Group A

FOIA/PA NO: 2014-0170

RECORDS BEING RELEASED IN PART

The following types of information are being withheld:

Ex. 1: ☐ Records properly classified pursuant to Executive Order 13526
Ex. 2: ☐ Records regarding personnel rules and/or human capital administration
Ex. 3: ☐ Information about the design, manufacture, or utilization of nuclear weapons
☐ Information about the protection or security of reactors and nuclear materials
☐ Contractor proposals not incorporated into a final contract with the NRC
☐ Other_____
Ex. 4: ☐ Proprietary information provided by a submitter to the NRC
☐ Other_____
Ex. 5: ☑ Draft documents or other pre-decisional deliberative documents (D.P. Privilege)
☐ Records prepared by counsel in anticipation of litigation (A.W.P. Privilege)
☐ Privileged communications between counsel and a client (A.C. Privilege)
☐ Other_____
Ex. 6: ☐ Agency employee PII, including SSN, contact information, birthdates, etc.
☐ Third party PII, including names, phone numbers, or other personal information
Ex. 7(A): ☐ Copies of ongoing investigation case files, exhibits, notes, ROI's, etc.
☐ Records that reference or are related to a separate ongoing investigation(s)
Ex. 7(C): ☐ Special Agent or other law enforcement PII
☐ PII of third parties referenced in records compiled for law enforcement purposes
Ex. 7(D): ☐ Witnesses' and Allegers' PII in law enforcement records
☐ Confidential Informant or law enforcement information provided by other entity
Ex. 7(E): ☐ Law Enforcement Technique/Procedure used for criminal investigations
☐ Technique or procedure used for security or prevention of criminal activity
Ex. 7(F): ☐ Information that could aid a terrorist or compromise security

Other/Comments:_____

December 18, 2007

MEMORANDUM TO: Dwight D. Chamberlain
Director, Division of Reactor Safety

FROM: Nicholas H. Taylor
Senior Resident Inspector, Cooper Nuclear Station

SUBJECT: CALLAWAY INDEPENDENT LESSONS-LEARNED ASSESSMENT

As directed in your memorandum on November 2, 2007, I have completed the subject assessment, the results of which are detailed in the attachments to this memorandum. Specifically, my review of charter items 1, 4, 5 and 6 is documented in Attachment 1. My review of charter items 2 and 3 is documented in Attachment 2.

In completing this assessment, I spent approximately one week performing interviews and document reviews in the Region IV office, assisted by Mr. Jeremy Groom. In addition to the interviews and document reviews, I attended an Allegation Review Board to better understand current allegation processing standards. Finally, I spent approximately two weeks interacting with the licensee and reviewing documents to better understand the safety significance of the alleged activities.

Summarized below is a list of observations and recommended actions from the assessment. The specific details supporting each observation are contained within the body of the report.

Observations	Recommended Actions
(1) (b)(5) (b)(5)	(1) (b)(5) (b)(5)
(2) Contrary to paragraph 5.b of PG 0858.14, concerns 2, 3, 4, 5 and 6 were not assigned due dates after the 3/19/07 ARB. In addition, concerns 2, 3 and 4 were not assigned due dates following the 4/9/07 or 6/18/07 ARBs	(2) Reinforce requirements of PG 0858.14 with members of ACES and ARB.
(3) None of the concerns in this case were closed within the 60 day requirement of PG 9011C.2.	(3) Reinforce requirements of PG 9011C.2 with the inspection staff.
(4) Contrary to paragraph 5.b of PG 0858.14 and section B of PG 0858.13, the ARB did not recognize the multiple individual concerns contained within concern 2, and did not split them out into separate concerns to clarify expectations for the inspection process.	(4) Reinforce requirements of PG 0858.14 with members of ACES and ARB.

(5) The 3/19/07 ARB was presented with all of the technical information required to justify an investigation, but chose not to do so (b)(5) (b)(5)	(5) (b)(5) (b)(5) (b)(5)
(6) The concerns list generated by the branch was (b)(5) (b)(5)	(6) (b)(5) (b)(5)
(7) The branch did not provide a draft NOV for concern 2 when routing the concerns list to the SAC on 3/12/07. (b)(5) (b)(5)	(7) (b)(5) (b)(5).
(8) The change management actions taken for the revision to PG 0858 on May 30, 2007 (b)(5)	(8) (b)(5) (b)(5)
(9) No documentation was provided for closure of concerns 5 and 6 from the original ARB on 3/19/07. (b)(5) (b)(5) (b)(5).	(9) (b)(5) (b)(5) (b)(5)
(10) When answering the concerns assigned by the ARB, the inspector paraphrased/shortened the statement of the concerns. As a result, the closure memo provided by the branch to the 6/18 ARB did not address all of the original aspects of concern 2.	(10) (b)(5) (b)(5)
(11) The closure letter sent to the alleger on 8/7/07 accurately restated the concerns, but did not address all aspects of concern 2 ((b)(5) (b)(5)	(11) (b)(5) (b)(5) (b)(5)

