NRC-002
Submitted: May 31, 2013

May 31, 2013

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CHARLISSA C. SMITH	)	Docket No. 55-23694-SP
	)	
(Denial of Senior Reactor Operator License Application)	)	
	)	

NRC STAFF TESTIMONY OF MARK A. BATES, PHILLIP G. CAPEHART, AND MICHAEL K. MEEKS CONCERNING THE CLAIM BY CHARLISSA C. SMITH THAT THE NRC IMPROPERLY DENIED HER SENIOR REACTOR OPERATOR LICENSE APPLICATION

Introduction

Q.1. Please state your name, occupation, and by whom you are employed.

A.1. (MAB)[1] My name is Mark A. Bates. I am employed as a Senior Operations Engineer in the NRC Region II office in Atlanta, GA. A statement of my professional qualifications is attached hereto, as Exhibit NRC-028.

A.1. (PGC) My name is Phillip G. Capehart. Please see my full answer to this question on page 1 of Exhibit NRC-003. A statement of my professional qualifications is available as Exhibit NRC-029.

A.1. (MKM) My name is Michael K. Meeks. Please see my full answer to this question on page 1 of Exhibit NRC-006. A statement of my professional qualifications is available as Exhibit NRC-030.

[1] For the answers to Questions 1-3, each individual witness is identified by his initials. For all remaining questions, the answers constitute the testimony of all undersigned witnesses.

Background

Q.2. Please describe the nature of your responsibilities on behalf of the NRC Staff (Staff).

A.2. (MAB) My principal responsibilities include developing, reviewing, administering, and grading initial license operator examinations in accordance with the requirements of NUREG-1021, "Operator Licensing Examination Standards For Power Reactors." My other duties include leading and participating in various types of inspections at nuclear power plants. Specifically germane to this testimony, it is my responsibility to lead inspections related to the licensed operator activities.

A.2. (PGC) Please see my full answer to this question on pages 1-2 of Exhibit NRC-003.

A.2. (MKM) Please see my full answer to this question on pages 1-2 of Exhibit NRC-006.

Q.3. Please explain what your overall duties have been in connection with the denial of the Senior Reactor Operator (SRO) license application of Charlissa C. Smith (Ms. Smith).

A.3. (MAB) I was the Chief Examiner for the Vogtle 2012-301 initial license examination, supervising Michael Meeks' activities as Chief-Under-Instruction, which he was performing to obtain qualification as a fully qualified Chief Examiner. Acting in this role, it was my responsibility to ensure that the examination materials were developed in accordance with the requirements of NUREG-1021. It was also my responsibility to ensure that the examination was administered and graded in accordance with NUREG-1021. Lastly, I had the additional assignment of being the Examiner of Record for Ms. Smith for the dynamic simulator portion of the operating test. I was chosen as Ms. Smith's Examiner-of-Record because I had no knowledge of any specific performance errors made by Ms. Smith on the Vogtle 2011-301 examination.

A.3. (PGC) Please see my full answer to this question on page 2 of Exhibit NRC-003.

A.3. (MKM) Please see my full answer to this question on pages 2-3 of Exhibit NRC-006.

Q.4. What is the purpose of your testimony?

A.4. Ms. Smith claims that the NRC improperly denied her 2012 SRO license application. The purpose of my testimony is to demonstrate that the Staff did properly discharge its duty in denying Ms. Smith's SRO license application. This testimony will cover the NRC's procedures for preparing and administering operating tests; the 2012 operating test administration in which Ms. Smith participated; the effect of Ms. Smith's appeal on Region II's regrade of her 2012 operating test; the equal treatment of all applicants for SRO licenses; and why Region II's assessment of the performance errors committed by Ms. Smith during the 2012 operating test resulted in a failing grade and denial of her license application.

Discussion – NRC Procedures

Q.5. What are the NRC procedures for preparing, administering, and evaluating operating tests, including procedures related to the avoidance of bias?

A.5. NUREG-1021, "Operator Licensing Examination Standards for Power Reactors," Revision 9, Supplement 1,[2] is the primary document used to develop, administer, and grade examinations required in obtaining an operating license for a power reactor. The operating portions of these examinations are dictated, in part, by 10 CFR 55.45, "Operating tests." The following paragraphs will summarize some of the requirements in NUREG-1021 as they pertain to the preparation, administration, and grading of the simulator scenario portion of the operating test, and to a lesser extent the job performance measures (JPM) portion. The following paragraphs will focus mostly on the dynamic simulator portion because this is the section of the operating test that resulted in the decision to deny Ms. Smith a Senior Reactor Operator (SRO) license. NUREG-1021 may be consulted for details beyond what appear in the following discussion.

[2] Exhibit CCS-005A.

As stated in NUREG-1021, ES-301, “Preparing Initial Operating Tests,” the simulator scenario portion of the operating test is the most performance-based aspect of the operating test and is used to evaluate the applicant’s ability to safely operate the plant’s systems under dynamic, integrated conditions. The simulator exam is administered in teams of three, with one operator standing the Control Room Supervisor (CRS) position, one operator standing the Operator At The Controls (OATC) position, and one operator standing the Balance Of Plant (BOP) position. At a minimum, an SRO applicant is required to be examined once in the CRS and OATC positions and a Reactor Operator (RO) applicant is required to be examined once in the OATC and BOP positions. Each operator is required to demonstrate proficiency on a range of competencies described on NUREG-1021, Forms ES-303-3 and ES-303-4, as well as Appendix D, “Simulator Testing Guidelines.”

With respect to the previously stated control room positions, it is important to note that there are synonymous terms for CRS, OATC, and BOP. These terms vary from one nuclear plant to another. This testimony, and many of the referenced documents, may refer to the OATC position as the Reactor Operator (RO), the BOP position as the Unit Operator (UO), and the SRO supervisor position as the Shift Supervisor (SS).

For most exams, the facility licensee’s training staff develops the exam and submits it to the NRC regional office for review and approval. The Chief Examiner, with assistance from other examiners, reviews the operating test, provides comments to the facility, and then evaluates the operating test at the facility to ensure the test meets the requirements of NUREG-1021, at which time the examination is approved for administration.

The simulator scenarios are developed to provide opportunities for each applicant to demonstrate all of the competencies on NUREG-1021, Forms ES-303-3 and ES-303-4. Simulator scenarios are constructed in accordance with the guidelines stated in NUREG-1021, ES-301, as well as Appendix D. Attachments 1 and 2 (Forms ES-D-1 & ES-D-2) of Appendix D contain the documentation for normal evolutions, instrument malfunctions, component

malfunctions, and major transients. These forms contain a description of the events on which the applicants will be examined. Due to the dynamic nature of the simulator portion of the examination, the NRC and facility training staff anticipate which applicant is most likely to diagnose and take actions for each event based on their assigned position. The scenarios are validated by the NRC and the facility training staff during a preparation week by performing the scenarios with experienced licensed operators. Licensed operators are used to ensure that required actions are correctly reflected on Forms ES-D-1 and ES-D-2, and that the applicant assignment for each event reflects which applicant will most likely diagnose and take actions for that event. Anticipating which applicant is most likely to take actions for an event is intended to increase the likelihood that each applicant will have opportunities to demonstrate competence in all the required areas during the completion of their full set of simulator scenarios. These designations are not intended to limit the possibility of non-designated applicants displaying competence during any event. Any errors made by ANY applicant during ANY event, regardless of which applicant was anticipated to take actions, are required to be documented.

After the operating test is prepared and the final list of applicants is received, the NRC Chief Examiner constructs a schedule that ensures each applicant will have an opportunity to display competence in all required areas and stand each of the positions required by NUREG-1021. Each examiner is assigned one applicant for each simulator scenario evaluation and that examiner remains assigned to that applicant for all of that applicant's simulator scenarios. NUREG-1021, ES-302, "Administer Operating Tests to Initial License Applicants," dictates that each applicant only have one examiner assigned for all simulator scenarios. ES-302 also requires minimization of surrogate operators and that each applicant receives no more than one scenario beyond the minimum number required. Each applicant may be required to have one additional scenario, beyond the minimum number, in order to facilitate the minimization of surrogates.

Furthermore, NUREG-1021, section ES-201, D.1.a states that "[t]he regional office shall not assign an examiner who failed an applicant on an operating test to administer any part of that applicant's retake operating test."

After the operating test is approved for administration and the examination schedule has been developed, the NRC examiners work with the facility training staff to administer the simulator portion of the exam. For a typical exam in Region II, one scenario is administered three times to three separate teams of operators on any given day.

With the exception of a critical task, examiners are required to grade every error that reflects on an operator's competence equally, irrespective of the consequences or potential consequences of the error. For operating exams resulting in a failure, the potential or actual consequences of the individual errors are documented on Form ES-303 in accordance with NUREG-1021, ES-303, "Documenting and Grading Initial Operating Tests," D.3.b., but do not have any bearing on the grading. NUREG-1021, ES-303, D.2.b, states:

> Using Form ES-303-3 or ES-303-4, depending on the applicant's license level, and the following generic guidance, evaluate any deficiencies coded for the simulator test to determine a grade for every applicable rating factor (RF) and competency. Keep in mind that the simulator test is generally graded based on competencies rather than consequences; every error that reflects on an operator's competence is considered equal unless it is related to the performance of a critical task (as determined in accordance with ES-301 and Appendix D).

NUREG-1021, Appendix D, D.1.a states that a Critical Task (CT) in a simulator scenario must have safety significance:

> In reviewing each proposed CT, assess the task to ensure that it is essential to safety. A task is essential to safety if its improper performance or omission by an operator will result in direct adverse consequences or significant degradation in the mitigative capability of the plant.
>
> If an automatically actuated plant system would have been required to mitigate the consequences of an individual's incorrect performance, or the performance necessitates the crew taking compensatory action that would complicate the event mitigation strategy, the task is safety significant.

> Examples of CTs involving essential safety actions include those for which operation or correct performance prevents the following:
>
> • degradation of any barrier to fission product release….

Another important grading requirement is that if an applicant is about to make an error, and the incorrect action or inaction is corrected by a teammate, the examiner is required to hold the applicant accountable for that error. NUREG-1021, Appendix E, Part E, item 4, states:

> Members of the operating team or crew (whether applicants or surrogates) should perform peer checks in accordance with the facility licensee's procedures and practices; non-crew members and NRC examiners will not perform this function. However, if you begin to make an error that is corrected by a peer checker, you will be held accountable for the consequences of the potential error without regard to mitigation by the crew.

NUREG-1021 requires the examiner to identify the root cause of an applicant's deficiencies and code each deficiency to no more than two Rating Factors (RFs) under normal circumstances. Coding a deficiency to more than two RFs is allowed in more extreme circumstances. ES-303, Section D.1.d, includes the following:

> Whenever possible, attempt to identify the root cause of the applicant's deficiencies and code each deficiency with no more than two different rating factors. However, one significant deficiency may be coded with additional rating factors if the error can be shown, consistent with the criteria in Section D.3.b, to be relevant to each of the cited rating factors.

NUREG-1021, ES-303, provides the scoring mechanics for the simulator portion of the exam. Forms ES-303-1 and ES-303-4 contain the scoring criteria for an SRO applicant. An SRO applicant is evaluated on six different competencies which are then broken down into various RFs. For each RF, an applicant receives a score of 1, 2, or 3, with 1 being the lowest possible score and 3 being the highest possible score. The following is extracted from NUREG-1021, ES-303, Page 5 of 19:

- If an applicant performs activities related to a rating factor and makes no errors, circle an "RF Score" of "3" for that rating factor.
- If an applicant makes a single error related to a rating factor, circle an "RF Score" of "2" for that rating factor, unless the error related to a critical task, in which case

a score of "1" would be required. Missing a critical task does not necessarily mean that the applicant will fail the simulator test, nor does success on every critical task prevent the examiner from recommending a failure if the applicant had other deficiencies that, in the aggregate, justify the failure based on the competency evaluations.

- If an applicant makes two errors related to a rating factor, circle an "RF Score" of "1" for that rating factor unless a score of "2" can be justified (and documented as discussed in Section D.3, below) based on correctly performing another activity (or activities) related to the same rating factor; three or more errors generally require a score of "1," regardless of the applicant's compensatory actions.

NUREG-1021 provides the following guidance for determining satisfactory and unsatisfactory performance on the dynamic simulator portion of the operating test. The following is extracted from ES-303, Page 6 of 19:

- If the grade for *all* competencies is greater than 1.8, the applicant's performance is generally satisfactory.

- If the grade for Competency 4, "Communications and Crew Interactions," is less than or equal to 1.8 but greater than 1.0, *and* the individual grades for *all* other competencies are 2.0 or greater, the applicant's performance is satisfactory.

- If the grade for Competency 4 is 1.0, *or* the grade for any other competency is 1.8 or less, the applicant's performance is unsatisfactory.

As stated above, NUREG-1021 recognizes that communications, on its own, has lesser significance than the other competencies. This is evidenced by the grading criteria specifically preventing a failure based solely on Competency 4, "Communications," as long as just one of the RFs in Competency 4 is evaluated as something other than the lowest possible score. Competency 4 is treated differently than all the other competencies in that a score of less than 1.8 can still result in a passing grade for the dynamic simulator portion of the exam. Receiving a score of less than 1.8, but greater than 1.0, only raises the minimum required score, or "cut score," in the other competencies from 1.8 to 2.0. With this in mind, NUREG-1021 contains scoring mechanics that explicitly address the lower level of significance for communication errors.

