Enclosure 3

Reactor Oversight Process Task Force FAQ Log
May 18, 2017

Dated June 5, 2017

FAQ Log April 2017

FAQ No.	PI	Topic	Status	Plant/Co.	Point of Contact
17-01	IE03	2016 Power Change	Introduced Jan. 12 Discussed Mar. 23 and May 18	Grand Gulf 1	Jim Nadeau (ENT) Matt Young (NRC)
17-02	IE03	PVNGS 3 Power Change	Introduced Mar. 23 Discussed April 13 and May 18	Palo Verde 3	George Andrews (APS) Charles Peabody (NRC)
17-03	MS	Baseline UA Critical Hours	Introduced April 13 Discussed May 18	Generic	Ken Heffner (Certrec) Zack Hollcraft (NRC)

For more information, contact: James Slider, (202) 739-8015, jes@nei.org

FAQ 17-01
Grand Gulf June 2016 Power Change (Draft Response)

Plant:	Grand Gulf Nuclear Station Unit 1		
Date of Event:	June 17, 2016		
Submittal Date:	January 11, 2017		
Licensee Contact:	James Nadeau	**Tel/email:**	1-601-437-2103 / jnadea1@entergy.com
NRC Contact:	Matt Young	**Tel/email:**	1-601-437-2387 / matt.young@nrc.gov

Performance Indicator: Unplanned Power Changes per 7,000 Critical Hours

Site-Specific FAQ (see Appendix D)? ~~Yes~~ or No

FAQ to become effective when approved or (other date) Approval

Question Section

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

NEI 99-02, IE03 Unplanned Power Changes, Page 14, Examples, Lines 17 through 31:

17 Examples of occurrences that would be counted against this indicator include:
18 · Power reductions that exceed 20% of full power and are not part of a planned and
19 documented evolution or test. Such power changes may include those conducted in
20 response to equipment failures or personnel errors or those conducted to perform
21 maintenance.
22 · Runbacks and power oscillations greater than 20% of full power. A power oscillation
23 that results in an unplanned power decrease of greater than 20% followed by an
24 unplanned power increase of 20% should be counted as two separate PI events, unless the
25 power restoration is implemented using approved procedures. For example, an operator
26 mistakenly opens a breaker causing a recirculation flow decrease and a decrease in power
27 of greater than 20%. The operator, hearing an alarm, suspects it was caused by his action
28 and closes the breaker resulting in a power increase of greater than 20%. Both transients
29 would count since they were the result of two separate errors (or unplanned/non-
30 proceduralized action).
31 · Unplanned downpowers of greater than 20% of full power for ALARA11 reasons.

NEI 99-02, IE03 Unplanned Power Changes, Page 16, Lines 1 and 2:

1 Off-normal conditions that begin with one or more power reductions and end with an unplanned
2 reactor trip are counted in the unplanned reactor scram indicator only. However, if the cause of

Event or circumstances requiring guidance interpretation:

Event Discussion:

On June 17, 2016 the Grand Gulf Nuclear Station was performing routine Turbine Control Valve testing in accordance with an approved procedure. During this testing the operators depressed the rest button on a solenoid valve to test one turbine control valve closure. The solenoid did not perform as designed

and ultimately a second control valve closed and remaining two control valves began oscillating (open/close) in an attempt to maintain turbine load/power. This oscillation induced a similar power swing in the core. Upon release of the solenoid test switch the oscillations dampened but did not terminate.

The operators next attempted to reopen the first valve in accordance with the test procedure slow-close method using the control oil bleed-off valve. This attempt did not open the valve and two valves remained closed. This increased the magnitude of the oscillations of the remaining two valves. The increased oscillation of the control valves induces a larger power oscillation in the core. Upon closure of the bleed-off valve the oscillations again dampened but did not terminate.

In an attempt to reduce and control the power oscillations within the core the operators inserted a number of control rods several steps. This dampened the magnitude of the power oscillations and frequency time between oscillations. This final action ultimately lead to a OPRM reactor trip.