(b)(5)	
(12) The acknowledgement letter to the alleger did not fully comply with PG 0858.14. Contrary to paragraph 9.b of PG 0858.14, the letter did not "advise the alleger of the intended method for resolution of the concerns."	(12) (b)(5) (b)(5) (b)(5)
(13) (b)(5) (b)(5)	(13) (b)(5) (b)(5)
(14) This case was treated as OI/ADR-related and not counted towards regional metrics ((b)(5) (b)(5)).	(14) (b)(5) (b)(5)
(15) Contrary to PG 0858.13 and PG 0858.14, the SAC was not included on concurrence for the inspection report documenting a violation related to the alleger's concerns.	(15) (b)(5) (b)(5)
(16) The documented concerns in AMS were not updated upon receipt of additional information from the alleger on 4/26/07. This additional information was provided by the alleger to correct inaccuracies in the stated concerns.	(16) (b)(5) (b)(5)
(17) The date of a telephone call with the alleger was recorded incorrectly in the AMS timeline.	(17 (b)(5) (b)(5)
(18) Contrary to the requirements of PG 9011C.2, ACES was included on distribution for only five of the ten delegation memos reviewed in this assessment. The assessors performed an extent of condition review across other branches and discovered that this inconsistency is not isolated to PB-B.	(18) (b)(5) (b)(5)
(19) (b)(5) (b)(5)	(19) (b)(5) (b)(5)
(20) (b)(5) (b)(5)	(20) (b)(5) (b)(5)

(b)(5)	
(21) Several different versions of an "audit attribute checklist" were used for required quarterly allegation audits.	(21) (b)(5) (b)(5)
(22) The current version of the Quarterly Allegation File Audit Checklist (b)(5) (b)(5)	(22) (b)(5) (b)(5)
(23) Of the eight audits reports reviewed, four were done by persons other than those required by PG 0858. In these cases, the responsible party delegated the audit to one of their subordinates.	(23) (b)(5) (b)(5)
(24) In several cases the audits were not completed in a timely manner, with one report being completed 138 days after the end of the calendar quarter ((b)(5) (b)(5)).	(24) (b)(5) (b)(5)
(25) An unanalyzed condition existed for approximately 15 minutes during the Callaway shutdown on 10/21/03.	(25) (b)(5) (b)(5)

Enclosures:
(1) Assessment of Region IV Actions For Callaway Allegation Case RIV-2007-A-0028
(2) Assessment of Event Significance For Callaway Allegation Case RIV-2007-A-0028
(3) Information Reviewed
(4) Charter Memorandum from Chamberlain to Taylor, November 2, 2007

CC:
Jeremy Groom, DRP

ASSESSMENT OF REGION IV ACTIONS FOR CALLAWAY ALLEGATION CASE RIV-2007-A-0028

Chronology of Actions by NRC Staff: [the age of the case follows each entry]

10/21/03 Alleged activities occurred during a plant transient at Callaway Plant

3/2/07 Allegation received by Callaway Senior Resident Inspector (SRI) (Peck). [1]

3/6/07 Allegation case RIV-2007-A-0028 is assigned to Projects Branch B (PB-B) to generate concerns list (Walker to Gaddy). Scheduled for ARB on 3/19/07. [5]

3/12/07 PB-B (Gaddy) provides concerns list to R4ALLEG via email (6 concerns identified) [11]

3/19/07 ARB reviews this case. PB-B assigned concerns 1-2 for inspection. EB2 assigned concerns 3-6 (SCWE) to contact alleger. Follow up to ARB directed to discuss potential OI involvement. [18]

3/29/07 Phone call with alleger to discuss concerns 3-6 of RIV-2007-A-0028 (Freeman, Smith, Gaddy). During this teleconference, the alleger provided examples of a failed SCWE at Callaway and claimed discrimination for participating in protected activities. [28]

3/30/07 Freeman documents the 3/29/07 phonecon in an email to R4ALLEGE. [29]

4/1/07 Alleger provides ACES (Walker) with a memorandum detailing interactions with the ECP program at Callaway. The alleger provides a detailed explanation for his assertion that discrimination had occurred. At this point, the alleger had presented sufficient detail to substantiate a "prima facie" discrimination case as defined in PG 0858. [31]

