May 6, 2005

Mr. L. William Pearce
Site Vice President
FirstEnergy Nuclear Operating Company
Beaver Valley Power Station
Post Office Box 4
Shippingport, Pennsylvania 15077

SUBJECT: BEAVER VALLEY - OPERATOR AND SENIOR REACTOR OPERATOR INITIAL EXAMINATION REPORT NO. 05000334/2005301 AND 05000412/2005301

Dear Mr. Pearce:

This report transmits the results of the Reactor Operator (RO) and Senior Reactor Operator (SRO) licensing examination conducted by the NRC during the period of February 28, 2005, to March 7, 2005. This examination addressed areas important to public health and safety and was developed and administered using the guidelines of the “Examination Standards for Power Reactors” (NUREG-1021, Revision 9).

Based on the results of the examination, eight of the eight Senior Reactor Operators and two of the three Reactor Operator applicants passed all portions of the examination. One Reactor Operator applicant failed the written portion of the examination. The 11 applicants included three ROs, seven instant SROs and one upgrade SRO. Mr. Stephen Barr and Mr. Steven Dennis discussed performance insights observed during the examination with Mr. Tom Gaydosik on March 3, 2005. On April 15, 2005, final examination results, including individual license numbers, were given during a telephone call between Mr. Richard Conte and Mr. Pete Senna.

In accordance with 10 CFR 2.390 of the NRC's "Rules of Practice," a copy of this letter and its enclosure will be available electronically for public inspection in the NRC Public Document Room or from the Publicly Available Records (PARS) component of NRC’s document system (ADAMS). These records include the final examination and are available in ADAMS for Unit 2 Accession Package Number ML041330062; SRO Written - Accession Number ML050900372; SRO Operating Section A - Accession Number ML050900374; SRO Operating Section B - Accession Number ML050900380; and SRO Operating Section C - Accession Number ML050900384; and for Unit 1 Accession Package Number ML042440185; RO and SRO Written - Accession Number ML051240138; RO and SRO Operating Section A - Accession Number ML051240140; RO and SRO Operating Section B - Accession Number ML051240141; and RO and SRO Operating Section C - Accession Number ML051240145; and, for both units, Facility Post Examination Comments on the Written Exams - Accession No. ML051240476. ADAMS is accessible from the NRC Web site at http://www.nrc.gov/reading-rm/adams.html (the Public Electronic Reading Room).

Should you have any questions regarding this examination, please contact me at (610) 337-5183, or by E-mail at RJC@NRC.GOV.

Sincerely,

/RA/

Richard J. Conte, Chief
Operations Branch
Division of Reactor Safety

Docket Nos: 50-334; 50-412
License Nos: DPR-66; NPF-73

Enclosure: Initial Examination Report Nos. 05000334/2005301 and 05000412/2005301

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REGION I

Docket Nos:	50-334, 50-412
License Nos:	DPR-66; NPF-73
Report Nos:	05000334/2005301 and 05000412/2005301
Licensee:	First Energy Nuclear Operating Company
Facility:	Beaver Valley Units 1 and 2
Dates:	March 7, 2005 (Written Examination Administration) February 28 to March 3, 2005 (Operating Test Administration) March 4 to April 14, 2005 (Examination Grading) March 22, 2005 (Receipt of Final Post Examination Comments)
Examiners:	Stephen Barr, Senior Operations Engineer (Chief Examiner, Unit 1) Steven Dennis, Senior Operations Engineer (Chief Examiner, Unit 2) Peter Presby, Operations Engineer Donald Jackson, Operations Engineer Harry Balian, Operations Engineer Joseph D'Antonio, Operations Engineer
Approved by:	Richard J. Conte, Chief Operations Branch Division of Reactor Safety

SUMMARY OF FINDINGS

IR 05000334/2005301 and 05000412/2005301; 2/28/05 to 3/7/05; Beaver Valley Units 1 and 2; Initial Operator Licensing Examination. Ten of eleven applicants passed the examination, two reactor operators, seven SRO instants, and one SRO upgrade.

The written examinations were administered by the facility and the operating tests were administered by six NRC region-based examiners. There were no inspection findings of significance associated with the examinations.

A. <u>Inspector Identified Findings</u>

No findings of significance were identified.

B. <u>Licensee Identified Findings</u>

No findings of significance were identified.

REPORT DETAILS

1. REACTOR SAFETY

Mitigating Systems - Reactor Operator (RO) and Senior Reactor Operator (SRO) Initial License Examination

a. Scope of Review

The facility examination team developed the written and operating initial examination and together with NRC Region I examiner staff verified or ensured, as applicable, the following:

- The examination was prepared and developed in accordance with the guidelines of Revision 9 of NUREG-1021, "Operator Licensing Examination Standards for Power Reactors." A review was conducted both in the Region I office and at the Beaver Valley plant and training facility. Final resolution of comments and incorporation of test revisions were conducted during and following the onsite preparation week.

- Simulation facility operation was proper.

- A test item analysis was completed on the written examination for feedback into the systems approach to training program.

- Examination security requirements were met.

The NRC examiners administered the operating portion of the examination to all applicants from February 28, 2005 to March 3, 2005. The written examination was administered by the Beaver Valley training staff on March 7, 2005.

b. Findings

Grading and Results

Ten (8 SROs and 2 ROs) of eleven applicants passed all portions of the initial licensing examination.

The facility had four post-examination comments on the RO portion of the written examination. The NRC resolutions of these comments are attached. Based on these comment resolutions, the NRC re-graded all of the applicants' written examinations. The re-grading of the written examinations resulted in two RO applicants achieving passing grades, rather than failing grades on the written exam as originally determined by the licensee.