Questions:
It is Entergy's position, based on the guidance provided in Lines 1 & 2 on Page 16 of NEI 99-02, that this was one event caused by the unexpected closure of a second control valve. This closure resulted from equipment failure of the solenoid valve, which ultimately was terminated by the insertion of rods and the receipt of an OPRM reactor trip. Operator actions to attempt to open the first closed valve using the test procedure, and reduce power changed the magnitude and frequency of the power oscillations but could not in of themselves cause the oscillations without the second control valve being shut. Therefore this should be counted as an unplanned SCRAM.

To aid the reviews in understanding the event the following attachment is provided:

- A Graph showing the power oscillations. The graph depicts magnitude of the y-axes and the time on the x-axes.

Question 1: How should this event be counted?

> Should it be counted from start to finish as one event which resulted in an unplanned SCRAM?
>
> Or
>
> Should it be counted as two events one being Unplanned Power Change and one being an Unplanned SCRAM?

Question 2: If it counts as an Unplanned Power Change how should the event be counted?

> Should it be counted as one event (turbine control valve testing) which introduced oscillation and was ultimately terminated in a reactor scram?

Or

Should each power oscillation greater than 20% full power, be counted?

Or

Should a group of oscillations greater than 20% full power influenced by a single cause be counted as a one power change event?

Question 2 Supporting Questions:

If each oscillation greater than 20% full power is to be counted, how do we count it?

Do we count each oscillation greater than 20% full power from the initial power, just prior to the start of the event?

For example: It the initial power was 60% then each oscillation greater than 80.0% or less than 40.0% would be counted

Or

Do we count each oscillation greater than 20% full power from peak to valley and valley to peak?

If licensee and NRC resident/region do not agree on the facts and circumstances, explain:
The collection of facts that caused the power oscillations and reactor SCRAM are understood and agreed upon by both Entergy and the Nuclear Regulatory Commission (NRC).

The NRC inspectors at the Grand Gulf Nuclear Station, however, do not agree with the licensee's determination that this event is only counted in the Unplanned Scrams per7000 Critical Hours performance indicator. The NRC inspectors' position that NEI 99-02, Revision 7, guidance would cause the licensee to count this series· of events in both the Unplanned Scram, per 7000 Critical Hours and Unplanned Power Changes per 7000 Critical Hours performance indicators:

The basis for this position is as follows:

The first set of oscillations greater than 20 percent power resulted from the second control valve closure and operator action to maintain the manual push buttons depressed on the solenoid valves. The control rooms' decision to hold the manual push button on the solenoid valve depressed resulted in approximately five minutes, of power oscillations of greater than 20 percent power. When the manual push button on the solenoid valve was depressed, the operators were unknowingly diverting electrohydraulic system flow, which challenged the control valves ability to stabilize steam flow when

two stop valves were closed. Operators then decided to release the manual push buttons and the power oscillations reduced to approximately 10 percent. This response demonstrated that the second control valve closure and the pressure control system issue resulted in power oscillations that were limited to only 10 percent. The operator actions to maintain the manual push button depressed caused power oscillations that were greater than 20 percent power.

The second set of power oscillations of greater than 20 percent was caused by operator actions to troubleshoot the issue by attempting to reset and reopen a control valve using the slow closure method with a different solenoid valve. When the desired plant response was not achieved; operators backed out of the troubleshooting efforts, and the power oscillations returned to approximately 10 percent. The third set of increased power oscillations was caused by additional operator actions as attempts were made to troubleshoot the issue by resetting the control valve. These troubleshooting efforts resulted in additional power oscillations of greater than 20 percent. During the control valve reset, operators began to insert control rods with the intention to reduce power and stop the power oscillations. Operators believed that a power reduction to less than 50 percent power would stabilize the plant since two open control valves could pass the resultant steam produced.

Ultimately, operators inserted four control rods, which reduced power and increased the frequency of the power oscillations: Although the magnitude of the power oscillations decreased, the increased frequency of the power oscillations were now in the “counting domain" of the Oscillating Power Range Monitor system, and provided a valid input to the reactor protection system to cause an automatic reactor SCRAM.