4/5/07 Additional information from the alleger is forwarded to PB-B (Walker to Gaddy). PB-B is assigned to provide a revised concerns list in preparation for ARB on 4/17/07. [35]

4/9/07 ARB considers new information. Previous concerns 3, 4, 5 and 6 are now distilled down to new concerns 3 and 4 (although this is not documented anywhere). Concern 3 is assigned to PB-B to inspect. Concern 4 referred to the Alternative Dispute Resolution (ADR) process based on the new information from the alleger. [39]

4/11/07 ACES (Freeman) sends acknowledgement letter to alleger based on the four concerns assigned by the 4/9/07 ARB. ADR is offered for concern 4. [41]

4/17/07 ACES (Freeman) resends the acknowledgement letter at the request of the alleger (the alleger had provided the wrong mailing address). [47]

4/20/07 Alleger provides letter to ACES (Freeman) to correct the concerns described in the 4/11/07 acknowledgement letter. In this letter, the alleger provides

some clarifying details on concerns 1 and 3. He asks that the NRC not pursue concern 4 due to his future plans at Callaway. [50]

6/7/07 PB-B documents the results of the inspection of concerns 1 and 2 (late, as the due date assigned was 5/19/07), substantiating both concerns and expressing plans to document some aspects of concern 1 as a violation in report 05000483/2007003. Based on the description of the concerns in the response memo, and interviews with the inspector and the PB-B branch chief, (b)(5) (b)(5) the inspector independently came to the correct conclusions and there was no impact resulting from this omission. Regarding concern 2, the inspector did not document a response to all of the elements of the concern, and as such did not specifically document that the failure to initiate a Callaway Action Request (CAR) and make a log entry (for going below minimum critical temperature) were both procedural violations. Note that the inspector had stated his intention to document a violation for these errors in response to concern 1. [98]

6/13/07 PB-B documents results of inspection of concern 3, again based on inspections done between 4/5 and 4/30. (b)(5) (b)(5)

6/13/07 PB-B branch chief (Gaddy) delegates branch responsibilities to the SPE (Brush) for the period 6/14/07-6/27/07. [104]

6/18/07 ARB meets and considers concern 2 to determine if an investigation will be required. (b)(5) (b)(5) (b)(5)). Determines that since no violation had occurred, no investigation was warranted. ARB assigned PB-B to document the review more fully and to bring the concern back to the ARB if any violation of NRC requirements was discovered. (b)(5) the concerns had been "paraphrased" by PB-B and some of the elements of concern 2 were actually addressed in the closure of concern 1. (b)(5) (b)(5) (b)(5)

6/19/07 PB-B (Brush) provides additional information in a memo to ACES for concern 2, as directed by the 6/18 ARB. In the memo, the branch did not definitively state whether or not the failure to log the TS entry constituted a violation (as they had originally done in the 6/7/07 memo). The branch does, however, state that no evidence of willfulness was discovered ((b)(5) (b)(5) (b)(5) [110]

8/2/07 NRC Integrated Inspection Report 05000483/2007003 is issued,

documenting a licensee-identified violation of Criterion XVI due to the licensee's failure to make an operating log entry and initiate a CAR for the plant transient that had occurred on 10/21/03. [154]

8/7/07 ACES (Freeman) documents case closure to the alleger. Closure of concerns 1 and 3 were accurate based on the information available. The stated resolution of concern 2 did not address the last sentence of the concern regarding the failure to log the Technical Specification entry or the operational transient, despite the fact that the branch had identified this as a violation of regulatory requirements in their answer to concern 1 on 6/7/07. Concern 4 was closed at the request of the alleger. [159]

8/8/07 "Closure Letter & Allegation File Checklists" is completed by ACES (Freeman). First bullet in the Closure Letter Checklist is checked and (b)(5) (b)(5). Lastly, the date of the telephone conversation with the alleger is captured incorrectly in AMS (contrary to the sixth bullet in the Allegation File Closure Checklist). [160]

8/30/07 Alleger provides NRC copy of his 8/15/07 letter to Senator Durbin, documenting three concerns. One of the concerns is essentially a restatement of concern 2 of RIV-2007-A-0028. The other two concerns were unrelated to this case. As a result of this letter, case file RIV-2007-A-0096 was opened and includes all three of these concerns.

9/5/07 ACES (Freeman) assigns PB-B (Gaddy) to review the 8/15/07 letter and directed PB-B to review previous actions and identify any new concerns.