Lastly, NUREG-1021 requires deficiencies displayed by Instant-SRO (ISRO) applicants when they are in either the OATC or BOP positions to be coded to the RFs in Competency 3, "Control Board Operations," when their errors fit the descriptions of the RFs in Competency 3. NUREG-1021 does not explicitly state this, but implies this with the statement on Form ES-303-4 for Competency 3: "[NOTE: This competency is optional for SRO-upgrade applicants; refer to Section D.2.b.]."

In other words, an SRO-upgrade applicant is not required to be tested in the OATC or BOP positions but could make errors in "understanding system operations." When the SRO-upgrade, while in the CRS position, makes an error in "understanding system operation," it would be coded in Competency 1, "Interpretation/Diagnosis," RF c, "Understanding." The same would be said for an ISRO that makes an error in "understanding system operations," while in the CRS position. However, when the ISRO is in the OATC or BOP position operating the control boards, an error in "understanding system operation," would be coded under Form ES-303-1, Competency 3, RF b, "Understanding."

JPMs, commonly referred to as the "walk-through" portion of the operating test, consist of administrative tasks, systems tasks performed by operation of equipment in the simulator, and systems tasks performed by verbally describing actions in the plant. Administrative JPMs may be administered either one-on-one with an examiner and an applicant, or in a classroom setting with a group of applicants and one examiner. The systems JPMs are administered one-on-one with an examiner and an applicant. An ISRO applicant is required to take five administrative JPMs and 10 systems JPMs. The systems JPMs consist of three administered in the plant and seven administered in the simulator. Many Chief Examiners utilize a technique called "station keeping" to increase the efficiency of JPM administration. The station keeping technique stations the examiner either in the plant, in the simulator, or in a classroom. The facility's training staff then escorts each of the applicants to that examiner to be evaluated on a task. This technique results in each examiner administering part of the walk-through portion to

each of the applicants. This is a contrast compared to the administration of the simulator scenarios where one single examiner is assigned to an applicant. Therefore, examiners other than the assigned examiner-of-record will likely administer some of the JPM portion to the various applicants.

NUREG-1021, ES-303, provides the scoring mechanics for the JPM portion of the exam. An applicant must complete all "critical steps" on a task in order to receive a satisfactory score. If a task has "time-critical" elements, the applicant is also required to complete those critical steps within the allotted time. A critical step is defined as a procedural step that must be performed correctly in order to accomplish the assigned task. An ISRO must satisfactorily complete three of the five administrative JPMs to receive a satisfactory score overall for the administrative portion. An ISRO applicant must also receive a satisfactory score on 12 of the 15 JPMs to receive an overall satisfactory score on the entire walk-through portion. ES-303 also requires examiners to document weaknesses displayed by the applicants even when an applicant's performance results in a satisfactory score for that JPM. These comments are used by the facility to remediate applicants on their documented weaknesses and can be used by the Region to evaluate an applicant's overall performance if a future waiver evaluation is required.

Discussion – Ms. Smith's 2012 Operating Exam

Q.6. Please describe how the 2012 exam at Vogtle was prepared.

A.6. The Vogtle 2012 exam was prepared in accordance with the standards in NUREG-1021 as described in the previous section. The facility licensee training staff prepared the exam material. In addition to review by the training staff, the exam material was thoroughly validated by Vogtle licensed operators. A representative of the facility approved the exam prior to submittal to the NRC Region II office. After NRC Region II received the exam, it was reviewed by M. Bates and M. Meeks. Minor comments were made and resolution was mutually agreed upon by the facility and NRC and subsequently incorporated into the final exam material. The entire exam team then reviewed the operating test at the facility to ensure that the exam

would be an effective tool for discriminating between competent and less-than-competent licensed operators. Once this determination was made, the exam was approved by M. Widmann, the Chief of Region II Operations Branch 1. The operating test submittal met the quality standards as described in NUREG-1021. The operating test simulator scenarios can be found at Exhibits CCS-048 (Scenario 3), CCS-052 (Scenario 6), and CCS-046 (Scenario 7).

Q.7. What steps, if any, did Region II take to avoid bias or the appearance of bias in the exam administration?

A.7. When the final number and makeup of the applicant class was determined by the licensee, M. Bates and M. Meeks developed the schedule for two full weeks to administer the operating test. The initial schedule was in a generic format ("I1 I2 I3" to designate "Instant SRO 1, Instant SRO 2, Instant SRO 3," *etc.*) and did not include any applicant names. Once the generic schedule had been generated, M. Meeks assigned applicant names to the positions in an inverse alphabetical order. Ms. Smith's name was assigned as "I2." When Ms. Smith was associated with "I2," the exam team purposely assigned M. Bates as the examiner of record for I2. This was specifically chosen to ensure that there would be no bias from the previous 2011 exam. The branch chief was notified of this decision. The simulator scenario schedule was as follows:

WEEK 1

	MONDAY (3/26)	TUESDAY (3/27)	WEDNESDAY (3/28)	THURSDAY (3/29)	FRIDAY (3/30)
0700-1000	Scenario #6 CRS: I2 / E2 OATC: I1 / E1 BOP: R1 / E3	Scenario 7 CRS: I1 / E1 OATC: I2 / E2 BOP: R1 / E3	Scenario #2 CRS: U1 / E1 OATC: R7 / E2 BOP: R8 / E3	Scenario #3 CRS: I4 / E2 OATC: R2 / E3 BOP: Surrogate E1: A3 & A1-1 (U1, I8, R4, R3, R5, R6, R7)	Scenario #1 CRS: U1 / E1 OATC: R8 / E3 BOP: R7 / E2
1000-1300	Scenario #6 CRS: I4 / E2 OATC: I3 / E1 BOP: R2 / E3	Scenario 7 CRS: I3 / E1 OATC: I4 / E2 BOP: R2 / E3	Scenario #2 CRS: I5 / E1 OATC: R5 / E2 BOP: R6 / E3	Scenario #3 CRS: I2 / E2 OATC: R1 / E3 BOP: Surrogate E1: A3 & A1-1 (I1, I3, I5, I6, I7, R8)	Scenario #1 CRS: I1 / E1 OATC: R6 / E3 BOP: R5 / E2
1300-1600	Scenario #6 CRS: I6 / E2 OATC: I5 / E1 BOP: R3 / E3	Scenario 7 CRS: I5 / E1 OATC: I6 / E2 BOP: R3 / E3	Scenario #2 CRS: I8 / E2 OATC: I7 / E1 BOP: R4 / E3	Scenario #3 CRS: I8 / E2 OATC: R4 / E3 BOP: Surrogate E1: A3 & A1-1 (I2, R1, I4, R2)	Scenario #1 CRS: I6 / E2 OATC: R3 / E3 BOP: Surrogate
1600-1800		~~Scenario 7 CRS: I7 / E1~~			

		~~OATC: I8 / E2~~ ~~BOP: R4 / E3~~			

I1: Operator V
I2: Charlissa Smith (Carla) Operator T
I3: Operator U
I4: Operator S
I5: Operator R
I6: Operator Q
I7: Operator P
I8: Operator O

R1: Operator N
R2: Operator M
R3: Operator L
R4: Operator K
R5: Operator J
R6: Operator I
R7: Operator H
R8: Operator G

E1: Michael Meeks (Chief – Under Instruction)
E2: Mark Bates (Chief)
E3: Phil Capehart

U1: Operator W

NUREG 1021, section ES-201, "Initial Operator Licensing Examination Process," D.1.a states: "The regional office shall not assign an examiner who failed an applicant on an operating test to administer any part of that applicant's retake operating test." While Ms. Smith had not failed the previous operating test, and the regional office was not required to assign a different examiner, the assignment of Mr. Bates as Ms. Smith's examiner of record represented an added measure in the interest of assuring objectivity. Keeping the intent of this requirement in mind, as shown above, M. Bates was intentionally assigned as Ms. Smith's examiner of record.

M. Bates was not directly involved in the preliminary decision associated with the potential denial of a waiver for Ms. Smith. This was purposely done to ensure that M. Bates would independently evaluate Ms. Smith's performance on the dynamic simulator without bias, however inadvertent, stemming from her performance on the previous exam administered in 2011. Specifically, M. Bates did not review any Form ES-303 documentation or any other record of Ms. Smith's 2011 performance until after the 2012 exam report was issued. A more complete discussion, including the full exam schedule and Region II Operations Branch schedule is available at Exhibit NRC-031.

Q.8. Please describe how the simulator scenarios were administered to the applicants.

A.8. Region II administered the simulator scenarios by providing the applicants a turnover package, which contained plant status and any directed activities required of them when they assumed responsibility for the plant ("assuming the watch"). The crew was provided

an opportunity to review this information in a classroom prior to entering the simulator. When the simulator was ready, the applicants entered the simulator and were provided an opportunity to become familiar with their control boards and setup any desired computer displays prior to assuming the watch.

The lead examiner was the examiner assigned to evaluate the SRO who was standing the CRS position. The lead examiner wore a headset so that he could be in constant communication with the simulator booth. This examiner orchestrated the scenario, calling to the booth to have the various malfunctions inserted so that the examiners could perform their evaluations. Prior to insertion of each malfunction, the lead examiner received confirmation from the other two examiners that they were ready for the next malfunction. The lead examiner would then request the booth operator to insert the malfunction at a certain point (e.g., insert following the crew brief, or insert in approximately two minutes). It is important to note that the exam team ensures that the plant is stable and that most administrative requirements are addressed prior to calling for the next event to be triggered. This generally entails waiting for the SRO to review Technical Specifications, notify management, and contact maintenance for repairs. Additionally, the exam team does not wait until the equipment, or instrumentation, is repaired prior to continuing to the next event. The exam team did not deliberately attempt to overload the applicants with multiple events at the same time. However, NUREG-1021, Appendix D, "Simulator Testing Guidelines," Step C.1.b (page 5 of 39), does allow malfunctions to be entered simultaneously on separate control panels provided the applicant can handle each event without extensive assistance. Additional guidance is also provided in this section which states, "extending the time between malfunctions with no operator action in progress may cause undue stress," therefore, extended time between events with no operator actions should be minimized.

The simulator booth personnel were members of the facility training staff. They ran the simulator and fielded applicant phone calls, acting as various members of the plant staff, to

perform actions outside of the simulated control room. The simulator booth operators activated their microphone so that the lead examiner could hear both sides of all communications from any applicant to the simulator booth. The simulator operator also had the responsibility to save the simulator data, as well as any notes that were taken by the training staff in the simulator booth.

It is important to note that the examiners acted as a team, assisting each other with the evaluation of all the applicants. Each examiner was assigned as the primary evaluator for a single applicant for each scenario; however, each examiner took notes on the communications and actions of all of the applicants to enhance the overall accuracy of the evaluation. It is also worth noting that the exam team did not communicate with the applicants during the administration of the scenarios. The examiners attempted to be as non-intrusive as possible and primarily maintained an observation/documentation role while the simulator was running. This is standard Region II protocol.

When the scenario was finished, the lead examiner directed the simulator operator to place the simulator in “freeze.” At this time, the applicants were instructed not to talk about the scenario and were reminded that the team of examiners would leave the simulator and then return with follow-up questions. The examiners then exited the simulator and went to a conference room where they spent several minutes recounting the events that were just observed. The examiners took time to review their notes and identified follow-up questions that needed to be asked to the applicants to help the examiners better understand any observed deficiencies. Because the scenarios were dynamic by design, it was entirely possible for one examiner to detect an error made by an applicant assigned to a different examiner. These items were discussed and follow-up questions, if warranted, were asked based on those observations also. The examiners then re-entered the simulator and asked the applicants questions on the scenario that they just completed. The answers to these questions were used

to determine whether an error was made, as well as to determine which RF the error should be assigned.

Due to the large class size, the operating test required two full weeks to administer. The Masters golf tournament coincided with the week following the first exam week; therefore, it was decided to place one non-exam week between the two weeks required to administer the operating test due entirely to hotel unavailability. After observing Ms. Smith on three scenarios during the first week of the exam, the exam team recognized that her performance was marginal. Therefore, the team used this intermediate week to document her simulator performance while their observations were fresh in their minds. Following this first draft of grading, the examiners understood that her performance could possibly result in a failing grade on the simulator portion of the exam.

Q.9. How did the Region II staff approach grading Ms. Smith's performance on the 2012 operating test?

A.9. The examiners graded the operating test in accordance with NUREG-1021 guidance and consistent with standard regional practice. As required by NUREG-1021, ES-303, examiners attempted to document every error that reflected on the applicant's competence. As required, the examiners graded each of these errors equally unless the error was related to a critical task. The consequences or potential consequences were documented on form ES-303-1 in accordance with NUREG-1021, ES-303, D.3.b.

Some of Ms. Smith's errors were corrected by her teammates. These errors were documented just as they would have been if they had not been corrected by her teammates, as required by NUREG-1021, and as stated previously.

Ms. Smith's errors were assigned to the RF that was most closely related to the root cause of her weakness as is required by NUREG-1021, ES-303, Section D.1.d. This section of NUREG-1021 also permits errors to be assigned to two RFs under normal circumstances and more than two RFs in more extreme circumstances. It is important to note that the Region II

examiners chose to only assign each error to one RF, the one that was most closely associated with the root cause of the error. When the initial licensing decision was made, it was discussed that even with this approach, an approach that was favorable to the applicant, the result was that the applicant failed the simulator portion of the operating test. This approach of only assigning each error to the one rating factor most closely associated with the root cause of the error was important when the exam team needed to make a determination whether the applicant should receive a "1" or a "2" for RFs when only two errors were documented for that RF. This aspect is discussed in the next paragraph. This approach was also important when explaining why Ms. Smith did not initially have any errors documented in Competency 2, "Procedures," and Competency 5, "Directing Operations."