Based on the above information and NEI 99-02, Revision 7, the inspectors' position is that the initial cause of the event (an unexpected control valve closure resulting in 10 percent power oscillations) was not the cause of the automatic reactor SCRAM. The reactor SCRAM was a result of operator action to insert control rods as an attempt to reduce power. Also, the cause of the greater than 20 percent power oscillations was a result of repeated operator decisions and actions to conduct troubleshooting activities during a 42 minute period. Therefore; this series of events should be counted in both the Unplanned Scrams per 7000 Critical Hours and Unplanned Power Changes per 7000 Critical Hours performance indicators.

Potentially relevant FAQs:

FAQ: 329
Date Entered: 12/12/2002
Cornerstone: Initiating Event
PI: IE03
Question:

NEI 99-02 states that unplanned power changes include runbacks and power oscillations greater than 20% of full power. Under what circumstances does a power oscillation that

results in an unplanned power decrease of greater than 20% followed by an unplanned power increase of 20% count as one PI event versus two PI events? For example: During a maintenance activity an operator mistakenly opens the wrong breaker which supplies power to the recirculation pump controller. Recirculation flow decreases resulting in a power decrease of greater than 20% of full power. The operator, hearing an audible alarm, suspects the alarm may have been caused by the activity and closes the breaker resulting in a power increase of greater than 20% full power.

Response:

Both transients in the example should be counted. There were two errors: (1) opening the wrong breaker and (2) reclosing the breaker without establishing the correct plant conditions for restarting the pump. If the pump had been restored per approved procedures only the first transient would be counted.

Response Section

Proposed Resolution of FAQ:

This even should be counted as an unplanned SCRAM. The cause of the power oscillation and ultimately the reactor SCRAM were the same, the unanticipated closure of the second control valve. The conduct of turbine control valve testing in accordance with approved testing procedures combined with an unexpected equipment failure caused the SCRAM.

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

No rewording of the guidance is required.

PRA update required to implement this FAQ?

No PRA updates are required.

MSPI Basis Document update required to implement this FAQ?

Not applicable.

NRC Response

Interpretation of Guidance and Process

This event did result in multiple unplanned power changes and one unplanned scrams, however due to its unique nature it does not easily fit the intent of NEI 99-02 when describing an unplanned power change. As such, the staff determined that the best approach to this event would be to use a site specific FAQ response dictated by NEI 99-02 Appendix D while trying to adhere to the logic of the Unplanned Power Changes per 7000 Critical Hours indicator guidance, while understanding that it cannot be applied literally. The staff decided to not attempt to update the PI guidance because this was

a rare event and attempting to describe it could result in a complicated scenario that would confuse other simpler events that may require reporting.

The most applicable portion of NEI 99-02 to this event is the following:

A power oscillation that results in an unplanned power decrease of greater than 20% followed by an unplanned power increase of 20% should be counted as two separate PI events, unless the power restoration is implemented using approved procedures. For example, an operator mistakenly opens a breaker causing a recirculation flow decrease and a decrease in power of greater than 20%. The operator, hearing an alarm, suspects it was caused by his action and closes the breaker resulting in a power increase of greater than 20%. Both transients would count since they were the result of two separate errors (or unplanned/non-proceduralized action).

FAQ 329 referenced above also addresses this:

Both transients in the example should be counted. There were two errors: (1) opening the wrong breaker and (2) reclosing the breaker without establishing the correct plant conditions for restarting the pump. If the pump had been restored per approved procedures only the first transient would be counted.

The key factor in determining the number of transients that would count towards the PI is the number of separate issues, faults or discrete events that occurred. The staff decided to apply this concept to the Grand Gulf event rather than attempt to count each individual power change.

The staff did note the following section of NEI 99-02:

Off-normal conditions that begin with one or more power reductions and end with an unplanned reactor trip are counted in the unplanned reactor scram indicator only.

It is the staff's opinion that this guidance applies to a single transient that initiates with a downpower, and ends with either a manual or automatic scram. An example would be lowering condenser vacuum where the crew lowers reactor power to try to halt the lowering vacuum, but the condition worsens until a scram occurs. In the Grand Gulf event, power oscillations occurred in both the upward and downward direction for approximately 50 minutes before the final operator action to insert rods to lower power which ended with the OPRM scram signal.