9/12/07 PB-B (Gaddy) forwards results of SPE's review (Deese) to ACES (Heller/Walker). Regarding the allegation stemming from the NRC's treatment of concern 2 of RIV-2007-A-0028, Deese recommends ARB reconsideration of the need for an OI investigation.

Review of Charter Items:

1. **Review and assess the adequacy of the previous NRC inspection follow up to the event discussed in allegation RIV-2007-A-0028.**

PB-B adequately inspected the technical aspects of the assigned concerns from RIV-2007-A-0028. As a result of the inspection efforts, PB-B documented a licensee identified violation of 10 CFR 50, Appendix B, Criterion XVI, "Corrective Actions," in NRC Integrated Inspection Report 05000483/2007003. While this violation accurately identified the performance deficiency (failure to initiate a CAR and make log entries in the control room logs), (b)(5) (b)(5) (b)(5) **(Observation #1)**

(b)(5)

(b)(5)

4. Review the appropriateness of ARB and inspection actions in response to receipt of allegation RIV-2007-A-0028 to include the decision making regarding the need for an OI investigation.

The ARBs in question (3/19, 4/9, and 6/18) all contained the correct mix of personnel. Two were chaired by DDRP, one by DRP.

Contrary to paragraph 5.b of PG 0858.14, concerns 2, 3, 4, 5 and 6 were not assigned due dates after the 3/19/07 ARB. In addition, concerns 2, 3 and 4 were not assigned due dates following the 4/9/07 or 6/18/07 ARBs. (Note – this requirement could not be found in PG 0858.13). (b)(5)

(b)(5), but an extent of condition review performed demonstrated that there are other cases where this was not being performed. As a result, the "Overdue Actions by Division and Branch" report that is discussed at the biweekly allegation status meeting would not have showed that these items were overdue, despite the fact that the one concern that was assigned a due date was completed several weeks late. **(Observation #2)** None of the concerns were closed within the 60 day requirement of PG 0858.14. **(Observation #3)**

Contrary to paragraph 5.b of PG 0858.14 and section B of PG 0858.13, the ARB did not recognize the multiple individual concerns contained within concern 2, and did not split them out into separate concerns to clarify expectations for the inspection process. This

(b)(5)

(b)(5). **(Observation #4)**

After reviewing all of the information provided by the alleger on 3/1/07 (which was presented to the ARB) and speaking with all of the ARB members present, (b)(5)

(b)(5)

(b)(5). In this case, the technical branch's original recommendation on 3/12/07 was that an investigation should be opened. The ARB was presented with this recommendation and all of the technical information required to justify an investigation, but chose not to do so (b)(5)

(b)(5)

(b)(5). **(Observation #5)**

5. **Determine the appropriateness of documentation for allegation RIV-2007-A-0028 including the concerns list that was generated and the closure documentation.**

The allegation receipt form contained all the required data and was provided to ACES in a timely fashion as required by PG 0858.14.

(b)(5)

(b)(5). **(Observation #6)**

PG 0858.14, which became effective on May 30, 2007, requires that the branch creating the concerns list shall provide the ARB with a draft NOV for any concern involving potential wrongdoing. This guidance, however, did not exist in the previous version of

PG 0858. As a result, the branch did not provide a draft NOV for concern 2 when routing the concerns list to the SAC on 3/12/07. (b)(5) (b)(5) (b)(5). **(Observation #7)**

None of the concerns in this case were closed out using the format required by PG 0858.14. While this guidance went into effect when the PG was revised on May 30, 2007 (approximately one week before the technical branch documented closure to ACES), (b)(5) (b)(5) (b)(5). In addition, the revised PG does not contain a summary of changes or change bars; rather it identifies that it "has been extensively updated." As a result, (b)(5) (b)(5) (b)(5) An extent of condition review was performed, revealing that several other recently closed allegation files did not take advantage of the "Providing a Basis for Closure" form. **(Observation #8)**

No documentation was provided for closure of concerns 5 and 6 from the original ARB on 3/19/07. (b)(5) (b)(5) (b)(5) **(Observation #9)**

The inspectors assigned to look into concerns 1 and 2 (b)(5) that has been identified in previous audits. When answering the concerns assigned by the ARB, the inspector paraphrased/shortened the statement of the concern. As a result, the closure memo provided by the branch to the 6/18 ARB did not address all of the original aspects of concern 2. (b)(5) (b)(5) (b)(5). **(Observation #10)**

The closure letter sent to the alleger on 8/7/07 accurately restated the concerns, but did not address all aspects of concern 2 ((b)(5)). (b)(5) (b)(5). **(Observation #11)**

6. **Determine if allegation RIV-2007-A-0028 was processed by Region IV in accordance with Agency guidance.**

This case met the definition of an allegation.