Ms. Smith received a score of "2" for RFs that had only one error assigned and she received a "1" for RFs that had three errors assigned. NUREG-1021 does not provide any leniency for the examiner to apply judgment when either one or three errors are made – the scoring criteria are entirely objective. However, there were three RFs, 1.b, 1.c, and 4.b, that were assigned two errors and a score of "1" was assigned. The examiners applied the following guidance from NUREG-1021, ES-303, Page 5 of 19, to make this determination:

- If an applicant makes two errors related to a rating factor, circle an "RF Score" of "1" for that rating factor unless a score of "2" can be justified (and documented as discussed in Section D.3, below) based on correctly performing another activity (or activities) related to the same rating factor; three or more errors generally require a score of "1," regardless of the applicant's compensatory actions.

The exam team determined that Ms. Smith displayed weaknesses in RFs 1.b, 1.c and 4.b beyond what was documented in the two errors assigned to each of those RFs. These additional weaknesses were used as justification by the exam team during the original grading to assign a score of "1" in those RFs. It was because of these additional weaknesses that the exam team could not justify a score of "2" for RFs 1.b, 1.c, and 4.b even though only two errors were documented. A cross-reference table was constructed that formalized weaknesses in these three rating factors that were present in errors assigned to a different rating factor that

more closely reflected the root cause of the error.[3] In accordance with NUREG-1021, ES-303, the examiners could have assigned these errors to additional RFs which would then have explicitly shown that third error in RFs 1.b, 1.c, and 4.b, hence the importance of understanding the grading approach that was used.

The grading approach to only assign each error to one RF also explains why the initial simulator grading did not contain errors in Competency 2, "Procedures," and Competency 5, "Directing Operations." The applicant actually did display weaknesses in these two competencies, but the errors were assigned ONLY to the ONE RF most closely associated with the root cause of the error. The exam team discussed this aspect with the Branch Chief, prior to formalizing the license denial, stating that there were elements of weakness in "Directing Operations," and to a lesser extent, elements of weakness in "Procedure Use," in many of the other errors that were assigned to another RF. The cross-reference table mentioned above provides examples where elements of weakness in these competencies existed, but the errors were assigned to a different RF because that other RF more closely represented the root cause of the error. Therefore, this description of the grading approach is partially intended to explain any perceived inconsistencies in the grading documentation by stating how the applicant had weaknesses in all competencies.

Furthermore, prior to issuance of the license denial, the exam team sought independent reviews from two Senior Operations Engineers and one Operations Engineer, all having previously held senior reactor operator licenses. Comments from these reviews were largely incorporated into the final documentation.

Q.10. What was the result of the Region II staff's initial grading of Ms. Smith's performance on the 2012 operating test?

A.10. As discussed above, the exam team graded Ms. Smith using the criteria in NUREG-1021. Furthermore, the exam team used a similar threshold for determining what level

[3] Exhibit NRC-032 (Binder Tab 4) at 7.

of performance was considered to be an error. Below, this testimony discusses the details of how Ms. Smith's errors were similar to errors made by other operators. Tables are provided that cross-reference errors made by Ms. Smith during the simulator scenarios with similar errors that were made by other applicants. This exam team was always sensitive to applying an equal standard to all applicants so that the grading was fair and without bias. However, the remainder of this answer will only discuss the details of the errors that were documented for Ms. Smith's simulator scenarios.

Eighteen errors were documented on Form ES-303-1.[4] For Ms. Smith, each error was assigned to only the one RF that was most closely associated with the root cause of the error. The initial grading included three pathways to a failing score. The applicant received a score of 1.70 in Competency 1, "Interpretation/Diagnosis," which resulted in a failure due to the score for that competency not being greater than 1.80. The applicant received a score of 1.20 in Competency 4, "Communications," which on its own did not result in a failure; however, it changed the minimum score for passing (cut score) to 2.00 or greater, versus greater than 1.8, which is the cut score when Competency 4, "Communication," is greater than 1.8. Because the applicant received a score of 1.99 in Competency 3, "Control Board Operations," a failure pathway existed due to the higher cut score induced by the low Competency 4, "Communications," score. A third, and partially redundant, failure pathway existed for the Competency 2, "Interpretation / Diagnosis," score also being less than 2.00, due to the higher cut score induced by the low Competency 4, "Communications," score.

Previously, the scoring criteria were discussed for the situation where two errors were documented for a RF. For reasons previously highlighted, scores of "1," rather than "2," were assigned for RF 1.b, 1.c, and 4.b. It is important to note that the exam team believes that the scores of "1" were justified and supported by the requirements in NUREG-1021. Furthermore, it is worth noting that any one of the failure pathways discussed in the previous paragraph

[4] *See* Exhibit CCS-045.

resulted in a failing grade. The combination of Competencies 3 and 4 resulted in a failure completely independent of the judgment used to assign a "1" when two errors were documented for RFs 1.b, 1.c, and 4.b.

Each error documented on Ms. Smith's form ES-303-1 is discussed in detail in sections of a binder that was assembled to assist the review panel during the appeal. The documentation for each error includes a factual sequence of events and the examiner's evaluation of the error. Following these two sections is the documentation that supports the construction of the factual sequence of events and the examiner's analysis. The errors are cross-referenced from the ES-303-1 form to the corresponding binder tab as follows:

ES-303-1 Page	Rating Factor & Error Descriptor	Exhibit Number for Binder Tab	Ms. Smith's Statement of Position
8	1.b: Interpretation/Diagnosis: Recognize & Attend EHC	NRC-033	7
10	1.b: Interpretation/Diagnosis: Recognize & Attend SI/SLI	NRC-034	5
12	1.c: Interpretation/Diagnosis: Understanding Pzr Heaters	NRC-024	11
14	1.c: Interpretation/Diagnosis: Understanding FIC-121 Understand	NRC-035	10
16	1.d: Interpretation/Diagnosis: Diagnose Auto Rod Op	NRC-036	8
18	3.a: Control Board Operations: Locate & Manipulate Tave/Tref	CCS-039	4
19	3.a: Control Board Operations: Locate & Manipulate PORV (CT)	CCS-039	12
20	3.a: Control Board Operations: Locate & Manipulate RWST	NRC-037	6
21	3.c: Control Board Operations: Manual Control TE-0130	NRC-038	9
23	4.a: Communications: Clarity FIC-121 Status	NRC-039	N/A
24	4.a: Communications: Clarity Immediate Op Action	NRC-039	N/A
25	4.a: Communications: Clarity SI	NRC-039	N/A
26	4.b: Communications: Crew & Others Informed Shift Manager 1	NRC-039	N/A
27	4.b: Communications: Crew & Others Informed Shift Manager 2	NRC-039	N/A
28	4.c: Communications: Receive Information ACCW 3-way	NRC-039	N/A

The following is an abbreviated discussion of the errors that were documented on Ms. Smith's initial form ES-303-1/2 for Competency 1, "Interpretation/Diagnosis, Competency 3,

"Control Board Operations," and Competency 4, "Communications." Errors in Technical Specifications are not discussed because Ms. Smith did not contest any of her Technical Specifications errors during the administrative review.

Q.11. Please describe the error committed by Ms. Smith regarding the EHC pump, noted in Ms. Smith's ES-303-1 p. 8, and which she contests in her Statement of Position 7.

A.11. Ms. Smith, as Control Room Supervisor (CRS), incorrectly diagnosed that EHC pressure had dropped below 1400 psig, which is the standby EHC pump automatic start setpoint. Ms. Smith correctly directed the start of the standby pump, but she provided this direction because she believed the standby pump had failed to automatically start. EHC pressure had not dropped below 1400 psig at the time Ms. Smith directed the start of the standby pump. The scenario was designed for the automatic start of the standby pump to fail, but EHC pressure had not yet lowered to 1400 psig where the automatic start would have been demanded. During the scenario, as part of a phone call to the simulator booth, Ms. Smith directed Clearance and Tagging (C&T) to investigate the automatic start feature on the standby EHC pump. After the scenario, Ms. Smith was asked to explain her directives. Ms. Smith stated that the standby EHC pump should have automatically started. This was incorrect and was indicative of a diagnosis issue related to not obtaining complete and accurate information on which to base the diagnosis, namely EHC pressure. Ms. Smith was downgraded in this competency because she misdiagnosed the failure of the automatic start of the standby EHC pump when pressure had not yet decayed to less than 1400 psig, which is when an automatic start of the standby pump would have been demanded.

During the preparation week when the exam team evaluated all of the dynamic simulator material in the Vogtle simulator, an evaluation took place on the time required for EHC pressure to lower to the point where ALB20-D05, HYD FLUID LO PRESS, would alarm following the EHC pump trip. The Form ES-D-2, for Scenario 3, Event 5 contained a statement that it would take

"SEVERAL MINUTES" for ALB20-D05 to alarm.[5] During the preparation week, the examiners ran this event without starting the standby EHC pump so that they could ensure the accuracy of "SEVERAL MINUTES for ALB20-D05 to alarm." This statement on page 21 of Form ES-D-2 was validated to be accurate during this demonstration to allow the pressure to lower without starting the standby pump. ALB20-D05 alarms at 1500 psig. The standby EHC pump does not start until EHC pressure lowers to 1400 psig. During the on-site validation, the examiners even discussed how an applicant would be evaluated if they started the standby pump while incorrectly diagnosing that it had failed to automatically start. Ms. Smith's performance was evaluated consistently with these discussions during the on-site validation.

The examiners were monitoring ALB20-D05, which they could easily observe from anywhere within the Main Control Room proper. ALB20-D05 did not alarm. One minute thirty one seconds elapsed from the time the EHC pump tripped until Ms. Smith directed the start of the standby EHC pump. One minute and 31 seconds is less than "SEVERAL MINUTES," as stated on Form ES-D-2 and as observed during validation of the scenario. R. Waltower stated in his sworn testimony, "While she was reviewing the procedure I did observe the annunciator for the EHC pressure illuminate."[6] When compared to Form ES-D-2, Page 21, and the examiner's notes, this statement by R. Waltower appears to be inaccurate.

It is worth referencing the portion in the next section that provides another example of the inaccuracy of Ms. Smith's teammates' signed statements that were provided for the RWST sludge mixing line leak. The examiner's factual sequence of events is much more accurate due to their extensive use of notes taken during the exam and then using those notes soon after the exam to enhance their memory. The applicants likely developed their signed statements six to eight weeks after the simulator exam was administered, without the benefit of any notes, as there was nothing to prompt them to draft a statement sooner.

[5] Exhibit CCS-048.
[6] Exhibit CCS-041.

Based upon these observations, the examiner determined that Ms. Smith had mis-diagnosed that the standby EHC pump had failed to automatically start. The principal element in this mis-diagnosis was that Ms. Smith did not obtain any EHC pressure values or trends before ordering the standby pump to be manually started. In accordance with this assessment, the examiner determined that the correct rating factor to place this deficiency was 1.b., which states: “Did the applicant ensure the collection of CORRECT, ACCURATE, and COMPLETE information and reference material on which to base diagnoses?”

Lastly, the examiners did administer the planned operating test for this event. The examiners did not use any unplanned applicant actions to displace any part of this event. The malfunction was inserted exactly as it was during validation of the scenario and the applicants were evaluated in all RFs on which they had an opportunity to display competence. As stated several times within this testimony and as required by NUREG-1021, examiners are required to grade every error that reflects on an operator’s competence. NUREG-1021 does not require Forms ES-D-2 to contain the infinite number of potential errors that an applicant could make. Potential errors that an applicant could make are not limited to the expected actions stated on Form ES-D-2.

Q.12. Please describe the error committed by Ms. Smith regarding the Safety Injection/Steam Line Isolation, noted in Ms. Smith’s ES-303-1 p. 10, and which she contests in her Statement of Position 5.

A.12. One of the key Vogtle plant interlocks, or “permissives,” is P-11, which is designed to allow operators to manually block automatic actuation of low pressurizer pressure Safety Injection/Steam Line Isolation (SI/SLI) when two-out-of-three pressurizer pressure instruments lower to less than 2000 psig, but remain greater than the automatic low pressurizer SI/SLI setpoint. The status of permissive P-11 is provided to the operators by a single interlock status light that is readily visible in the control room. During plant operations at normal operating pressure (greater than 2000 psig), the P-11 status light is NOT lit. The P-11 status

light will illuminate when conditions allow for blocking automatic low pressure SI/SLI. Permissive P-11 is the critical parameter that must be evaluated when operators are required to manually block low pressure SI/SLI during plant de-pressurization evolutions under normal, abnormal, or emergency conditions.

Ms. Smith, as CRS, directed the Operator at the Controls (OATC) to block SI/SLI when conditions for P-11 were not met; consequently, his actions were not successful and automatic low pressure SI/SLI remained enabled. At the time Ms. Smith gave this initial direction to block SI/SLI, there were indications available to the operators that blocking of SI/SLI would not be successful (i.e., P-11 light not illuminated). Approximately six minutes after the first attempt, the OATC successfully blocked SI/SLI.

After the scenario, Ms. Smith was asked to explain why blocking SI/SLI was not initially successful. Ms. Smith stated she thought pressurizer pressure was 1998 psig. She stated that P-11 must not have been at that same spot. This statement that "P-11 must not have been at that same spot," suggests that she did not check the P-11 status prior to initially directing the block. Ms. Smith was downgraded in Competency 1, "Interpret/Diagnose Events and Conditions Based on Alarms, Signals, and Readings," because she did not collect complete and accurate information on which to ensure pressurizer pressure was less than 2000 psig. Specifically, "complete" information needed to include verification of the appropriate interlock (P-11) prior to directing the OATC to block SI/SLI.