<u>Disposition</u>

The staff determined that three discrete events occurred during this transient that are indicative of plant performance and should be considered inputs into the unplanned power change PI.

The first was the equipment issue that led to the initial oscillations. This issue can be summarized as a combination of both the failure of start-up fluid MSV 3 solenoid valve 1N32F514C/SJ13S243 due to excessive mechanical force along with the procedural inadequacies of 06-OP-1N32-V-0001 Attachment II.

The second was the decision by operators, at time 02:27, after having stopped the procedure, to not proceed with the conservative path of inserting a manual scram or commencing a shutdown, but to try to continue the procedure. This resulted, as seen on the PDS trend plot in an increase in the magnitude of oscillations at that time.

The third error occurred at time 02:49, when the operators again attempted to utilize the surveillance procedure rather than take the more conservative path of a scram or shutdown.

The decision to begin to insert control rods to lower power began the final transient, which resulted in the OPRM scram, as such, this final portion of the event would count only towards the unplanned scram PI.

This response only applies to this specific event at Grand Gulf.

FAQ 17-02 (Draft Response)
Palo Verde Unit 3 Scram

Plant:	Palo Verde Nuclear Generating Station (PVNGS), Unit 3		
Date of Event:	09/19/2016		
Submittal Date:	03/23/2017		
Licensee Contact:	George Andrews	Tel/email:	623-393-2219
NRC Contact:	Charles Peabody	Tel/email:	623-393-3737

Performance Indicator:

IE03, Unplanned Power Changes per 7000 Critical Hours

Site-Specific FAQ (see Appendix D)? (__) Yes or (X) No

FAQ to become effective (X) when approved or (other date) _____

Question Section

Does an unplanned power change caused by a main turbine trip that ends in an elective manual scram and is counted as an unplanned scram also need to be counted as an unplanned power change?

On September 19, 2016, the Palo Verde Nuclear Generating Station (PVNGS) Unit 3 main turbine tripped from 100% power resulting in an automatic reactor power cutback, which reduced power greater than 20%. The reactor power cutback system automatically reduced unit power to approximately 50%, and operators subsequently initiated a power reduction to 12% power in accordance with the load rejection abnormal operating procedure. During the power reduction to 12%, PVNGS management elected to complete a reactor shutdown to troubleshoot and repair the cause of the turbine trip, which was not known. PVNGS counted this event as an unplanned scram because the staff was using an abnormal operating procedure to direct plant actions.

The resident inspector proposed that the main turbine trip event should be counted under both unplanned scram and unplanned power change performance indicators since the cause of the manual scram was discretionary and therefore different than the malfunction that caused the turbine trip-initiated unplanned power change.

PVNGS does not agree that both should be counted and proposes the event be counted solely as an unplanned scram since the reason (the component failure) for the discretionary plant shutdown/manual scram was the same as the turbine trip/unplanned power change.

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

Section 2.1 of NEI 99-02, Revision 7 (page 11, lines 11-14) provides the following definition:

"*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."

Section 2.1 of NEI 99-02, Revision 7 (page 17, lines 1-9) states:

> "Off-normal conditions that begin with one or more power reductions and end with an unplanned reactor trip are counted in the unplanned reactor scram indicator only. However, if the cause of the downpower(s) and the scram are different, an unplanned power change and an unplanned scram must both be counted. For example, an unplanned power reduction is made to take the turbine generator off line while remaining critical to repair a component. However, when the generator is taken off line, vacuum drops rapidly due to a separate problem and a scram occurs. In this case, both an unplanned power change and an unplanned scram would be counted. If an off-normal condition occurs above 20% power, and the plant is shut down by a planned reactor trip using normal operating procedures, only an unplanned power change is counted."

Event or circumstances requiring guidance interpretation:

The PVNGS design includes provisions that permit a 100% secondary load rejection without incurring an automatic reactor trip. A load rejection results in a reactor power cutback which automatically drops selected subgroups of regulating bank control rods into the reactor and initiates a steam bypass control system quick-open demand which opens all eight steam bypass control valves to modulate and reduce power to approximately 50%. The load rejection does not result in an automatic reactor trip as demonstrated by this event.