The acknowledgement letter to the alleger did not fully comply with PG 0858.14. Contrary to paragraph 9.b of PG 0858.14, the letter did not "advise the alleger of the

intended method for resolution of the concerns." Note – this requirement could not be found in PG 0858.13 or in Management Directive 8.8. **(Observation #12)**

Contrary to (b)(5) the guidance of PG 9011C.2, "Inspection Program Oversight," PB-B did not document the results of inspection efforts for concerns 1, 2 and 3 within 60 days of assignment by the ARB. Based on interviews conducted with the involved parties, no inquiries were made regarding the missed due dates, nor did PB-B make any attempt to contact ACES to work out more appropriate due dates. (b)(5) the ARB's failure to assign due dates for 5 of the 6 original concerns. As a result, these overdue items did not appear on the regular "Overdue Actions by Division and Branch" report reviewed at regular allegation status meetings. (b)(5) (b)(5). In this case, the inspection effort by the branch took 82 days, (b)(5) over the 60 day requirement of PG 9011C.2. At the time of this assessment, there were 6 other open inspection actions assigned, two of which were overdue (RIV-A-2007-0083 and RIV-A-2007-0088). These inspection actions were both assigned to NMIB and were both 75 days old at the time of the assessment. Neither of these cases involved OI or DOL activities, (b)(5) (b)(5) (these cases were 102 and 98 days old respectively). There were two other inspection activities documented in the allegation status report that were completed late (RIV-2006-A-0128 at 115 days and RIV-2007-A-0002 at 110 days). Both of these cases involve OI, (b)(5). The timeliness of inspection actions is one element discussed during the biweekly allegation status meetings. (b)(5) (b)(5). **(Observation #13)**

This file was originally considered to be "OI related" and was therefore not tracked against DRP/regional metrics. This is accomplished by selecting a "box" in the AMS software. The reason for this treatment was that concern 4 (as revised at the 4/9 ARB) alleged discrimination and ADR was offered. When the alleger subsequently declined ADR in his 4/20 letter, the "box" in AMS was never unchecked. As a result, this case file was not tracked against the required 150/180 day metrics, despite the fact that there was no OI or ADR activity to justify its exclusion. The case was eventually closed at day 159 and would have counted against the 150 day metric had it been properly characterized. (b)(5) (b)(5) (b)(5). **(Observation #14)**

Contrary to PG 0858.13 and PG 0858.14, the SAC was not included on concurrence for the inspection report documenting a violation related to the allegers concerns (Callaway IR 05000483/2007003). (b)(5) (b)(5) (b)(5). The assessors performed an extent of condition review and found several other examples of allegation-related violations being documented without placing ACES on concurrence for the report. **(Observation #15)**

The documented concerns in AMS were not updated upon receipt of additional information from the alleger on 4/26/07. This additional information was provided by the alleger to correct inaccuracies in the stated concerns. **(Observation #16)**

The date of a telephone call with the alleger was recorded incorrectly in the AMS timeline (the timeline states that this occurred on 3/28/07 when it actually occurred 3/29/07). **(Observation #17)**

The assessment team reviewed all of the PB-B delegation memos that were written during the time that this case was being addressed. Contrary to the requirements of PG 9011C.2, ACES was included on distribution for only five of the ten delegation memos written. The assessors performed an extent of condition review across other branches and discovered that this inconsistency is not isolated to PB-B. **(Observation #18)**

Effect of (b)(5) on the Allegation Process:

The last piece of technical information used to close the allegation file was received by ACES on 6/19/07, yet the file was not closed until 8/7/07 (50 days later). It was during this time that the 150 metric was exceeded. (b)(5) (b)(5) At the time of this assessment, there were 52 open allegation cases, 29 of which are assigned to ACES for action. All of these cases are being processed and reviewed by the Senior Allegation Coordinator and an Allegation Coordinator. Their focus on reviewing the technical information, corresponding with staff and communicating with the allegers, (b)(5) (b)(5) (b)(5). **(Observation #19)**

(b)(5) (b)(5). Additionally, the senior project engineer was assigned the additional duty of being the acting Technical Support Staff Team Leader for a portion of this time. (b)(5)

The closure memo to ACES documenting the results of PB-B's inspection of concerns 1, 2 and 3 was not sent to ACES until 6/13, despite the fact that the resident inspectors had completed the technical inspection promptly (before 4/30). (b)(5) (b)(5) (b)(5) the closure memo to ACES was sent on the day that the branch chief turned over to the SPE for planned annual leave and only 3 work days prior to the scheduled ARB. (b)(5) (b)(5) (b)(5). **(Observation #20)**