Within Competency 1, Ms. Smith was downgraded in RF 1.b, "Interpretation/Diagnosis – Ensure Accuracy," because she failed to properly verify the correct status of the P-11 interlock, which caused her to incorrectly direct the OATC to block low steamline pressure SI/SLI when plant conditions would not allow the action to be successful. The root cause of this error was that Ms. Smith did not ensure the collection of correct, accurate, and complete pressurizer pressure information prior to providing this direction. Specifically, the correct indication to verify whether the attempt to block could be successful was the status of the P-11 permissive,

irrespective of which pressure the OATC reported. P-11 could easily be verified by Ms. Smith from her SRO position. P-11 verification could also have been directed by Ms. Smith to the OATC. Emergency Operating Procedure, 19030-C, "E-3 Steam Generator Tube Rupture," Step 12.b, directs the operators to verify pressurizer pressure less than 2000 psig, but the step does not state which indications to use. The applicant must know which indications are meaningful when verifying pressurizer pressure as it pertains to blocking low steam line pressure SI/SLI to accomplish the intent of the procedure step.

Note that NUREG-1021, Appendix E, Part C, Step 3, states: "[an applicant] should know from memory certain automatic actions, set points, interlocks, [and] operating characteristics … as appropriate to the facility."[7]

There is no time documented in any of the examiners' notes for when Ms. Smith initially directed the OATC to block SI/SLI. However, at 12:31:05, M. Bates' notes document that "RCS pressure should be verified", which was indicative that an unsuccessful block attempt had already occurred. Based on a review of simulator data, Ms. Smith claims that at time 12:33 (8340.4 seconds into the scenario – provided in CCS-042) that pressurizer pressure was approximately 1998 psig. Based on the same simulator data approximately 2 minutes earlier, at 8216.7 seconds, pressurizer pressure was greater than 2000 psig.

9709	"pi418"	"pi428"	"pi438"	"pi455a"	"pi456"	"pi457"	"pi458"
8216.7	2009.16	2009.16	2009.06	2500	2000.04	2000.04	2000.04
8217.75	2009.11	2009.11	2009.01	2500	2000	2000	2000
8218.75	2009.07	2009.07	2008.97	2500	1999.96	1999.96	1999.96
8219.75	2009.02	2009.02	2008.92	2500	1999.92	1999.92	1999.92
Data for intermediate times hidden for display purposes							
8338.4	2007.04	2007.04	2006.95	2500	1997.8	1997.8	1997.8
8339.4	2006.95	2006.95	2006.85	2500	1997.81	1997.81	1997.81
8340.4	2006.93	2006.93	2006.83	2500	1997.8	1997.8	1997.8
8341.45	2006.93	2006.93	2006.83	2500	1997.8	1997.8	1997.8
8342.45	2006.94	2006.94	2006.85	2500	1997.8	1997.8	1997.8

Regardless of the exact pressure, two-out-of-three pressurizer pressures are required to be less than 2000 psig to satisfy the P-11 permissive. The examiners were monitoring the P-11

[7] Exhibit CCS-005B.

status light because that is the pressure indication that matters when blocking SI/SLI. Ms. Smith initially directed the OATC to block SI/SLI without the P-11 permissive being met. It must be emphasized that P-11 status, which is an indicator of pressurizer pressure, is the key parameter to verify prior to blocking SI/SLI. Neglecting to collect the critical indication of pressurizer pressure, P-11 status, as it pertains to completing the intent of the procedure step, is the reason the applicant was downgraded for this error. The error was corroborated by the fact that the first block attempt was unsuccessful, which proves that P-11 was not in the required state to allow the block to occur. This same analysis was used to place the error in RF 1.b because the applicant did not collect complete and accurate information before giving the direction to block SI/SLI.

Lastly, the scenario was validated by numerous licensed operators, training staff, and NRC examiners prior to being administered. The scenario, including the accuracy of P-11, validated acceptably. It is also noteworthy that neither of the other two applicant crews had any issue with P-11 operation when the same scenario was administered during that same day. Finally, the facility licensee is required to maintain their simulator in accordance with ANSI/ANS-3.5-1985, "American National Standard Nuclear Power Plant Simulators for Use in Operator Training." This document requires the licensee to test the simulator from full power all the way down to cold conditions, which would include blocking SI/SLI when the appropriate conditions (P-11 interlock) were achieved.

Q.13. Please describe the error committed by Ms. Smith regarding the pressurizer heaters, noted in Ms. Smith's ES-303-1 p. 12, and which she contests in her Statement of Position 11.

A.13. Ms. Smith, as CRS, entered 18001-C, Section C, and performed all steps with the exception of directing pressurizer heaters to be placed in automatic. When Ms. Smith reached Step C8.b to place heaters in automatic, she stated that they were going to wait to place heaters in automatic. She also stated, "I do not think heaters are operating properly." A

few minutes later, Ms. Smith informed the OATC that he could place the pressurizer heaters in automatic. Instead, the OATC placed the "A" backup heaters to ON. Ms. Smith permitted the OATC to manually control pressurizer heaters for the remainder of the scenario. After the scenario, Ms. Smith was asked to explain her actions pertaining to pressurizer heater operation during the scenario. Ms. Smith stated that she did not want to place heaters to automatic until pressure was lower. Ms. Smith was downgraded in this competency because the pressurizer pressure control system was functioning properly after an unaffected channel was selected, and Ms. Smith decided not to direct completion of 18001-C, Step C8.b, which would have returned heaters to automatic.

A partial sequence of events can be used to show Ms. Smith's confusion on pressurizer pressure control. Ms. Smith's verbal communications with the OATC demonstrated a level of confusion over the status of the pressure control system. Ms. Smith explicitly stated, "I do not think heaters are operating properly…" when, in fact, the only degradation with the pressure control system was the failed instrumentation channel, which had been defeated from the control circuit. She also directed her board operator to perform actions and her board operator repeatedly did not carry out actions that she directed.

- At time 11:05:02 – Ms. Smith directed R. Waltower to maintain pressurizer pressure within a band of 2220-2250 psig, in accordance with procedure 18001-C (At this time R. Waltower was controlling pressurizer pressure with both heaters and spray valve controllers in manual.)

- R. Waltower informed Ms. Smith that he was turning off the [pressurizer] heaters. Ms. Smith responded, should they have been? [off]. R. Waltower then stated, "my meter is at 100 percent." Ms. Smith then said, "o.k."

- At time 11:07:00 Ms. Smith directed R. Waltower to select an unaffected channel on PS-455F in accordance with step C7.

- At this point in the event, the failed channel had been removed from the control circuit, and the procedural steps listed above directed the operators to return the pressure control system to automatic.

- At time 11:07:41, the team reached step C8, and R. Waltower reported pressure was 2248 psig and lowering.

- Ms. Smith did not direct the OATC to perform step C8.b., which would restore pressurizer pressure heaters to AUTO.

- Instead, at time 11:08:29, Ms. Smith stated to R. Waltower "*I do not think heaters are operating properly…taking heaters back to auto may not be what we want.*"

- At time 11:10:22, Ms. Smith directed R. Waltower to "Go ahead and take pressurizer heaters to ON." R. Waltower replied "I am maintaining pressure," and did not take any action to change the configuration of the pressurizer heaters. R. Waltower did not complete the actions that were just directed by Ms. Smith.

- Shortly afterwards, Ms. Smith again stated to R. Waltower that "now we can take heaters to AUTO." Without further communications, R. Waltower then placed B/U group heaters 'A' [and no others] to "ON." Once again – R. Waltower did not complete the actions that had just been directed by Ms. Smith.

- At time 11:15:47, Ms. Smith directed R. Waltower to return the pressurizer master controller to AUTO, which was performed. At this time, pressurizer heaters were still in manual configuration.

Ms. Smith was downgraded in Rating Factor 1.c., "Interpretation/Diagnosis - Understanding," which related to Ms. Smith's "understanding of how the plant systems, and components operate and interact (including set points, interlocks, and automatic actions)." Ms. Smith stated that she did not think heaters were working properly, when in fact they were working as designed. The control systems for pressurizer heaters were designed to energize the heaters when pressurizer level was above program in order to saturate the colder liquid water. The plant is specifically designed with this interlock to function with control systems in AUTO. The heaters, although working as designed, were never placed back to AUTO.

Furthermore, the statements made by the board operators indicated a lack of confidence with the direction they were receiving from Ms. Smith. As detailed above, Ms. Smith directed actions to be carried out that were not performed. This additional aspect of the event demonstrates a deficiency in Competency 5, "Directing Shift Operations." The examiner

considered this aspect during the grading process, but ultimately evaluated that the root cause deficiency was a result of Ms. Smith's overall misunderstanding of the condition of the pressure control system during this event. This illustrates quite well that the examiners would have been justified in grading her more harshly, in that she directed the board operators to perform actions, and they chose to not perform the actions that Ms. Smith directed them to perform. At the time of grading, the issue was only assigned to "understanding" because the examiners made a judgment that she would have been able to provide better oversight if she had a better understanding of how the plant worked. Contrary to her claims, the examiners attempted to be extremely fair at all times, and tried to only document each error under the single RF that most closely represented the root cause of the error – even when assigning more rating factors could have been justified by NUREG-1021.

Lastly, Operator V's performance on Scenario 7, Event 3, was not comparable to Ms. Smith's performance on this event. Operator V did not display any weakness in his understanding with the automatic bypass of the letdown demineralizers on high temperature. Operator V made a decision to allow the demineralizers to remain bypassed until Chemistry personnel could provide assurance that it was OK to place the demineralizers back in service. Operator V's decision did not involve control of any plant parameters with direct operator impact. It was a conservative decision to get that confirmation prior to placing letdown flow back through the demineralizers. In the near term, that decision did not impact control of the plant. Contrast this to Ms. Smith's performance where she stated that she did not think heaters were operating properly, when in fact they were, and her directives to the OATC that were not performed. Operators were directly impacted by manually controlling pressurizer heaters, when automatic control could have been used. At a minimum, an understanding issue was justified for Ms. Smith on this event. It is worth noting that Operator N was downgraded on his evaluation for making related errors.

Ultimately, Ms. Smith's Statement of Position is evidence that she still has a misunderstanding of the relevant control systems. It is true that heaters will energize when a sufficiently high pressurizer level deviation exists. The control systems are designed to energize pressurizer heaters to ensure that water insurge into the pressurizer will be returned to saturation conditions. Five percent above program level will cause heaters to energize. It is not true that heaters being placed to automatic would cause pressurizer pressure to exceed the upper end of the procedurally directed control band of 2250 psig. Based on our notes, pressurizer pressure was 2248 psig and lowering with the OATC controlling pressurizer sprays in MANUAL when performing step C8. Pressurizer sprays will always dominate the pressure control balance when competing with pressurizer heaters. Therefore, placing heaters to automatic should have no impact on pressure control because the OATC had the ability to control pressure with sprays still in MANUAL. The same response would be seen even after placing the sprays in AUTO. Hence, not placing heaters to AUTO represented a misunderstanding of the pressure control system.

Q.14. Please describe the error committed by Ms. Smith regarding FIC-0121, charging flow controller, noted in Ms. Smith's ES-303-1 p. 14, and which she contests in her Statement of Position 10.

A.14. Ms. Smith, as CRS, was expected to understand the impact of the LT-459, pressurizer level channel, failure on charging flow and direct the crew to place FIC-0121, charging flow controller, to manual prior to selecting an unaffected pressurizer level channel in accordance with procedure 18001-C, Section D, "Failure of Pressurizer Level Instrumentation." Keeping FIC-0121 in MANUAL, for an acceptable period of time, was necessary to avoid a rapid lowering of charging flow because pressurizer level had been above setpoint for several minutes due to the LT-459 failure, thereby causing the controller output signal (i.e. which would be "saturated") to demand less charging flow. It was expected that FIC-0121 remain in manual until the controller output signal would maintain charging flow at an acceptable level (i.e. until

the controller “unsaturated”). Placing it back to automatic too soon would result in a rapid lowering of charging flow. Placing it back to automatic too soon would also demonstrate a misunderstanding of how the controller is designed to operate.

Ms. Smith initially directed placing the charging flow controller to manual prior to selecting an unaffected pressurizer level channel. However, after the OATC selected an unaffected pressurizer level channel, Ms. Smith directed the OATC to place FIC-0121 back to automatic before the controller was able to control charging flow at a rate that would provide adequate flow through the regenerative heat exchanger. Subsequently, charging flow rapidly lowered, at which time the OATC placed FIC-0121 back to manual. The BOP informed Ms. Smith that he believed that FIC-0121 was failed. After the scenario, the examiner asked Ms. Smith if there was a problem with FIC-0121. Ms. Smith stated that the charging control valve was closing and that it should not have closed because pressurizer level was on program. Ms. Smith was downgraded in this competency because she did not understand that charging flow would lower due to the controller’s response to pressurizer level being above setpoint for such a long time.

NUREG-1021, as stated earlier, requires examiners to grade every error that reflects on an operator’s competence. Ms. Smith correctly directed 18001-C, Section D, “Failure of Przr Level Instrumentation,” Step D2 RNO, which directed taking manual control of charging flow to prevent letdown from flashing. After the failure was addressed and unaffected channels selected, Step D9 directed pressurizer level control to be placed back to AUTO. There is no way for the examiners to predict how long a crew will take to complete steps prior to D9, nor is there a way for the examiners to predict how much integration will build into the charging flow controller. Therefore, Step 9 was expected to be performed, but the applicant was not expected to perform the step until the integration had decayed and charging flow could actually be controlled in AUTO. Therefore, there was a clear issue with the applicant’s competence with respect to her understanding of the charging flow controller.