On September 19, 2016, the PVNGS Unit 3 main turbine tripped at 1434 with the unit operating at 100% power. A reactor power cutback occurred automatically, as designed. The control room staff began a power reduction to 12% using abnormal operating procedure 40AO-9ZZ08, "Load Rejection." Subsequently, based on an assessment of need for troubleshooting and repairs, potential reactivity management challenges at the end of core life, and the uncertainty of cause which might delay the return to full power, the control room staff and plant management made a decision to complete a plant shutdown and place the plant in Mode 3 by tripping the reactor using step 3.24 of 40AO-9ZZ08 from approximately 34% power at 1554 to facilitate repairs. No additional, unexpected plant conditions were occurring that would require a plant shutdown other than the loss of the main turbine. Refer to the Figure 1 for a graphical display of the power changes during the event.

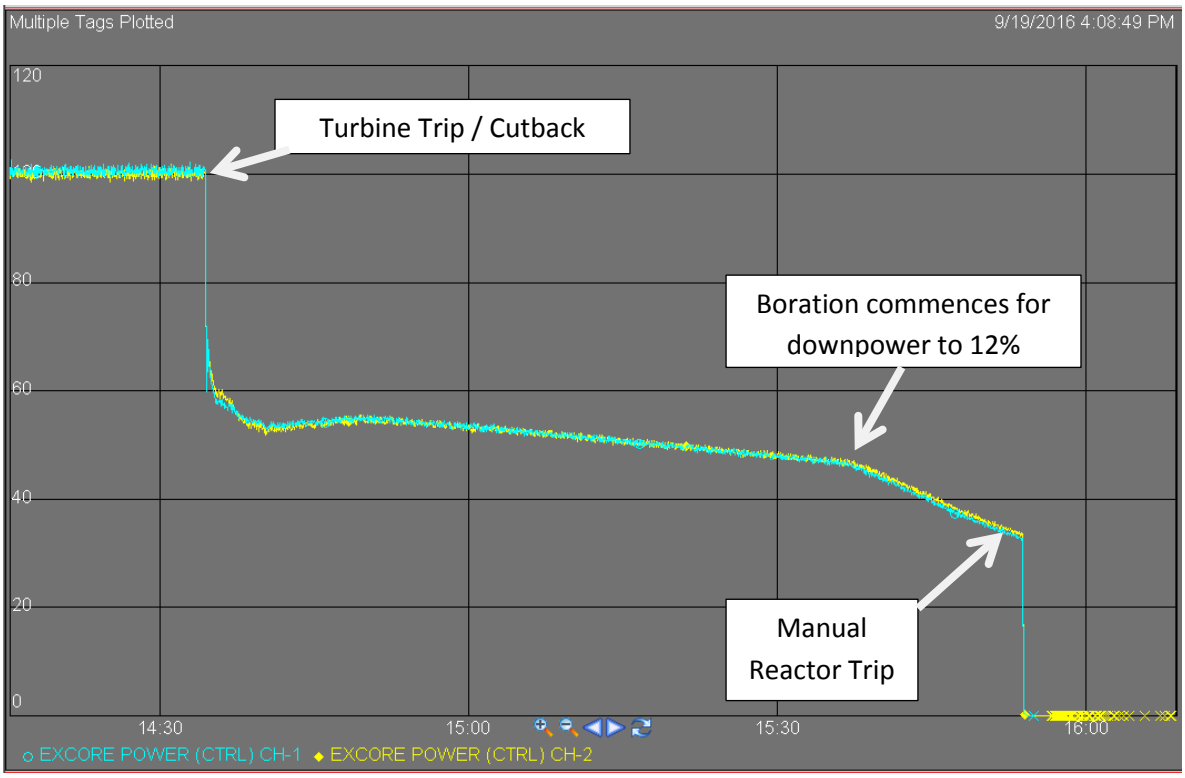

Figure 1: Reactor Power during the Event

Time	Action
1434	Main turbine trip from 100% power, reactor power cutback reduced power to approximately 53% - operators began briefing and development of game plan for power reduction in accordance with the procedure
1532	Commenced 1300 gallon boration at 31 gallons per minute to reduce power to 12% from approximately 45% power based on reactor engineering game plan
1554	Manual trip of the reactor at approximately 34% power to facilitate troubleshooting and repair of the cause of the main turbine trip

