability to implement all of the guidance in NEI 99-02. The intent is to provide a second quarter MSPI submittal for AFW that most accurately reflects the actual availability and reliability of the old and new AFW system configurations and implement the guidance of NEI 99-02 as much as reasonable.

Questions:
1. Is it acceptable to use the baseline planned unavailability for the second quarter of 2011 based upon a baseline for the new pumps and associated monitored valves? The baseline will be determined by adjusting the baseline for the existing pumps for unitized operation (taking out the unavailability that is no longer applicable) and averaging the results.~~the old pumps and associated monitored valves and make the change in the baseline planned unavailability beginning with the third quarter of 2011?~~

2. Is it acceptable to report 1) actual unavailability and actual demands for the period of the second quarter of 2011 when the new pumps and associated monitored valves were installed and utilized to meet technical specification requirements and 2) estimated demands and unavailability for the initial portion of the quarter based upon an average of unitized data from the old pumps? (Example - Unit 2 will place the new pump and associated monitored valves in service on 4/30/11. Actual data for the new pumps and associated valves will be submitted for the period from 4/30/11 to 6/30/11 and estimates based upon an average of unitized data for the old pumps and monitored valves for the period from 4/1/11 - 4/29/11.)~~Is it acceptable to report actual unavailability and actual demands for the second quarter of 2011 based upon the pumps and associated monitored valves that were actually installed and utilized to meet technical specification requirements during the quarter even though the device records will not match at the end of the quarter?~~

3. Is it acceptable to report the unavailability for the past three years (2Q/08 -1Q/11) based upon an average of unitized data for the existing pumps?

~~3~~4. Is it acceptable to have a new PRA, or supplemental PRA evaluation, with the new pumps and associated monitored valves included, approved prior to placing the pumps and associated monitored valves in service, but after March 31, 2011, and used for second quarter reporting and subsequent inclusion in the MSPI Basis Document during the second quarter of 2011?

~~4~~5. Is it acceptable to update the device records in CDE at the time the new pumps and associated monitored valves are placed in service and include the new train definition in the MSPI Basis Document at the end of the second quarter of 2011?

~~5~~6. Is it acceptable to revise the generic common cause failure adjustment value in NEI 99-02, Appendix F, Table 7, from 1.25 to 1.0 per this FAQ and to update NEI 99-02 at a later date after the systems are placed in service?

Resolution

1. Yes - It is acceptable to use the baseline planned unavailability for the second quarter of 2011 based upon a baseline for the new pumps and associated monitored valves. The baseline will be determined by adjusting the baseline for the existing pumps for unitized operation (taking out the unavailability that is no longer applicable) and averaging the results. ~~the old pumps and associated monitored valves and make the change in the baseline planned unavailability beginning with the third quarter of 2011.~~

2. Yes - It is acceptable to report 1) actual unavailability and actual demands for the period of the second quarter of 2011when the new pumps and associated monitored valves were installed and utilized to meet technical specification requirements and 2) estimated demands and unavailability for the initial portion of the quarter based upon an average of unitized data from the old pumps~~actual unavailability and actual demands for the second quarter of 2011 based upon the pumps and associated monitored valves that were actually installed and utilized to meet technical specification requirements during the quarter~~.

3 Yes - It is acceptable to report the unavailability for the past three years (2Q/08 -1Q/11) based upon an average of unitized data for the existing pumps.

~~3.~~ 4 Yes - It is acceptable to have the new PRA, with the new pumps and associated monitored valves included, approved prior to placing the pumps and associated monitored valves in service, but after March, 2011, ~~-~~and used for second quarter reporting and subsequent inclusion in the MSPI Basis Document during the second quarter of 2011.

~~4.~~5. Yes - It is acceptable to update the device records in CDE at the time the new pumps and associated monitored valves are placed in service and include the new train definition in the MSPI Basis Document at the end of the second quarter.

~~5~~6. Yes - It is acceptable to revise the generic common cause failure adjustment value in NEI 99-02, Appendix F, Table 7, from 1.25 to 1.0 per this FAQ and to update NEI 99-02 at a later date after the systems are placed in service.

For Information Only

Timeline of key actions associated with the Point Beach AFW modification:

1. PRA approval to support the 10 CFR 50.65 application
   - MODE 4 Ascending for Unit 2 and prior to placing the new AFW train in service for Unit 1
2. Date the PRA of record will be approved
   - Unit 1 pump in service date
3. Date new AFW train is scheduled to be placed in service for Unit 2
   - 4/22/2011 (MODE 4)
4. Date new AFW train is scheduled to be placed in service for Unit 1
   - 4/11/2011
5. Date the MSPI Basis Document will be updated
   - 6/30/11
6. Date CDE will be updated with the new PRA coefficients
   - Prior to 2Q11 submittal 7/20/2011
7. Date CDE will be updated with the new device records for Unit 2
   - Same date as train placed in service
8. Date CDE will be updated with the new device records for Unit 1
   - Same date as train placed in service
9. Date CDE will be updated with new train configuration for Unit 2
   - Prior to 2Q11 submittal
10. Date CDE will be updated with new train configuration for Unit 1
    - Prior to 2Q11 submittal