The examiner classified the root cause deficiency for this event as RF 1.c, "Interpretation/Diagnosis – Understanding," due to Ms. Smith's misunderstanding of the effects of "saturation" on the FIC-0121 controller. The controller was in MANUAL for approximately 18 minutes with a level deviation signal building in. By giving the direction to return the controller to AUTO, Ms. Smith was evidently satisfied that the saturation issue had been resolved. This demonstrated a misunderstanding of the integration component of the controller design. It is also worth noting that conversations took place between M. Bates and facility training personnel that confirmed that the reason charging flow decreased uncontrollably when first placing pressurizer level back to AUTO was that the integration of the controller had built in to a point that charging could not possibly be controlled in AUTO at that point.

There were also aspects of this event that related to oversight and directing shift operation, Competency 5. The plant was stable when the examiners called for the next event to be triggered, a failure of PT-508, feedwater flow transmitter. At the time of the PT-508 failure, FIC-0121 was being controlled satisfactorily in MANUAL. The BOP operator correctly diagnosed the PT-508 failure, announced that he was performing immediate operator actions [for the PT-508 failure], and correctly controlled feedwater pump speed in manual. However, once the BOP operator had the feedwater transient under control and informed Ms. Smith that immediate operator actions were complete, Ms. Smith immediately directed the OATC to restore FIC-0121 to automatic operation. This hasty direction is what created the second <u>self-induced</u> transient. To re-iterate, there were two nearly simultaneous events – one inserted by the lead examiner who called to the booth to have them input the PT-508 failure at some set time in the near future, and a second self-induced event that was created by Ms. Smith hastily directing FIC-0121 to be placed in AUTO immediately after receiving the report that immediate operator actions associated with the PT-508 event were complete. Competent supervisory oversight would have allowed FIC-121 to be satisfactorily controlled in MANUAL until the PT-508 failure was addressed.

Lastly, the planned event with PT-508 and the applicant induced event with the loss of charging flow, were completely independent events. NUREG-1021 does provide guidance to not insert simultaneous events if one event could mask the diagnosis of the other. One of these events dealt with charging flow and pressurizer level control occupying the OATC, and the other event dealt with feedwater control involving the BOP operator. The events were independent. They did not have characteristics that would easily mask one event due to the other. They involved different board operators. And finally, the only reason they occurred at the same time was that the applicant chose to have FIC-0121 placed back to AUTO right after the PT-508 event revealed itself.

Q.15. Please describe the error committed by Ms. Smith regarding monitoring Tave and Tref in order to monitor automatic control rod insertion, noted in Ms. Smith's ES-303-1 p. 16, and which she contests in her Statement of Position 8.

A.15. Ms. Smith, as CRS, was expected to monitor valid indications of average Reactor Coolant System temperature (Tave) and compare to reference temperature (Tref) values in order to effectively monitor automatic control rod insertion during the power reduction. Procedure 18013-C, "Rapid Power Reduction," provides guidance to monitor Tave/Tref deviation using IPC computer point UT-0495;[8] however, this indication was not accurate due to a previous failure. With UT-0495 not being accurate, Ms. Smith was expected to choose a valid indication of Tave and compare that to program Tref. Based on the Tave/Tref deviation, Ms. Smith was expected to ensure automatic control rod insertion was responding appropriately.

Ms. Smith monitored points UT-0420 and UT-0496 to evaluate correct response of the rod control system. During the initial portion of the power reduction, Tave was lower than Tref. With Tave approximately 2 °F lower than Tref, Ms. Smith directed the OATC to take manual control of rods and insert control rods 5 steps. The OATC recommended to not initially place rods to manual, and suggested continued monitoring and inserting rods in manual if they do not

[8] *See* CCS-051.

move as required. Ms. Smith agreed with this suggestion. Shortly thereafter, the OATC informed Ms. Smith that he was taking rods to manual and inserting control rods 5 steps (Tave was still approximately 2 °F lower than Tref and rods were not designed to step in when Tave was lower than Tref). Ms. Smith agreed with the control rod insertion and the control rods were inserted. (At this point an error had occurred in that Ms. Smith agreed with the control rod insertion based on an incorrect diagnosis of the temperature deviation and the control rods were subsequently inserted.) Again the OATC began to insert control rods 5 more steps and Ms. Smith stated "no - Tave was already cold." Shortly thereafter, ALB12-A5, TAVE/TREF DEVIATION, alarmed. After the scenario, Ms. Smith was asked why she had directed placing rods to manual. She stated that placing rods in manual was a bad idea. The examiner also asked which temperature indications she was monitoring. She stated that the normal average temperature indication was impacted by the HL RTD failure so she chose the lowest of the loop Tave values. Ms. Smith was downgraded in this competency because she incorrectly directed control rods be placed in manual and then directed rod insertion when Tave was lower than Tref, which resulted in the TAVE/TREF DEVIATION alarm.

The examiner evaluated the root cause deficiency related to this error as RF 1.d, "Interpretation/Diagnosis – Diagnose," because Ms. Smith demonstrated an inability to interpret/diagnose plant conditions based on control room indications. Specifically, during this event, Ms. Smith and the OATC wrongly believed (initially) that the automatic rod insertion function was not functioning properly. It appeared that they both eventually understood their error, but not until after control rod insertion was incorrectly directed by Ms. Smith and incorrectly carried out by the OATC.

Competency 1, "Interpretation/Diagnosis," was the competency that was most closely associated with the root cause of the error. The end result was that Ms. Smith incorrectly directed control rod insertion and that insertion was performed; however, the cause was that the applicant and the OATC both incorrectly diagnosed the functioning of the automatic control rod

insertion feature. Analyzing the RFs within Competency 1: Ms. Smith did not have an issue with attending to conditions based on importance or severity (RF 1.a); she did not have a weakness with collecting complete and accurate information because she was using the correct indications to make the diagnosis (RF 1.b); and she did not have a problem with understanding how automatic control rod insertion was designed to work based on her response to follow-up questions and her eventual recognition of the error during the scenario (RF 1.c). Therefore, the error was assigned to RF 1.d because she made an incorrect diagnosis that control rods should have been inserting in automatic because of the temperature deviation. This incorrect diagnosis was the reason she incorrectly directed the control rod insertion.

Operator R also made an error with respect to moving control rods and monitoring temperature. Operator R's error occurred during Scenario 7 and the plant was at a much lower power level. The applicant informed the examiner during post-scenario questioning that he had incorrectly applied a procedure step, which led to the error. Operator R's performance was consequently downgraded in RF 2.c (Procedures – Correct Use) because the root cause of the error was very different than the root cause of Ms. Smith's error. The following is taken from Operator R's Form ES-303:

> During post-scenario follow-up questions, the applicant stated that during the team's pre-scenario briefing, he had incorrectly applied step 4.1.15 of UOP 12004-C, which directs the operators to use program Tave as a substitute for Tref during the power ascension. However, step 4.1.15 is only valid for conditions before the turbine was placed in service and synchronized to the grid. The operators were briefed before the scenario that UOP 12004-C step 4.1.41 was the step in effect—with power at 29% and the turbine already on the grid. The applicant made one non-critical error associated with this rating factor, and was therefore evaluated with a score of "2" for this rating factor.[9]

There were additional elements associated with rating factor 1.b. in that the OATC and Ms. Smith failed to collect diverse indications that may have assisted them in making a better diagnosis of the plant condition. Specifically, the OATC and Ms. Smith were reliant on the digital parameters displayed on the IPC computer behind the CRS position; and the OATC was

[9] Exhibit NRC-042.

not observed using the installed plant instruments to independently confirm the digital information.

Q.16. Please describe the error committed by Ms. Smith regarding maintaining Tave within 2°F of Tref, noted in Ms. Smith's ES-303-1 p. 18, and which she contests in her Statement of Position 4.

A.16. Ms. Smith, as OATC, was expected to make the required reactivity adjustments to maintain Tave within 2°F of Tref during a power ascension from 29%.

Prior to commencing the power ascension, the CRS directed Ms. Smith to maintain Tave within 2°F of Tref. However, Ms. Smith allowed Tave to drop approximately 2.3 °F below Tref after the power ascension was suspended. Tave trended downward for approximately 40 minutes before reaching the maximum deviation of 2.3 °F, at which time Ms. Smith withdrew control rods and brought Tave back within the directed control band. After the scenario, the applicant was asked to state the Tave/Tref control band provided by the CRS. Ms. Smith stated 2 °F. Ms. Smith was also asked to state the maximum difference between Tave and Tref prior to the reactor trip. Ms. Smith stated 2.3 °F. Ms. Smith was downgraded in this competency because her reactivity manipulations were not timely enough to maintain the control band provided by the CRS.

Ms. Smith withdrew control rods at 07:36:50 and did not request to withdraw control rods again until 08:18:02, which coincided with Event 5 (PT-456 failure and associated PORV opening). Between 07:36:50 and 08:18:02, Events 3 and 4 were inserted. The exam team observed all three crew members remaining in the vicinity of TE-0130 for the duration of Event 3. Specifically, Ms Smith was standing directly in front of TE-0130 when making her statements with respect to C&T, and while operating the controller. This entire time Ms. Smith was responsible for monitoring primary parameters. It was during this time that P. Capehart and M. Bates noticed that Ms. Smith had not actively monitored Tave, or other primary parameters, through the entire duration of Event 3. Event 4 was inserted at 08:11:20. Event 4 contained no

verifiable actions and resided in the scenario solely for the CRS to get an opportunity to address Technical Specifications. There was ample opportunity for control rods to be withdrawn during Event 4.

The examiners were diligent about documenting communications for reactivity manipulations, and none of the examiners have any record of Ms. Smith requesting control rod withdrawals from 07:36 to 08:18. Event 5 (PT-456) was inserted at 08:18:02 after she had completed the first step of a three step control rod withdrawal. She then performed immediate operator actions in response to the PT-456 failure, which included her error with the mis-operation of the PORV. Event 5 immediate operator actions were completed by about 08:19:00. The last expected procedure action for Event 5 was completed at 08:31:54. Ms. Smith did not request a control rod withdrawal until approximately five minutes after completion of that last expected procedure action (AOP-18001-C, Section C, Step C12). At 08:37:??, after Tave had drifted outside of the directed band for approximately five minutes, Ms. Smith requested a control rod withdrawal. Therefore, with no other required procedural actions to perform, Ms. Smith took five minutes to recognize that Tave was outside the band before recommending to the SRO that control rods be withdrawn three steps.

As just stated, at approximately 08:32:00 Tave went outside of the directed band. Ms. Smith did not state that Tave was outside the directed band, nor did she request control rods be withdrawn for almost five minutes after Tave went outside the band. An error was documented because she allowed Tave to drift toward the edge of the directed band for over 40 minutes, during which time the exam team held conversations stating concerns about how long it had been since she had monitored primary parameters. It is true that she requested a control rod withdrawal at the time the booth inserted Event 5 (note: lead examiner made a request for the next event to be inserted at some time in the future – e.g. in two minutes – it was coincidental that control rods were being withdrawn when Event 5 was inserted). After Event 5 immediate

operator actions were completed, the applicant then waited approximately 19 minutes until requesting control rod withdrawal due to Tave being outside of the directed band.

The examiner determined that the root cause deficiency was a result of poor control board operations. NUREG 1021, Appendix D, E.2.c. states for the competency *Operate the Control Boards* that "This competency involves the ability to *locate* and *manipulate* controls to attain a desired plant and system response or condition." ES-303 form ES-303-4 further specifies that RF 3.a. determines that "…the applicant LOCATE AND MANIPULATE CONTROLS in an accurate and timely manner." For this event, Ms. Smith, as OATC, failed to manipulate the controls in a timely fashion to obtain the desired system response of maintaining the Tave-to-Tref deviation within the directed 2 ^{o}F band. Based on post-scenario follow-up questions, there was no deficiency in understanding; furthermore, there was no element of taking manual control of automatic functions because rods were in manual from the initiation of the scenario. Vogtle does not operate with automatic rod withdrawal capabilities, only automatic rod insertion.

During the operator actions for Event 3, the entire team of applicants was physically located in front of the control panel containing the controller for TE-0130. The NRC exam team noted that Ms. Smith was standing in front of the TE-0130 controller throughout Event 3, a location that made it difficult to monitor the Tave/Tref deviation. P. Capehart and M. Bates conducted a short discussion questioning the allowable duration of time for the OATC position to be away from monitoring the key reactor plant parameters. P. Capehart also noted that Ms. Smith was not monitoring reactor coolant temperature trends via the IPC computer trend screen.

For this Tave/Tref event, there was disagreement between the examiners' documentation and signed statements from J. Turner. It is worth referencing the portion in the next section that provides an example of the inaccuracy of her teammates' signed statements that were provided for the RWST sludge mixing line leak during her request for a grading review

(appeal) as well as their signed testimony for this hearing. It is also important to reference the accuracy of her teammates' statements for the EHC failure previously discussed. The examiners' factual sequence of events is much more accurate due to their extensive use of notes taken during the exam and then using those notes soon after the exam to enhance their memory of the events while documenting her performance. The applicants likely developed their signed statements six to eight weeks after the simulator exam was administered, without the benefit of any notes, as there was nothing to prompt them to draft a statement sooner. Therefore, when the examiners have no record of Ms. Smith requesting control rod withdrawals over long periods of time, combined with her apparent lack of monitoring for long periods of time, it is likely that she was not diligently monitoring, which led to the error of not manipulating control rods in a timely manner.