Tripping the reactor from 34% power was a permissible step of the abnormal operating procedure to establish plant conditions to perform troubleshooting and conduct repairs. The abnormal operating procedure provides the option of either plant shutdown or holding power at 12% while conducting repairs following a load rejection event. Stabilizing at 12% power at the end of core life presents challenges to the operators that are not warranted for an extended period of operation. However, the reactor protection system was not challenged and plant conditions did not require a reactor scram. The plant was not approaching reactor scram setpoints, and conditions were not likely to result in a scram. The control room staff was provided with a reactor engineering game plan that indicated the plant would be capable of reducing reactor power to 12% and stabilizing there. PVNGS management decided to shutdown the reactor and perform repairs in Mode 3 because the cause of the turbine trip was unknown and placing the plant in Mode 3 was preferred to sustaining 12% power operations for an extended period of time at the end of core life. The control room staff demonstrated conservative decision making with this course of action.

The NEI 99-02 example for a condition that would require counting an event both as an unplanned scram that occurred during an unplanned power change is given beginning on line 4 of page 17 of NEI 99-02. The intent of that discussion is to exemplify the disparate causes of the unplanned scram and unplanned power changes that required inclusion under both performance indicators. The unplanned scram was caused by the loss of condenser vacuum during an unplanned power changed to conduct unplanned turbine generator repairs. The scram was due to a separate degrading condition that, by itself, could have resulted in a reactor scram.

The NEI 99-02 example is dissimilar from the September 19th, 2016, Unit 3 main turbine trip. The manual scram to complete the shutdown of the plant in order to troubleshoot and repair the cause of the main turbine trip was directly related to the cause of the main turbine trip itself and not to some other unrelated failure or degrading condition in the plant. No additional, unexpected plant conditions were occurring that would require a plant shutdown. The ultimate causal linkage of the unplanned power change (turbine trip) ending in a manual scram to correct the cause of the initiating turbine trip should count only as an unplanned scram as described in the referenced NEI guidance.

PVNGS proposed resolution: The event would count only as an unplanned scram.

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

The resident inspectors generally agree with the event synopsis. However, there is an outstanding question of whether the manual trip was required by station procedures. The manual trip is permitted by the abnormal operating procedure, but it was not specifically directed. There is some question as to whether the plant could have been stabilized at 12% to take the turbine off line. Reactor Engineering was advising the operators to continue the down power rather than scram at the time the licensee's management made the decision to manually trip the reactor. If the plant had been stabilized at 12%, then a reactor trip would not have been required and there would be no issue of double counting; it would only register as an unplanned down power. PVNGS chose to manually trip the reactor, which was a conservative decision that was made at the discretion of the licensee, separate from and in no way directly caused by the spurious turbine trip or required by the procedure. Furthermore, had the station been unable to meet a Power Distribution Limit while continuing to down power that would have satisfied direct causation for inclusion as an unplanned scram only. But, as it stands, PVNGS ultimately made a separate decision to manually trip the reactor on less than 72 hours' notice. Therefore, it should be counted as a separate event under the current language of NEI 99-02, Revision 7.

Potentially relevant FAQs:

FAQ 156: An unplanned runback was terminated by a scram. Should it count as both unplanned scram and unplanned power change? The answer is no without any details.

FAQ 296: An unplanned power change was initiated to repair a stator cooling leak and condenser vacuum was lost requiring a reactor scram. Both were required to be counted because the cause of each was different. No discretionary decision making was involved. This is the example in NEI 99-02.

FAQ 319: Unplanned power change resulted from a loss of a station power transformer induced loss of condenser vacuum (loss of 3 of 6 circulating water pumps). When power was restored, high circulating screen DP resulted in a loss of the fourth circulating water pump and a manual trip of the reactor. No discretionary decision making was involved. The NRC appropriately determined that this event should

be counted as both an unplanned power and an unplanned scram because two separate plant equipment failures occurred (loss of transformer and high DP).