Review of the Quarterly Allegation Audit Program:

PG 0858 requires these audits to be done quarterly by the Directors of DRP, DRS, DNMS and the Team Leader, ACES on a rotating basis. The audit is required to be completed within 30 days of the end of each calendar quarter. The assessors performed a review of the last two years of quarterly allegation file audits to determine whether or not the existing quarterly audit process was successfully identifying program weaknesses. Based upon our review of these audit reports, the following observations are offered:

Several different versions of an "audit attribute checklist" are in use. PG 0858 contains a hyperlink to the current Quarterly Allegation File Audit Checklist, but we found that several other versions have been used within the past two years, despite the fact that the approved checklist has been included in PG 0858 by reference since at least November 2002. **(Observation #21)**

The current version of the Quarterly Allegation File Audit Checklist contains nine attributes, (b)(5)

(b)(5)

(b)(5) **(Observation #22)**

Of the eight audits reports reviewed, four were done by persons other than those required by the instructions. In these cases, the responsible manager delegated the audit to one of their subordinates. The assessors learned that some of these audits were delegated to provide a training opportunity for subordinate staff members, (b)(5)

(b)(5)

(b)(5). **(Observation #23)**

In several cases the audits were not completed in a timely manner, with one report being completed 138 days after the end of the calendar quarter ((b)(5)). **(Observation #24)**

ASSESSMENT OF EVENT SIGNIFICANCE FOR CALLAWAY ALLEGATION CASE RIV-2007-A-0028

Operational transient on October 21, 2003

One of the operational events discussed in the subject allegation was a technical-specification required plant shutdown of the Callaway Plant on 10/21/03. This shutdown was conducted after the failure of safety-related electrical inverter NN11 on 10/20/03. Technical Specification (TS) 3.8.7, "Inverters – Operating," required the inverter to be restored to an operable status within 24 hours, after which TS required the plant to be placed in Mode 5. Based on the inability to restore the inverter to an operable status, the licensee commenced a shutdown at 0100, 10/21/03.

Allegation Case RIV-2007-A-0028 documents, amongst other things, concerns that the operators at Callaway may have purposely "covered up" significant deficiencies in the operation of the plant, including: (1) Sub critical operation for approximately two hours without control rods inserted, and (2) allowing reactor coolant system average coolant temperature (RCS Tavg) to fall below the minimum temperature for criticality.

The inverter was subsequently restored to an operable status at 2202 on 10/21/03. A reactor startup was performed on 10/24/03 and the plant returned to normal operations.

Review of Charter Items:

2. **Review the safety significance of the event discussed in allegation RIV-2007-A-0028.**

This review of safety significance will deal with the two operational concerns individually.

Sub critical operation without control rods inserted

In this event, the Callaway Plant was sub critical from approximately 1013 to 1215 with the control bank rods fully withdrawn. The action to insert these rods is a procedural requirement without a time limit in the normal shutdown procedure. In actuality, being shutdown with the control banks withdrawn is an unusually conservative configuration. In the event that a positive reactivity casualty were to commence, the large amount of negative reactivity in the withdrawn bank of control rods could be used to put the plant in a safe condition. This configuration was a result of the unusual nature of the plant shutdown (sub critical conditions were a result of a temperature rise combined with xenon buildup, as opposed to the insertion of control rods). This event demonstrated the operators' unfamiliarity with plant conditions that resulted in an inadvertent reactor shutdown, but did not represent a safety significant condition.

Operation with RCS Tavg below minimum temperature for criticality

TS 3.4.2, Minimum Temperature for Criticality, requires RCS Tavg to be maintained at or above 551 F with the reactor in Mode 1 or Mode 2 with Keff >/= 1.0. If the limiting condition for operability (LCO) is not met, Condition A is entered and Required Action A.1 directs the plant to be placed in Mode 2 with Keff < 1.0 within 30 minutes.

On 10/21/03, an uncontrolled steam plant transient occurred during the shutdown that resulted in RCS temp dropping to approximately 551 F (two degrees below the minimum critical temperature defined in TS 3.4.2) with the reactor critical. Unbeknownst to the operators, Tavg stayed below minimum critical temperature for a total of 15 minutes until the temperature trend was reversed as a result of tripping the turbine. Concurrent with this, the combination of the negative reactivity being added by the temperature rise and the buildup of Xenon caused the reactor to become sub critical, and TS 3.4.2 was no longer applicable. In total, a 15 minute period of time existed when the LCO was not met, but the TS was not violated in that the required action for Condition A was completed in less than 30 minutes (albeit accidentally).