The examiners, throughout the scenario, had concerns with Ms. Smith's diligence in monitoring RCS temperature. Her apparent failure to monitor RCS temperature was so pronounced that P. Capehart walked over to M. Bates and questioned how long it had been since Ms. Smith had been in a position to monitor RCS temperature. Ms. Smith's downgrade for this error was warranted because of a lack of diligent monitoring of RCS temperature coupled with having ample opportunity over a 40 minute period to control Tave within the band set by the CRS. The examiners did acknowledge that she attempted to move control rods when the PORV failed open; however, approximately 19 minutes elapsed from the time the PORV failed open until she requested that she withdraw control rods again. Prior to requesting the control rod movements, temperature had been outside of the directed band for almost five minutes.

Also, the CRS (Operator V) was downgraded for his involvement in this same error. The CRS shared responsibility for knowing the status of important parameters such as Tave. This is noteworthy due to Ms. Smith's accusations of bias. This example, along with many others

shown in a table later in this testimony, displays an equal threshold used by the examiners for determination of errors on every applicant.

There is a further element of poor communications during this event. There is no record from any NRC examiner of any communications during an approximate 40 minute period of time where Ms. Smith notified the CRS of the Tave-to-Tref value and trend. This is a clear example of a deficiency in rating factor 4.b., "Did the applicant keep crew members … informed of plant status?"

Q.17. Please describe the critical task error committed by Ms. Smith regarding the PORV manipulation, noted in Ms. Smith's ES-303-1 p. 19, and which she contests in her Statement of Position 12.

A.17. Ms. Smith, as OATC, was expected to diagnose a failure of PT-456, and correctly perform the immediate operator actions of procedure 18001-C, "Systems Instrumentation Malfunction,"[10] Section C, which included:

- closing pressurizer spray valves
- closing the affected PORV, and
- operating heaters as necessary to restore pressure.

Ms. Smith was expected to complete these Immediate Operator Actions without requiring assistance from other crew members.

Ms. Smith correctly diagnosed that PT-456 failed high and immediately closed the pressurizer spray valves. However, she did not immediately close the affected PORV, or its associated PORV Block Valve, and PRZR pressure continued to lower. Approximately 30 seconds after initiation of the failure, the CRS loudly directed, "Shut that valve!" The applicant then closed the PORV to halt the pressure decrease. After the scenario, the applicant was asked to explain her response to the PT-456 failure. Ms. Smith stated that she had initially manipulated the PORV switch in the wrong direction. The applicant was downgraded in this competency because she did not manipulate the PORV handswitch in an accurate manner.

[10] Exhibit CCS-051.

As stated earlier, closing the PORV or its associated block valve should have been designated as a critical task in the original grading. NUREG-1021, Appendix D, Section D, states that a CT must have safety significance, cueing (an external stimulus to prompt the operator to perform the task), a measurable performance indicator, and performance feedback. The closing of the PORV or associated block valve contained all of the criteria required of a CT. The required action was safety significant because closing the PORV or associated block valve was necessary to maintain a fission product barrier. The proper cueing existed because the simulator provided necessary indications for the operator to diagnose and thereby prompt the required actions. A measurable performance indicator existed because Form ES-D-2 stated that the applicant was expected to close the PORV. Appropriate performance feedback existed because after closing the PORV, pressurizer pressure recovered, and PRT parameters stabilized. Therefore, all the CT criteria were met, but an oversight occurred by not correctly designating the PORV closure as a CT.

The PORV not being linked to a CT was an oversight during the exam preparation and should have been designated as a CT from the beginning. This oversight was not discovered during the initial grading, in part, because three errors were documented in the affected RF, which resulted in the lowest possible score of "1" for that RF. During the initial grading, if the PORV error would have been correctly designated as a CT, the score for that RF would have remained a "1" because that is the lowest possible score. The Region II exam team discovered their grading error when preparing to be interviewed by the informal review panel, and provided documentation of the PORV CT to the informal review panel as part of the "Binder" document.[11] During those interviews, the Region II exam team admitted to the review panel that the PORV error should have been designated as a CT error. The Region II exam team informed the review panel that the error was required to be graded as a failed CT in accordance with NUREG-1021.

[11] Exhibit CCS-039.

An example of another examination developed and administered by Region II that contained a similar critical task for PORV block valve closure can be seen on the Catawba 2012 examination.[12] Other examples also exist, as PORV failures are frequently used on initial license exams. The Catawba 2012 exam was provided as an example, however several other examples could be provided with additional research. Furthermore, it is worth noting that the 1979 accident at the Three Mile Island Unit 2 nuclear plant, which resulted in a partial core meltdown, was caused, in part, due to a failed open pressurizer PORV.

Q.18. Please describe the error committed by Ms. Smith regarding the RWST sludge mixing isolation valves' handswitches, noted in Ms. Smith's ES-303-1 p. 20, and which she contests in her Statement of Position 6.

A.18. Ms. Smith, as OATC, was expected to know the location of the Refueling Water Storage Tank (RWST) sludge mixing isolation valves' (1-LT-0991 & 1-LT-0990) handswitches, which were located on the control room back panel QPCP. As a result, Ms. Smith was expected to assist the crew in locating and closing the sludge mixing isolation valves in a timely manner following annunciation of ALB06-E04, RWST LO LEVEL. Ms. Smith was the OATC, therefore, it was not expected that she leave her control boards to close the valves. However, it was expected that she recommend to the crew that those valves' handswitches were located in the control room (and also modeled in the simulator) and that the automatic actions for those valves to close on low RWST level needed to be ensured.

After receipt of ALB06-E04, Ms. Smith did not recommend to the crew that they needed to ensure that the sludge mixing isolation valves were closed. During this event the BOP stated to Ms. Smith that the sludge mixing valves should have closed on low RWST level, but Ms. Smith did not recommend that the crew ensure that those control room handswitches be checked closed. The entire crew, including Ms. Smith, allowed the RWST leak to continue for approximately 19 minutes when the only action required to isolate the leak was closing the

[12] Exhibit NRC-024 at 16.

control room handswitches for the sludge mixing isolation valves, which should have been verified closed as part of performing the alarm response procedure associated with ALB06-E04.

The examiner downgraded Ms. Smith in RF 3.a, “Control Board Operations – Locate & Manipulate,” because she displayed weakness in the ability to locate, in a timely manner, the handswitches to close the RWST sludge mixing valves. Approximately 19 minutes elapsed, including conversations between ALL applicants that the sludge mixing valves should have automatically closed, without verifying the position of the isolation valves. It was not until the CRS pointed at the appropriate Piping and Instrumentation Diagram (P&ID) which provided the control room location (QPCP), that any of the crew members even left the Main Control Room proper to look at panel QPCP, which was located behind the main control boards, but still in the Main Control Room. Keep in mind that the crew dispatched operators to the location of the leak and the report back from the field was that the leak was “downstream of the sludge mixing valves,” and also, “Can’t tell the position of the valves (sludge mixing isolation valves). Leakage is in the valve gallery room.” Even with this information, none of the applicants even suggested that they should check the status of the sludge mixing valves on the back panel of the Main Control Room.

Again, it is worth referencing answers to Questions 29 and 30 which provide examples of the inaccuracy of Ms. Smith’s teammates’ signed statements that were provided for the RWST sludge mixing line leak during her request for a grading review (appeal). Her teammates made these same statements in their sworn testimony for this hearing. The examiner’s factual sequence of events is much more accurate due to their extensive use of notes taken during the exam and then using those notes soon after the exam to enhance their memory. The applicants likely developed their signed statements six to eight weeks after the simulator exam was administered, without the benefit of any notes, as there was nothing to prompt them to draft a statement sooner.

The examiners did not ask follow-up questions because during the post-scenario caucus it was determined that enough evidence existed to determine that the error was required to be placed in RF 3.a due to the applicants displaying weakness with locating the valves. This judgment was based on the applicants having conversations about the valves auto close feature, knowledge from the field operator that they observed the leak location as downstream of the sludge mixing isolation valves and they could not tell the position of the valves, combined with the fact that none of the operators even went to the back panel to look at the position of the sludge mixing isolation valves. The applicants are claiming that they knew the location of those valves and the 19 minutes of delay was due to trying to find the procedure guidance to close those valves. The examiners documented in their notes that the BOP stated that there was no guidance in the SI procedure for closing the sludge mixing valves (which was incorrect). Finally when the BOP went to panel QPCP, he closed the valves without first stopping the pumps. This was not in accordance with the procedure. ALL the evidence pointed to the fact that none of the operators knew the location of those switches, which is why there was no need to ask a follow-up question. Furthermore, once the CRS found the location of the valves on the P&ID, they all then learned the location of those valves, so a follow-up question after the scenario would not have been meaningful.

The performance of Ms. Smith's crew, and other crews as well, on the RWST leak was one of the primary concerns of the exam team during the simulator portion of the exam. Mr. Meeks included the RWST leak in the list of items that were discussed at the informal exit meeting with representatives of the facility. The item was significant because the RWST is a very important safety-related tank that does not have a redundant train to provide a backup water source. It was mentioned at the informal exit meeting because many of the crew members, not just Ms. Smith, exhibited weakness with the location of the switches and use of procedures. The exam team knew that many of the applicants would receive comments due to errors made on this event, and briefed the licensee management before even departing the

licensee's training facility. The following is taken from M. Meeks' notes that he prepared and used for conducting the briefing of licensee management prior to the exam team leaving the site:

> (15.) {DEBRIEF ONLY} All teams had problems with RWST sludge valves and ARP response; procedure for service air specifies QPCP panel, ARP does not. Also procedural usage—some other plants ARPs state to verify automatic actions occur, yours do not.[13]

As stated in the sections that describe the development of the exam material and the administration of the exams, Forms ES-D-1 and ES-D-2 are not intended to include all possible errors that any of the applicants could make. These forms are intended to outline which operator is most likely to diagnose and perform the verifiable actions for each of the events. At any time an applicant performs an action, makes a statement, neglects to perform an action, or neglects to correct an action, etc., the examiner can make a judgment on whether competence was displayed in one of the required areas. Examiners base their judgments on the applicant having a fair opportunity to display competence. When a fair opportunity does not exist for the applicant to display competence, then the applicant's performance is not downgraded. In this case, when the applicant had 19 minutes to state that those valves needed to be verified closed, a fair opportunity existed for ALL of the applicants to display competence. Six applicants received similar comments on this event, two of which were serving in the OATC position, yet had a fair opportunity to provide information on the location of the sludge mixing isolation valves' handswitches. The RF was assigned based on the root cause of the error and consistent with the grading approach discussed earlier, which stated that each error was only documented in one RF.

Q.19. Please describe the error committed by Ms. Smith regarding the TE-0130 failure diagnosis, noted in Ms. Smith's ES-303-1 p. 21, and which she contests in her Statement of Position 9.

[13] Exhibit NRC-023 at 3.

A.19. Ms. Smith, as OATC, was expected to diagnose the failure of TE-0130, Letdown Heat Exchanger Outlet Temperature, and manually control TV-0130 using controller 1TIC-0130, LETDOWN HX OUTLET TEMP.

When TE-0130 failed low, Ms. Smith acknowledged the associated alarms (ALB07-F04 & ALB07-B04), but did not take any actions to manually control letdown temperature, and also did not recommend to the CRS that she could manually control letdown temperature. Approximately seven minutes after the first alarm annunciated, Ms. Smith made the statement, "The only thing we can do is call C&T [Clearance & Tagging] to get the TE fixed." Approximately one minute later, the CRS directed Ms. Smith to take manual control of 1TIC-0130 and monitor the Volume Control Tank (VCT) outlet temperature. When Ms. Smith began manipulating 1TIC-0130, she initially pressed the up arrow, and the CRS immediately informed her that the controller raises and lowers temperature and that the arrows are not indicative of opening and closing the valve. After the incorrect manipulation and specific direction from the CRS, Ms. Smith gained control of letdown temperature. After the scenario, Ms. Smith was asked to explain her response to the malfunction. She stated that she initially pressed the up pushbutton, and then corrected her actions and pushed the down pushbutton.

Ms. Smith had seven minutes to understand that the automatic function of controlling letdown temperature could be accomplished manually. Instead of making this recommendation to the CRS, she stated that the only option was to call C&T to get the TE repaired. Furthermore, she demonstrated a weakness in taking manual control of an automatic function by her incorrect manipulation of 1TIC-0130. Ms. Smith was downgraded in this competency due to not demonstrating the ability to manually control an automatic function.

The examiner downgraded Ms. Smith in RF 3.c, "Control Board Operations – Manual Control," which is related to the ability to take manual control of automatic functions. The TE-0130 error was different from the PORV valve operation error in that a plant parameter was controlled in automatic under normal circumstances for the TE-0130 failure. The PORV failed in

the open position, which required it to be closed, but no parameter needed to be controlled. The PORV error was a switch that was not accurately manipulated. The TE-0130 error occurred because Ms. Smith made errors attempting to take manual control of an automatic function. She did not gain control of that automatic function until after the CRS provided very specific instructions as to how the controller operated.

Letdown heat exchanger outlet temperature is a plant parameter that is normally controlled by the automatic operation of the 1TIC-0130 controller, which throttles TV-0130 as appropriate. However, for this event, the TE-0130 temperature input to this controller failed low so that, though system temperature was still being automatically maintained by 1TIC-0130, it was being automatically maintained to the wrong temperature. Therefore, Ms. Smith was directed to take 1TIC-0130 out of automatic control and then maintain the system temperature within band by manually controlling the throttling of TV-0130. This manual control of a system that is otherwise normally controlled automatically to maintain a plant parameter is typical of an RF 3.c. task.