FAQ 440: The licensee asked a question: Whether a planned shutdown to repair a reactor recirculation pump motor that faulted two days prior and caused an unplanned power change should result in an unplanned power change or an unplanned scram. The licensee manually tripped the reactor to repair the motor using the normal plant shutdown procedure. The licensee counted this as an unplanned power change and asked whether this should be an unplanned scram or unplanned power change. The NRC answered it should be counted as an unplanned scram because the shutdown from single loop condition from 55% is not its normal method of shutting down the reactor. The NRC did not answer the question whether the event should be counted as an unplanned power change as well.

This FAQ is similar to the Palo Verde event in that it contained an element of discretionary decision making (in the licensee's opinion). It is dissimilar in that the licensee argued the event should not have counted as an unplanned scram and PVNGS is asking whether the main turbine trip should be counted as an unplanned power change. The NRC response only addressed the unplanned scram question.

Response Section

Proposed Resolution of FAQs:

The main turbine trip that ended in a manual scram should count only as an unplanned scram.

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

None

PRA update required to implement this FAQ? No

MSPI Basis Document update required to implement this FAQ? No

NRC Response

The staff reviewed the procedure used by the licensee for the transient response and eventual plant trip (40AO-9ZZ08 Rev. 31), and discussed the event with the licensee and resident inspectors. The most pertinent parts of NEI 99-02 as pointed out by the licensee involve the definition of unplanned scram and when not to count a downpower that proceeds an unplanned scram. In this event, the initial downpower was caused by an unknown fault on the turbine control system. The decision to trip the reactor was predicated by that initial event. While some discretion was exercised by the licensee to trip the reactor at 34% power rather than at 12% power, both were per the abnormal procedure. As such, the downpower and scram are subject to the criteria in Section 2.1 of NEI 99-02, Revision 7 (page 17, lines 1-2): "Off-normal conditions that begin with one or more power reductions and end with an unplanned reactor trip are counted in the unplanned reactor scram indicator only."

This event should count as one unplanned scram and no unplanned power changes. No change to NEI 99-02 is required as a result of this FAQ.

FAQ 17-XX Baseline Unavailability Critical Hours

Plant: Generic FAQ Based on ROPTF Whitepaper
Date of Event: N/A
Submittal Date: March 23, 2017
Industry Contact: Ken Heffner Tel/email: 919-434-833/ken.heffner@certrec.com
NRC Contact: Zack Hollcraft Tel/email: 301-415-3024/zachary.hollcraft@nrc.gov

Performance Indicator:

MS06,MS07 , MS08, MS09, MS10

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):

Currently, NEI 99-02, page F-9, starting at line 36 says "The initial baseline planned unavailability is based on actual plant-specific values for the period 2002 through 2004. (Plant-specific values of the most recent data are used so that the indicator accurately reflects deviation from expected planned maintenance.) These values may change if the plant maintenance philosophy is substantially changed with respect to on-line maintenance or preventive maintenance. In these cases, the planned unavailability baseline value should be adjusted to reflect the current maintenance practices, including low frequency maintenance evolutions."

Event or circumstances requiring guidance interpretation:

The guidance is silent on whether, if the planned unavailability baseline hours change, a licensee should retain the 2002 to 2004 critical hours as baseline, or revise the baseline critical hours to some other period of operation. As the intent of updating the baseline unavailability is to have the value be a reflection of the current maintenance philosophy, revising the baseline critical hours to those of the most recent three years of operation would be appropriate. By using the most recent three-year period, inappropriate inflation of the baseline unavailability is avoided If the plant had an extended outage during the 2002-2004 period (the lower denominator would inflate the allowance for planned unavailable during periods without the extended outage).

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

N/A – this FAQ is based on an ROPTF whitepaper.

Potentially relevant existing FAQ numbers: There are no relevant FAQ numbers.

Response Section:

Proposed Resolution of FAQ:

Since the baseline unavailability value can change as maintenance philosophy changes, , it is appropriate to change the baseline critical hours to those from the most recent three years, rather than retain the critical hours from the original baseline period of 2002-2004.