The minimum temperature for criticality identified in TS 3.4.2 is closely related to a design basis accident assumption, hot zero power. Hot zero power is defined in the Callaway USAR and TS bases as 557 F. Standard technical specifications for Westinghouse plants contain the minimum temperature for criticality specification that is in use at Callaway. This temperature specification was established to provide some operational flexibility for licensees to assist in plant startup and shutdown. Historically, several plants have reported conditions where TS allowed minimum temperatures were significantly below design basis assumptions (reference 10 CFR Part 21 report from Commonwealth Edison 3/18/93 and Indian Point 3 LER 93-046-00). NRC Information Notice 94-75 discusses this vulnerability and describes that "small changes in initial temperature such as those allowed by TS would have a negligible impact on accident analysis results. However, if PWRs are allowed to achieve criticality significantly below the temperature that was previously analyzed at hot-zero-power, the following safety concerns would be raised:"

(1) potential non-conservative impacts on positive reactivity insertion accidents (such as rod control cluster ejection and main steam line break accident)
(2) the response of the power-range ex-core nuclear instruments may be adversely affected by the higher density coolant (with a non-conservative impact on high power trip setpoints)
(3) potential for the moderator temperature coefficient of reactivity to become more positive

In addition, the Callaway TS Basis document identifies the following two concerns with critical operations below minimum critical temperature:

(4) Pressurizer operating characteristics – transient & accident analyses assume that the pressurizer is within its normal startup and operating range
(5) Maintaining the moderator temperature above minimum critical temperature ensures that the reactor vessel is above its minimum nil ductility transition reference temperature.

The inspector reviewed the licensee's corrective action program treatment of IN 94-75 as documented in CAR 199500031. This resulted in a technical review of TS 3.4.2 to ensure that the Callaway safety analysis was still satisfied with temperature as low as 551 F with the reactor critical. The results of this analysis are described in Corrective Action Tracking System (CATS) 45602. The inspector noted that this analysis only considered the acceptability of having Tavg as low as 551 F. During the transient described above, actual Tavg was as low as 551 F for approximately 15 minutes, outside the bounds of the evaluation documented in CATS 45602. When challenged

with this observation, the licensee acknowledged that this transient put the plant outside of previously analyzed operations and that additional evaluation would be necessary to determine what, if any, safety significance was associated with this unanalyzed condition.

The inspector concluded that an unanalyzed condition was present for approximately 15 minutes during the plant shutdown on 10/21/03. Specifically, RCS Tavg was allowed to drop below the analyzed limit of 551 F. The safety significance of this unanalyzed condition has yet to be determined by the licensee. **(Observation #25)**

3. Review the appropriateness of operator actions in response to the event discussed in allegation RIV-2007-A-0028.

This review of operator actions will deal with the two operational concerns individually.

Sub critical operation without control rods inserted

As described above, no performance deficiencies were identified related to Callaway Plant being sub critical with the control bank rods withdrawn.

Operation with RCS Tavg below minimum temperature for criticality

The operators on watch during and immediately after the event on October 21, 2003 did not recognize that Tavg had descended below the minimum temperature for criticality. There is no specific annunciation at Callaway to warn operators of this condition. The fact that a letdown isolation occurred suggested that a cool down was in progress, but there is no indication in the operating logs or in personal statements from the operators that they were aware that the LCO for TS 3.4.2 was not satisfied. This condition was discovered by a member of the operations training staff several weeks after the event, resulting in CAR 200308885 being written. In this CAR it was clearly identified that an uncontrolled cool down had occurred to approximately 550 F, but TS 3.4.2 was not mentioned in the CAR. The NRC first learned of the potential TS violation from the alleger in case RIV-2007-A-0028.

As such, no inappropriate operator actions were identified regarding temperature going below the minimum temperature for criticality.

The inspector did review the reporting requirements of 10 CFR 50.73. The condition described here was truly an unanalyzed condition as defined in 10 CFR 50.73 and NUREG 1022. But given that the event occurred more than three years ago, reporting in accordance with 10 CFR 50.73 is not required.

Beyond the issues already discussed, NRC Integrated Inspection Report 05000483/2007003 documented a licensee-identified violation, in that licensee procedures were violated when operators did not log the details of this operational transient, nor did they initiate a CAR promptly.