Whereas 1TIC-0130 is a controller that normally maintains a plant parameter automatically, a PORV is a safety feature that only operates in abnormal/emergency situations, specifically, in order to relieve an over-pressure situation. Unlike a controller such as 1TIC-0130, a pressurizer PORV is not the automatic feature that controls its associated plant parameter, that is, the pressurizer PORV is not used to automatically control primary pressure; this is done by pressurizer heaters and spray. Thus, taking manual control of pressurizer heaters and spray would be analogous to taking manual control of the letdown heat exchanger outlet temperature, but closing an opened pressurizer PORV would not.

At the time the initial grading was conducted, and again during the appeal review, the exam team specifically recalled Ms. Smith, along with the other two applicants, remaining in the vicinity of the TE-0130 controller throughout the duration of the event. The examiners recalled Ms. Smith specifically standing directly in front of the controller for the duration of the event.

The entire team of applicants being located in the vicinity of TE-0130 during the entire event is what prompted the conversation between P. Capehart and M. Bates about how long it had been since Ms. Smith had monitored key reactor parameters. This same concern is detailed in the section discussing the error with maintaining Tave/Tref within the 2°F band.

Actions associated with this event were not reassigned to the BOP operator. The BOP operator did reference the alarm response procedure, but Ms. Smith remained directly in front of the TE-0130 controller throughout the event. Ms. Smith's responsibilities to monitor the reactor were not reassigned to another operator, however, she remained in front of the TE-0130 controller. Ms. Smith was eventually directed by the CRS to take manual control of TE-0130, which further supports that the CRS did not reassign the task to another operator.

During the initial grading the exam team considered that more than one error could be documented in accordance with the guidance of NUREG-1021. The examiner considered that there were elements of RF 1.b and 3.b demonstrated during this event. These RFs are related to Ms. Smith's ability to demonstrate an understanding of how the plant, systems, and components operate and interact (including set points, interlocks, and automatic actions)?" More specifically, during this event, Ms. Smith stated, "there is nothing else we can do but call C&T…," demonstrating a lack of understanding that the controller could be operated in a manual mode. Furthermore, the CRS was then required to instruct Ms. Smith in the correct operation of the controller, which demonstrated that Ms. Smith had a deficiency in understanding how the controller operated.

Q.20. Did Ms. Smith commit any other documented errors during her operating test performance that are relevant to this proceeding?

A.20. Yes, six additional errors are relevant: (1) FIC-0121 Status Error: RF 4.a, (2) Immediate Op Action Status Error: RF 4.a, (3) SI Error: RF 4.a, (4) Shift Manager 1 Error: RF 4.b, (5) Shift Manager 2 Error: RF 4.b, and (6) ACCW 3-Way Error: RF 4.c.

Q.21. Please explain the FIC-0121 Status Error.

A.21. In response to LT-459 failing low, Ms. Smith, as CRS, directed the OATC to place FIC-0121 in manual to control pressurizer level. However, approximately one minute later, Ms. Smith stated during a crew brief that FIC-0121 was in automatic. The OATC quickly corrected the communication error. Ms. Smith was downgraded due to not clearly and accurately communicating the status of FIC-0121 to the crew.

Q.22. Please explain the Immediate Op Action Status Error.

A.22. Ms. Smith, as CRS, was expected to enter the correct procedure (18001-C) and begin performing the steps to address the failure of LT-459. Ms. Smith was not expected to direct the UO to perform Immediate Operator Actions because there were no Immediate Operator Actions associated with this failure.

Ms. Smith, in response to LT-459 failing low, directed the UO to perform Immediate Operator Actions. The UO responded that no Immediate Operator Actions existed. Ms. Smith then proceeded to enter the correct procedure and perform steps in the correct section of that procedure. After the scenario, Ms. Smith was asked what Immediate Operator Actions she had intended the UO to perform after the associated alarms were received. Ms. Smith stated that she had "misspoke" when providing that direction. Ms. Smith was downgraded in this competency because she did not communicate in a clear, accurate, and easily understood manner when she provided direction to the UO to perform Immediate Operator Actions that did not exist for the failure of LT-459.

Q.23. Please explain the SI Error.

A.23. Ms. Smith, as OATC, was expected to state that pressurizer pressure was not less than 1870 psig in accordance with procedure 19000-C, "E-0 Reactor Trip or Safety Injection," Step 4 RNO.

When the CRS directed Ms. Smith to "check if SI is required," Ms. Smith initially checked steam generator pressures, and then incorrectly informed the CRS that <u>pressurizer</u> pressures were 1020 psig and stable. The CRS did not correct the communication, nor did the applicant

correct the false information. The CRS did not direct any incorrect actions based on the communication error. Ms. Smith was downgraded in this competency because she did not communicate in an accurate manner when a determination was being made on whether safety injection was required.

Q.24. Please explain the Shift Manager 1 Error.

A.24. Ms. Smith, as CRS, was expected to request the Shift Manager's (SM) permission prior to placing 1-FIC-540 (SG #4 FRV) back to automatic after selecting the unaffected SG level control channel. Procedure NMP-OS-007-001, Version 9.0, "Conduct of Operations Standards and Expectations," Step 6.29.2.1, states, in part, "When a system or component has been placed in manual due to a transient caused by an automatic control malfunction, SM permission is required prior to returning the system or component to automatic control following stabilization from the transient and correction of the malfunction."

Ms. Smith incorrectly directed the UO to place 1-FIC-540 back to automatic without first getting permission from the SM. After Ms. Smith gave the direction to the UO, the OATC whispered to Ms. Smith that she needed to get the SM's permission prior to going to automatic. Ms. Smith then instructed the UO to wait to place 1-FIC-540 back to automatic until the SM's permission was obtained. Ms. Smith obtained the SM's permission, and then correctly directed the UO to place 1-FCI-540 back to automatic. Ms. Smith was downgraded due to not keeping the SM informed as required by NMP-OS-007-001. It was only the correction by the OATC that allowed the communication requirement to be met.

Q.25. Please explain the Shift Manager 2 Error.

A.25. Ms. Smith, as CRS, was expected to request the SM's permission prior to placing the pressurizer master pressure controller back to automatic following the selection of an unaffected pressurizer channel. Procedure NMP-OS-007-001, Version 9.0, "Conduct of Operations Standards and Expectations," Step 6.29.2.1, states, in part, "When a system or component has been placed in manual due to a transient caused by an automatic control

malfunction, SM permission is required prior to returning the system or component to automatic control following stabilization from the transient and correction of the malfunction."

Ms. Smith incorrectly directed the UO to place the pressurizer master pressure controller back to automatic without first getting permission from the SM. Ms. Smith was downgraded due to not keeping the SM informed as required by NMP-OS-007-001. This error was made during Event 4 and the previous error occurred during Event 1. Ms. Smith was corrected by another operator during Event 1, yet she made the exact same mistake three events later.

Q.26. Please explain the ACCW 3-Way Error.

A.26. Ms. Smith, as CRS, was expected to acknowledge communication of technical data in accordance with the three-way communication standards stated in procedure 00004-C, "Plant Communications," Revision 9.5. Specifically, during this event when the UO stated that alarms were consistent with the failure of the ACCW pump malfunctions, it was expected that Ms. Smith repeat the information and the UO complete the communication by stating that the repeated information was correct.

The UO clearly stated to Ms. Smith that the alarms were consistent with the ACCW pump malfunctions, but Ms. Smith did not repeat the information. Also, the UO did not ensure that Ms. Smith correctly received the information.

Discussion – Region II Regrade During Appeal

Q.27. Please describe the involvement of Region II staff during the administrative review of Ms. Smith's operating test grade.

A.27. OLMC-500, "Processing Requests for Administrative Reviews and Hearings," states that administrative reviews will take into account any regional and/or any examiner of record input.[14] The affected region is responsible for answering questions and providing input as requested by NRR Operator Licensing and Training Branch (IOLB). OLMC-500 also states that the review panel will establish and maintain communications with the affected region and

[14] *See* Exhibit CCS-030 at 1.

IOLB, in order to ensure that the review results include regional and IOLB input.[15] It is important to highlight this because only three examiners observed and documented the applicant's performance. It is imperative that even an independent review panel capture the observations and facts from these examiners. It is also imperative that the IOLB program office, specifically the Branch Chief, have input to the process to ensure that the guidance in NUREG-1021 is properly applied.

OLMC-500 states that the reviewer(s) shall utilize NUREG-1021, ES-303 to determine the applicant's overall operating test score based on the contested items, as well as the remaining test items.[16] In other words, a re-grade of all items is necessary in order to accurately assess an applicant's performance, not just the items dictated by the applicant who was denied a license. When conducting this re-grade, it is possible for an applicant's score to change in either direction, higher or lower – the goal is accuracy and compliance with NUREG-1021. For example, a recent simulator exam appeal in Region II was conducted for a Crystal River 3 applicant. During that re-grade, the applicant's scores went down[17] and the denial was sustained.

In response to the applicant's original appeal, the Region II exam team re-graded the applicant. The exam team self-identified three additional errors. The exam team also identified that one of the original errors was associated with a critical task (See first column of previous table: ES-303-1, Page 19), but was not initially designated as such. It is important to note that the error associated with the CT was assigned to RF 3.a, which already had a total of three errors assigned. Three errors results in a score of "1" for a RF and any one error associated with a CT also results in a score of "1"; therefore, failing to identify the CT during the original grading did not have an impact on the scoring, and consequently did not impact the licensing

[15] *Id.* at 3.
[16] *Id.* at 9.
[17] Exhibit CCS-036.

decision. It is also worth noting that the Crystal River 3 appeal mentioned above also identified a CT during the re-grade that was not designated as such during the initial grading.

The following is taken from Region II's re-grade during the administrative review:

> This response to the Review Panel's conclusion is intended to show the NRR Program Office, the most accurate evaluation of the applicant's performance. The following conclusions by Region II's Exam Team are based on the observation of three examiners with extensive Industry and NRC experience. Region II considered the Review Panel's Report in combination with the Exam Team's first hand observation of the applicant's performance and applied the guidance of NUREG-1021 to provide the Program Office with an accurate evaluation that is defensible by the only three examiners that actually observed the applicant's performance.
>
> The Region II Exam Team concluded, with the opportunity of hindsight and deeper evaluation, that the initial evaluation as documented in the denial was largely accurate. The Region II Exam Team did, however, agree with some aspects of the Review Panel's Report for assigning some errors to additional rating factors. Region II's final conclusion is that the original denial should be sustained. Region II's revised Form 303-1 can be found at the end of this document (Page 11 of 11).[18]

As stated above, even with the benefit of hindsight and the luxury of more time, Region II's initial and revised grading contained only minor differences.

Q.28. What is the proper approach when an applicant's version of events disagrees with the examiners' documentation and recollection of events?

A.28. OLMC-500 states that if the applicant's version of the events disagrees with the examiner of record's version, the reviewers are generally expected to utilize the NRC examiner's version of events in conducting the review, unless there is impartial (e.g., simulator recordings) evidence to the contrary.[19] The examiners have the only retained notes that document the performance of the applicant. The examiners also have the ability to use their notes to enhance their memory of her performance. Also, the examiners were able to utilize both their notes and memories to document the applicant's performance within days of the administration of the scenarios. Any notes or documentation developed by Ms. Smith or her

[18] Exhibit CCS-060 at 1.
[19] Exhibit CCS-030 at 8.

teammates would have been based mostly on memory of their performance approximately six to eight weeks earlier.

Consider the error with the RWST Sludge Mixing Line Leak and failure to automatically isolate.[20] Ms. Smith's teammates supplied signed statements based on their recollection several weeks earlier. However, examiner documentation made at the time of the events contradicts the accuracy of those points.

Q.29. How does Mr. Turner's version of events conflict with the actual events surrounding Ms. Smith's error with the RWST Sludge Mixing Line Leak and failure to automatically isolate, as documented by the examiners at the time those events took place?

A.29. Mr. Turner's version of events is incorrect, as evidenced by documentation created at the time of the examination, in at least four respects.

First, Mr. Turner states: "Rodney informed me, by name, not Carla of the automatic action that did not take place." According to the Examiner Factual Sequence of Events: At 09:06:47, Rodney Waltower quietly stated to Ms. Smith, "sludge mixing should have isolated on low RWST level." This was documented in M. Bates' notes.

Second, Mr. Turner states: "There was never any confusion as to where the handswitches were located by either Rodney or me." According to the Examiner Factual Sequence of Events: At approximately 09:13, J. Turner pointed at the sludge mixing valves on the P&ID, which also stated the location of the switches in the control room, control panel QPCP.[21] It was only then that Mr. Waltower went to that panel to close the valves, or even verify their position. Also, in M. Bates' notes found in that same binder tab, it can be seen that reports from the field stated that the leak was downstream of the sludge mixing isolation valves and that they could not tell the position of the valves. Even with this information, none of the applicants verified the position of the associated handswitches in the control room.

[20] Exhibit NRC-037.
[21] *Id.*

Third, Mr. Turner states: “I made a conscience decision to isolate the sludge mixing system by use of the SOP 13105-1 Step 4.2.7.3. This decision was based on not isolating the system with the pump running.” According to the Examiner Factual Sequence of Events: The examiners, both M. Meeks and P. Capehart, recalled the valves being closed while the pump was running. The pump then automatically tripped. Furthermore, ALB06-E04 stated that the sludge mixing valves should have automatically closed. Also according to the Examiner Factual Sequence of Events: At approximately 09:12 R. Waltower informed J. Turner that there was no instruction in the SI (safety injection) OP for closing the sludge mixing valves. This is documented in P. Capehart’s notes.

Fourth, Mr. Turner states: “The delay of 19 minutes was incurred while reviewing the P&ID for the RWST and finding the correct procedure and step to isolate the sludge mixing system.” According to the Examiner Factual Sequence of Events: At approximately 09:12 R. Waltower informed J. Turner that there was no instruction in the SI (safety injection) OP for closing the sludge mixing valves. This is documented in P. Capehart’s notes. J. Turner pointed at the valves on the P&ID. The P&ID clearly stated the panel location in the control room. At approximately 09:13 R. Waltower closed the valves, but did not manually stop the pump.