Proposed FAQ 11-06 – MSPI EDG Run Hour Reporting
To Be Introduced 2/16/2011

Plant: **Generic**
Date of Event: **N/A**
Submittal Date: **2/16/11**
Licensee Contact: **Roy Linthicum, 630-657-3846, roy.linthicum@exeloncorp.com**
NRC Contact: **Steve Vaughn**
Performance Indicator: **Mitigating Systems**
Site Specific FAQ: **No**
FAQ requested to become effective: October 1, 2011

Question Section:

NEI 99-02 section F.2.2.1, Mitigating System Performance Index, page F-20, provides the guidance for counting EDG run hours. During initiate implementation of MSPI, it was decided to include the 1st hour of run time for the EDGs in the run hours calculations, even though failures within the 1st hour or operation are either EDG demand or Load/Run failures, as it was expected to result in a small impact to the calculated . A recent investigation (ML 101580244) concluded that in order to maintain the industry generic failure rates used as a comparison for MSPI, the 1st hour of operation for the EDGs must be **excluded** from the run hours calculations. Inclusion of the 1st hour or operation results in almost a factor of 1.5 reduction in the industry prior failure rate used for MSPI.

The impact of not counting the 1st hour of operation on historical MSPI reporting identified that excluding the 1st hour of operation from the EDG run hours would not have resulted in any change in indicator color. Therefore, this change will be made for future reporting only.

Guidance needing clarification/interpretation:

Revise NEI 99-02 section F.2.2.1 and F.2.2.2 eliminate the addition of the 1st hour of EDG operation from the run hour data that is input into the CDE database.

Event requiring guidance interpretation:

N/A. This FAQ is for general guidance improvement and does not address a specific event.

NRC Resident Inspector Position:

The NRC is in agreement with the need to revise guidance on MSPI EDG run hour reporting.

If licensee and NRC resident/region do not agree on the facts and circumstances explain:

NA.

Potentially relevant existing FAQ numbers: NA

Response Section:

Proposed Resolution of FAQ:
It is recommended that the following proposed wording changes or changes with equivalent meaning be incorporated into NEI 99-02.

Licensee proposed wording changes:

Bolded and underlined phrases indicate proposed changes, strike-throughs indicate deletions.

Page F-21: Lines 27 – 32

Run hours (pumps and emergency power generators only) are defined as the time the component is operating. **For pumps, r**~~R~~un hours include the first hour of operation of the component. **For EDGs, exclude all hours before the output breaker is closed (or EDG hours when the EDG is run unloaded) and the first hour after the breaker is closed (the first hour of operation after the breaker is closed is considered part of the load/run demand).** Exclude post maintenance test run hours, unless in case of a failure, the cause of the failure was independent of the maintenance performed. In this case, the run hours may be counted as well as the failure. Pumps that remain running for operational reasons following the completion of post maintenance testing, accrue run hours from the time the pump was declared operable.

Comments and Questions on Draft Revision of IMC 0305

All page numbers refer to the redline markup version.

- Overall, the guidance has been enhanced for better understanding.
- Section 4.14 - Definition for "Held-Open Finding." Maybe this new definition should be better defined the way the definition for "Parallel Performance Indicator Inspection Finding" was. Page 36 has a definition that could be used. Pg 3
- Section 07.04(d)(5) - Guidance added for what needs to be discussed about SCCIs in the mid-cycle and EOC letters. Pg 15 and 20. The section discussing the SCCI for EOC letter incorrectly uses the term mid-cycle three times. Pg 20 paragraph 5(a), (b) and (c).
- Section 11.01(d) - One of the definitions for "Held-Open Findings" is "the regional office does not complete the final exit meeting for a supplemental inspection within the finding's first four quarters." This replaces "because a supplemental inspection has not been conducted." Is this appropriate? I realize the old definition had some short comings, but I'm not sure this is better. Pg 36 and 37.
- Section 11.01(e)(5) - This paragraph requires the region to perform a supplemental inspection to close a held-open finding. With the new definition of held-open finding, this means the region would have to perform another supplemental inspection just because there wasn't an exit during the first four quarters. Is this correct and is that appropriate? Pg 37
- Section 11.04 d Pages 44 and 45. - The expansion supplemental inspection's scope to include all currently open safety significant performance issues (greater than green findings) in all cornerstones and strategic performance areas creates a situation where the NRC may conduct follow-up inspections in areas where the licensee has not completed the causal analysis and developed and implemented the corrective actions. The examples on page 45 present the same picture.

  For example - a yellow finding is issued in the second quarter in Reactor Safety/Mitigating Systems. The licensee informs the NRC that they are ready for the 95002 in the first quarter. During the fourth quarter, the licensee receives a white finding in Safeguards/Physical Protection and has not completed the causal analysis, etc. at the time of the 95002. Section d. and the two examples imply that the 95002 would include the security white finding. It does not make sense to inspect an area where the corrective actions have not been completed as the results can only be negative.
- Section 14 (SCCIs) – How will this be implemented? Rolled out on a "going-forward" basis after implementation date? Applied to existing cross-cutting issues?
- Section 14.03(b) - It is good to have the region develop the closing criteria for a SCCI and include in the assessment reports, but by not limiting the region to specific closure criteria, predictability and consistency is lost. Pg 58.