INFORMATION REVIEWED

Persons contacted:

NRC:

Ray Caniano, Deputy Director, Division of Reactor Safety, Region IV
Rick Deese, SPE Branch B
David Dumbacher, SRI Callaway
Harry Freeman, Region IV Senior Allegation Coordinator
Karla Fuller, Regional Counsel and ACES Team Leader, Region IV
Vince Gaddy, Branch Chief, Branch B
Ravinder Grover, NRR, Technical Specifications Branch
Art Howell, Director, Division of Reactor Projects, Region IV
Russ Telson, NRR, Technical Specifications Branch
Anton Vegel, Deputy Director, Division of Reactor Projects, Region IV
Darrell White, Director, Office of Investigations, Region IV

Licensee:

Tom Elwood, Regulatory Affairs
Justin Hiller, Regulatory Affairs
Steve Petzel, Regulatory Affairs

Documents Reviewed:

NRC Documents:

Allegation Case File RIV-A-2007-0028

Policy Guide 0858.13, "Management of Allegations," November 8, 2002

Policy Guide 0858.14, "Management of Allegations," May 30, 2007

Policy Guide 9011C.2, "Inspection Program Management," October 24, 2007

NRC Integrated Inspection Report 05000483/2007003, August 2, 2007

NUREG 1022, "Event Reporting Guidelines," Revision 2

Management Directive 8.8, "Management of Allegations," February 4, 1999.

Callaway Documents:

Callaway Plant Technical Specifications, Amendment 133 (in effect 10/21/03)

Callaway Plant Technical Specifications Bases Document, Revision 0 (in effect 10/21/03)

Core Operating Limits Report, January 21, 2003

Reactor Operator Daily Log, October 20-24, 2003

Shift Supervisor Daily Log, October 20-24, 2003

Callaway Action Requests 199500031, 200308555, 200702606, 200711024

Callaway LER 03-009-00, "Failure of NN11 inverter results in a Technical Specification required plant shutdown," December 19, 2003.

Callaway Action Tracking System Report 45602

Operating Experience:

10 CFR Part 21 Notification from Commonwealth Edison Company, "Minimum Temperature for Criticality Analysis, " March 18, 1993

Indian Point Unit 3 LER 93-046-00, "Low Temperature for Criticality Placing the Plant Outside Design Basis Due to Personnel Error," December 1, 1993

NRC Information Notice 94-75, "Minimum Temperature for Criticality," October 14, 1994

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MEMORANDUM TO: Nick Taylor, Senior Resident Inspector

FROM: Dwight D. Chamberlain, Director
Division of Reactor Safety

Dwight D. Chamberlain
11/2/2007

SUBJECT: CALLAWAY INDEPENDENT LESSONS-LEARNED ASSESSMENT

Region IV received a copy of a letter from a concerned individual dated August 15, 2007, that discussed concerns regarding NRC's handling of issues that were referenced in allegation files RIV-2007-A-0028 and RIV-2007-A-0048. As a consequence of the letter, several allegation review boards were held on the issues referenced in the letter. The ARB determined that the Office of Investigations should review one aspect of allegation RIV-2007-A-0028. As a result, senior management determined that an independent lessons-learned assessment should be performed to review NRC actions related to the event discussed in allegation RIV-2007-A-0028 and review Region IV's handling of allegation RIV-2007-A-0028.

You have been selected to perform the independent lessons-learned assessment. The scope of the assessment should address the following:

1. Review and assess the adequacy of the previous NRC inspection follow up to the event discussed in allegation RIV-2007-A-0028.
2. Review the safety significance of the event discussed in allegation RIV-2007-A-0028.
3. Review the appropriateness of operator actions in response to the event discussed in allegation RIV-2007-A-0028.
4. Review the appropriateness of ARB and inspection actions in response to receipt of allegation RIV-2007-A-0028 to include the decision making regarding the need for an OI investigation.
5. Determine the appropriateness of documentation for allegation RIV-2007-A-0028 including the concerns list that was generated and the closure documentation.
6. Determine if allegation RIV-2007-A-0028 was processed by Region IV in accordance with Agency guidance.

You should plan to begin the lessons-learned assessment no later than November 1, 2007, and complete the assessment with a memorandum to me providing the results of your assessment and any lessons learned no later than December 7, 2007. Please contact me with any questions regarding this assignment and with any questions you have during the performance of the assessment. Please note that you should consult with technical resources in DRS and DRP (e.g. SRAs, Operator Licensing, Resident, STA, etc) as needed during your review. Thank you for accepting this important assignment.

cc: E. Collins, Regional Administrator
P. Gwynn, Deputy Regional Administrator
A. Howell, Director, DRP
T. Vegel, Deputy Director, DRP
K. Fuller, Team Leader, ACES
H. Freeman, Senior Allegation Coordinator
R. Caniano, Deputy Director, DRS