Special Considerations:

If the plant had an extended outage (e.g., greater than six months) during the 2002-2004 time frame or the most recent three-year period, then baseline values could be erroneously inflated

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

The following should be added to the current guidance on page F-9 of Revision 7, starting at line 42: “If the planned unavailability baseline value is adjusted, the critical hours should be changed to those of the most recent three-year period. If the most recent three-year period includes an extended shutdown (> 6 months), the most recent three-year period that does not include the extended shutdown should be used”.

PRA update required to implement this FAQ? No
MSPI Basis Document update required to implement this FAQ? No

NRC Staff White Paper 17-01
Performance Indicator Validity during
Extended Shutdown and Start-Up Conditions

Purpose

This white paper proposes to incorporate guidance into the current revision of NEI 99-02, "Regulatory Assessment Performance Indicator Guideline," and NRC IMCs for determining performance indicator (PI) validity for plants in extended shutdown conditions and the start-up of plants that were in extended shutdown conditions. The staff considers the term "valid" in this white paper to mean that the PI adequately provides enough data for performance assessment purposes.

Background

NEI 99-02 currently provides guidance for determining the applicability or validity of some PIs under certain conditions. However, NEI 99-02 does not provide guidance for determining the validity for other PIs and plant conditions. Plant conditions that would need such determinations include an extended shutdown, which IMC 0608, "Performance Indicator Program," defines as a condition where the reactor has been subcritical for at least 6 months and the start-up of a plant from an extended shutdown, and the start-up of new plants for which the PIs in NEI 99-02 will be applicable.

Past examples that demonstrate the need for such guidance include the restart of the Browns Ferry Nuclear Plant Unit 1, the extended shutdown of the Crystal River Nuclear Generating Plant, the Fort Calhoun IMC 0350 shutdown, and the Watts Bar Unit 2 startup.

Discussion

NRC staff proposes modifying NEI 99-02 to add and clarify reporting guidance for extended shutdown conditions and start-ups from extended shutdowns. The staff proposes that NRC IMCs be updated with guidance for determining PI validity.

For NEI 99-02, in section 1, Introduction, the following paragraph and table would be added.

> **Performance Indicator Reporting During Extended Shutdown**
>
> Some performance indicators depend on critical hours, or technical specification requirements that are not applicable during certain shutdown modes. In order to address these indicators losing the ability to provide valid performance data, the following table describes when these indicators will be deemed invalid and non-applicable, and following re-start, when they become valid again. For performance indicators, when a shutdown exceeds six months, it will be considered an extended shutdown and applicable indicator values are displayed as "Not Applicable" as determined by the table below. Plants in an extended shutdown should enter the following comment for any affected PIs:
>
> *Entered period of extended shutdown on DATE, data is invalid.*
>
> Plants that have exited a period of extended shutdown or in initial startup should enter the following comment for any affected PIs:

DRAFT

NRC Staff White Paper 17-01
Performance Indicator Validity during
Extended Shutdown and Start-Up Conditions

Exited period of extended shutdown (Initial Startup) on DATE, data is invalid until XQXX.

Sensitivity studies have shown that for most cases, one year is adequate time for the MSPI indicator to provide valid data. However for some sites, more time may be required. In these situations, plants should submit an FAQ to the ROP Working Group with an analysis that shows what indicators require more time and how much is required prior to making them valid.

Indicator	Valid during Shutdown	Time after Shutdown until valid	Comments
Unplanned Scrams per 7,000 Critical Hours	No	1 year	
Unplanned Power Changes per 7000 Critical Hours	No	1 year	
Unplanned Scrams with Complications	Yes	Immediate	
Safety System Functional Failures	Yes	Immediate	
Mitigating System Performance Index	No	1 year	Licensees may request special circumstances via the FAQ process
Reactor Coolant System Specific Activity	No	Immediate	Further guidance provided in Section 2.3
Reactor Coolant System Leakage	No	Immediate	Further guidance provided in Section 2.3
Drill/Exercise Performance	Yes	Immediate	
Emergency Response Organization Drill Participation	Yes	Immediate	
Alert and Notification System Reliability	Yes	Immediate	
Occupational Exposure Control Effectiveness	Yes	Immediate	
RETS/ODCM Radiological Effluent Occurrence	Yes	Immediate	
Protected Area Security Equipment Performance Index	Yes	Immediate	

DRAFT