Q.30. How does Mr. Waltower’s version of events conflict with the actual events surrounding Ms. Smith’s operating test performance, as documented by the examiners at the time those events took place?

A.30. Mr. Waltower’s version of events is incorrect, as evidenced by documentation created at the time of the examination, in at least three respects.

First, Mr. Waltower states: “There was no confusion on where the valves were located.” According to the Examiner Factual Sequence of Events: Discussions were held, as documented in Binder Tab 12, by all three applicants with respect to the sludge mixing valves

being designed to automatically isolate on low RWST level.[22] The entire duration of the event, almost 20 minutes, none of the applicants even attempted to look to see if those valves automatically closed. It was not until J. Turner pointed to the panel designation on the P&ID, QPCP, that any of the operators even approached the panel containing the switches for those valves. Also, in M. Bates' notes found in that same binder tab, it can be seen that reports from the field stated that the leak was downstream of the sludge mixing isolation valves and that they could not tell the position of the valves. Even with this information, none of the applicants verified the position of the associated handswitches in the control room.

Second, Mr. Waltower states: "Jamie [Turner] discussed with me procedural guidance for shutting the valves and directed me to find the SOP for removing the sludge mixing system from service. I agreed with this action so that challenging automatic actions of systems is expectations of both Operations and Operations Training being reinforced throughout license training." According to the Examiner Factual Sequence of Events: At approximately 09:12 R. Waltower informed J. Turner that there was no instruction in the SI (safety injection) OP for closing the sludge mixing valves (documented in P. Capehart's notes).[23] J. Turner pointed at the valves on the P&ID. The P&ID clearly stated the panel location in the control room. At approximately 09:13 R. Waltower closed the valves, but did not manually stop the pump. Also, consider the EHC pump trip and manual start of the standby pump.[24] The accuracy of R. Waltower's signed testimony is questionable.

Third, Mr. Waltower states: "While she was reviewing the procedure I did observe the annunciator for the EHC pressure illuminate." During the preparation week when the exam team evaluated all of the dynamic simulator material in the Vogtle simulator, an evaluation took place on the time required for EHC pressure to lower to the point where ALB20-D05, HYD FLUID LO PRESS, would alarm following the EHC pump trip. The Form ES-D-2, for Scenario

[22] *Id.*
[23] *Id.*
[24] Exhibit NRC-033.

3, Event 5,[25] contained a statement that it would take "SEVERAL MINUTES" for ALB20-D05 to alarm. During the preparation week, the examiners ran this event without starting the standby EHC pump so that they could ensure the accuracy of "SEVERAL MINUTES for ALB20-D05 to alarm." This statement on page 21 of Form ES-D-2 was validated to be accurate during this demonstration to allow the pressure to lower without starting the standby pump. ALB20-D05 alarms at 1500 psig. The standby EHC pump does not start until EHC pressure lowers to 1400 psig. The examiners were monitoring ALB20-D05, which they could easily observe from anywhere within the Main Control Room proper. ALB20-D05 did not alarm. One minute thirty one seconds elapsed from the time the EHC pump tripped until Ms. Smith directed the start of the standby EHC pump. One minute and 31 seconds is less than "SEVERAL MINUTES," as stated on Form ES-D-2 and as observed during validation of the scenario. When compared to Form ES-D-2, Page 21, and the examiner's notes, the statement by R. Waltower appears to be inaccurate.

Q.31. What do you wish to show with the above comparisons?

A.31. The purpose of the above discussion was to provide an example of why OLMC-500 requires the appeal review to default to the examiner's version of the events when there is a disagreement with the applicant's version of the events, unless there is impartial evidence to the contrary. The above example depicts how the examiner's notes taken during the scenario, as well as their memories used to document the applicant's performance within days of the exam, impact the accuracy of the evaluation. It is then practical to extrapolate this apparent inaccuracy of the applicants' statements, where impartial evidence does exist, to the other events where not as much impartial evidence exists (e.g.: Tave/Tref and TE-0130 events). It is logical to consider that the examiners' notes and documentation of the events are likely more accurate than that provided by the applicants.

Discussion – Equal Treatment of All Applicants

[25] Exhibit CCS-048.

Q.32. Were the preparation, administration, and execution of Ms. Smith's 2012 exam the same as that for all other applicants taking that 2012 exam?

A.32. Yes. JPM comments were made using a similar threshold for all applicants. If the applicant made an error that prevented the successful completion of the task, or placed the plant in a less safe condition, then the applicant normally received an unsatisfactory score. If the applicant simply made an error then self-corrected, made an error that did not hinder the completion of the task and did not result in the plant being in a less safe condition, then the applicant typically received a comment on Form 303-1, but received a score of satisfactory for that JPM.

The following table cross-references comments for those JPMs on which Ms. Smith received comments to similar comments made on other applicants. It should be noted that Ms. Smith did not receive an unsatisfactory score on any JPM, but she did receive comments on four JPMs. The table will reflect that in all cases, similar comments were made for similar mistakes by other applicants. This table as well as the supporting pages from the various Form 303-1s from the other applicants can be accessed at Exhibit NRC-043.

Applicant	**Admin JPM c**	**Systems JPM a**	**Systems JPM d**	**Systems JPM g**
Carla Smith	Pass w/ Comment	Pass w/ Comment	Pass w/ Comment	Pass w/ Comment
Operator H	Pass w/ Comment		Pass w/ Comment	Pass w/ Comment
Operator G		Pass w/ Comment		Pass w/ Comment
Operator M	Pass w/ Comment		Pass w/ Comment	Pass w/ Comment
Operator N			Pass w/ Comment	Pass w/ Comment
Operator U			Pass w/ Comment	Pass w/ Comment
Operator O			Pass w/ Comment	
Operator S		Pass w/ Comment	Pass w/ Comment	

Operator Q		Pass w/ Comment	Pass w/ Comment	
Operator J			Pass w/ Comment	
Operator R		Pass w/ Comment	Pass w/ Comment	
Operator L		Pass w/ Comment		

Simulator comments were also made using a similar threshold for all applicants. NUREG-1021 provides pertinent guidance that was used as a basis for the exam team's evaluation of the applicant's performance in the various Competencies. ES-303, section D.2.b, states:

> Using Form ES-303-3 or ES-303-4, depending on the applicant's license level, and the following generic guidance, evaluate any deficiencies coded for the simulator test to determine a grade for every applicable rating factor (RF) and competency. Keep in mind that the simulator test is generally graded based on competencies rather than consequences; every error that reflects on an operator's competence is considered equal unless it is related to the performance of a critical task (as determined in accordance with ES-301 and Appendix D).[26]

Therefore, errors that reflected an operator's competence in any of the rating factors were documented as required by NUREG-1021.

There are numerous examples of applying a similar threshold, as shown for the JPMs, for what was considered to be an error on the simulator also. The following table displays a cross-reference of Ms. Smith's errors to other applicant's errors where a similar threshold was used. In many cases the exact same error was documented in the exact same rating factor. Small differences may be seen for some examples due to the applicant standing in a different position when the error was made, or due to the other applicant displaying a different root cause for making the error. The intent of this table is not to show every example and all similarities. The purpose is to show a pattern of fairness by showing several examples where a similar threshold was applied. It is also worth noting that Ms. Smith made more errors than the other

[26] Exhibit CCS-005A.

applicants; therefore, there was not a one-for-one comparison to be made for all of the comments documented for her performance in the simulator. This table as well as the supporting pages from the various Form 303-1s from the other applicants can be accessed at Exhibit NRC-043.

Rating Factor	**Form 303-1 Pg # for Carla's Comment**	**Applicant and Form 303-1 Pg # for Similar Comment using Similar Threshold / Examiner of Record for Similar Comment**
1.b	8	Operator S Pg 9 / Bates Operator M Pg 11 / Capehart
1.b	10	Operator N Pg 17 / Capehart
1.c	12	Similar threshold can be seen generally via other comments in this table.
1.c	14	Operator Q Pg 13 / Bates Operator S Pg 10 / Bates Operator V Pg 10 / Meeks Operator R Pg 8 / Meeks Operator L Pg 9 / Capehart
1.d	16	Operator Q Pg 12 / Bates Operator V Pg 11 / Meeks
3.a	18	Operator Q Pg 14 / Bates Operator V Pg 14 / Meeks
3.a	19	Similar threshold can be seen generally via other comments in this table.
3.a	20	Operator S Pg 11 / Bates Operator N Pg 15 / Capehart Operator V Pg 7 / Meeks Operator M Pg 10 / Capehart Operator U Pg 7 / Meeks
3.c	21	Operator O Pg 10 / Bates
4.a	23	Operator L Pg 13 / Capehart
4.a	24	Operator V Pg 12 / Meeks
4.a	25	Similar threshold can be seen generally via other comments in this table.
4.b	26	Operator Q Pg 15 / Bates Operator S Pg 12 / Bates
4.b	27	Operator Q Pg 15 / Bates Operator S Pg 12 / Bates
4.c	28	Operator N Pg 18 / Capehart Operator V Pg 13 / Meeks
6.a	29	Operator P Pg 14 / Meeks Operator P Pg 15 / Meeks
6.a	30	Operator S Pg 13 / Bates
6.a	31	Operator Q Pg 16 / Bates

		Operator V Pg 15 / Meeks Operator R Pg 10 / Meeks

Lastly, a fairness review was conducted by an independent Region II Branch Chief. This review contained questions and answers to all three examiners with respect to fairness and rigor of evaluation.[27] The other two examiners' responses to these questions can be accessed at Exhibits CCS-001 and CCS-006.

Discussion – Region II Grading of Ms. Smith's 2012 Operating Test

Q.33. Please explain how Region II graded Ms. Smith's 2012 operating test and why that grading resulted in a denial of her license.

A.33. As stated above, NUREG-1021 provides the following guidance for determining satisfactory and unsatisfactory performance on the dynamic simulator portion of the operating test. The following is extracted from ES-303, Page 6 of 19:[28]

- If the grade for *all* competencies is greater than 1.8, the applicant's performance is generally satisfactory.
- If the grade for Competency 4, "Communications and Crew Interactions," is less than or equal to 1.8 but greater than 1.0, *and* the individual grades for *all* other competencies are 2.0 or greater, the applicant's performance is satisfactory.
- If the grade for Competency 4 is 1.0, *or* the grade for any other competency is 1.8 or less, the applicant's performance is unsatisfactory.

Eighteen errors were documented on Form, ES-303-1.[29] For Ms. Smith, each error was assigned to only the one RF that was most closely associated with the root cause of the error.

The initial grading included three pathways to a failing score. The applicant received a score of 1.70 in Competency 1, "Interpretation/Diagnosis," which resulted in a failure due to the score for that competency not being greater than 1.80. The applicant received a score of 1.20 in Competency 4, "Communications," which on its own did not result in a failure; however, it raised the minimum score for passing (cut score) in all other competencies to 2.00 or greater,

[27] Exhibit NRC-014.
[28] Exhibit CCS-005A.
[29] Exhibit NRC-045.

versus greater than 1.8. Because the applicant received a score of 1.99 in Competency 3, “Control Board Operations,” a failure pathway existed due to the higher cut score induced by the low Competency 4, “Communications,” score. A third, and partially redundant, failure pathway existed for the Competency 2, “Interpretation/Diagnosis,” score also being less than 2.00, due to the higher cut score induced by the low Competency 4, “Communications,” score.

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CHARLISSA C. SMITH	)	Docket No. 55-23694-SP
	)	
(Denial of Senior Reactor Operator License Application)	)	
	)	

AFFIDAVIT OF MARK A. BATES CONCERNING THE CLAIM BY CHARLISSA C. SMITH THAT THE NRC IMPROPERLY DENIED HER SENIOR REACTOR OPERATOR LICENSE APPLICATION

I, Mark A. Bates, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my statement of professional qualifications are true and correct to the best of my knowledge and belief.

Executed in Accordance with 10 C.F.R. § 2.304(d)

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Executed in Rockville, Maryland
this 31st day of May, 2013

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CHARLISSA C. SMITH	)	Docket No. 55-23694-SP
	)	
(Denial of Senior Reactor Operator License Application)	)	
	)	

AFFIDAVIT OF PHILLIP G. CAPEHART CONCERNING THE CLAIM BY CHARLISSA C. SMITH THAT THE NRC IMPROPERLY DENIED HER SENIOR REACTOR OPERATOR LICENSE APPLICATION

I, Phillip G. Capehart, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my statement of professional qualifications are true and correct to the best of my knowledge and belief.

Executed in Accordance with 10 C.F.R. § 2.304(d)

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Executed in Rockville, Maryland
this 31st day of May, 2013

UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ATOMIC SAFETY AND LICENSING BOARD

In the Matter of	)	
	)	
CHARLISSA C. SMITH	)	Docket No. 55-23694-SP
	)	
(Denial of Senior Reactor Operator License Application)	)	
	)	

AFFIDAVIT OF MICHAEL K. MEEKS CONCERNING THE CLAIM BY CHARLISSA C. SMITH THAT THE NRC IMPROPERLY DENIED HER SENIOR REACTOR OPERATOR LICENSE APPLICATION

I, Michael K. Meeks, do hereby declare under penalty of perjury that my statements in the foregoing testimony and my statement of professional qualifications are true and correct to the best of my knowledge and belief.

Executed in Accordance with 10 C.F.R. § 2.304(d)

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Executed in Rockville, Maryland
this 31st day of May, 2013