Examination Administration and Performance

No findings of significance were identified

4OA6 Exit Meeting Summary

On April 15, 2005, the NRC provided conclusions and examination results to Beaver Valley management representatives via telephone. License numbers for eight of ten applicants were also provided during this time. License numbers for the remaining two applicants were withheld pending completion of their required six months onsite experience. Mr. Pete Senna was informed that when the NRC is notified in writing that these two individuals have completed their 6-month experience, their licenses would be issued.

The NRC expressed appreciation for the cooperation and assistance that was provided during the preparation and administration of the examination by the licensee's training staff.

ATTACHMENT 1

SUPPLEMENTAL INFORMATION

KEY POINTS OF CONTACT

Licensee Personnel

T. Gaydosik, Manager, Operator Training
T. Wooley, Senior Instructor, Operator Training

NRC

S. Barr, Senior Operations Engineer
S. Dennis, Senior Operations Engineer
D. Jackson, Senior Project Engineer
H. Balian, Operations Engineer
J. D'Antonio, Operations Engineer
P. Presby, Operations Engineer

LIST OF ITEMS OPENED, CLOSED, AND DISCUSSED

ITEM NUMBER	TYPE	DESCRIPTION
NONE		

ATTACHMENT 2

Licensee's Post Written Examination Comments Publically Available
ADAMS Accession No. ML051240476

Note: The licensee's post exam comments regarding these four questions were received by the NRC on March 22, 2005. During the exam there were no questions from the applicants regarding either any of these questions. The NRC's resolution for these four post exam comments is based on the independent reviews that were conducted by both NRC chief examiners assigned to the exam team as well as the Branch Chief.

<u>Original Question # 43:</u>

Unit 1

Given the following conditions:

- The Unit is in Mode 5.
- A loss of RHR cooling occurred due to a loss of CCR.
- The RO reports that all CCR pumps are tripped.
- The crew is performing actions of AOP-1.10.1, Residual Heat Removal System Loss.

Which ONE of the following describes the reason for monitoring RHR temperature at this time?

A. RHR temperature must be logged to determine time to RCS saturation.

B. RHR temperature must be logged to determine time available to vent RHR pumps.

C. If temperature exceeds 180°F, the RHR pumps must be tripped to prevent seal damage.

D. If temperature exceeds 180°F, the RHR pumps must be tripped to prevent cavitation.

Unit 2

Given the following conditions:

- The Unit is in Mode 5.
- A loss of RHS cooling has occurred.
- The crew is performing actions of AOP-2.10.1, Residual Heat Removal System Loss.
- The RO reports that CCP pumps CANNOT be started.
- The US directs the RO to monitor RHS system temperature.

Which ONE of the following describes the reason for monitoring RHS temperature at this time?

A. RHS temperature must be logged to determine time to RCS saturation.

B. RHS temperature must be logged to determine time available to vent RHS pumps.

C. If temperature exceeds 180°F, the RHS pumps must be tripped to prevent seal damage.

D. If temperature exceeds 180°F, the RHS pumps must be tripped to prevent cavitation.

<u>LICENSEE'S JUSTIFICATION FOR CHANGE:</u>

- The BVPS position is to accept two answers to this question; Answers "A" or "C." The original correct answer is "C."

- The initial conditions of the question stated a loss of RHR/RHS had occurred and did not state the status of the RHR/RHS pumps. The status of these pumps at the onset of the event is critical in determining the correct answer.

- The initial conditions of the question did however state that AOP 1(2).10.1, Residual Heat Removal System Loss, was being exercised. Four of the six Entry Conditions for this procedure are directly related to a loss of the running RHR/RHS pumps. The other two Entry Conditions address temperature issues, which could be related to a loss of the running pumps or could be due to the loss of cooling water (CCR/CCP).

- Additionally, the status of the RCS pressure and temperature were not listed in the stem of the question. What was listed was that the unit was in Mode 5 and that core cooling was lost. Under these conditions it is quite possible that RCS subcooling could be quickly lost, requiring the operator to stop the RHR/RHS pumps due to cavitation as directed by AOP 1(2).10.1, Residual Heat Removal System Loss, Step 6, Response Not Obtained (RNO).

- Based on the information provided in the stem of the question, the AOP entry conditions, and the AOP steps requiring the RHR/RHS pumps to be stopped if cavitating, there exists enough ambiguity that the status of the RHR/RHS pumps is indeterminate during this event.

- If the RHR/RHS pumps were operating throughout this event, answer “C” would be correct per AOP 1(2).10.1, Residual Heat Removal System Loss, step 9.c, Response Not Obtained (RNO) column.

- If the RHR/RHS pumps were NOT operating at the onset of the event, due to events other than power supply related problems, or if they were stopped during the event due to cavitation, answer “A” would be correct per AOP 1(2).10.1, Residual Heat Removal System Loss, steps 5.a.2) Response Not Obtained (RNO) and step 11.b.

- Answer “A” was originally stated as being incorrect because it stated that RHR/RHS temperature would not be monitored for time to saturation, RCS temperature would be monitored. However, from the initial conditions, RHR/RHS temperature would be indicative of RCS temperature as stated below.

  - In the question stem, a loss of all forced cooling flow (CCR/CCP) through the RHR/RHS Heat Exchangers exists. This would lead to the RHR/RHS Heat Exchanger inlet and outlet temperatures being the same as the bulk RCS temperature.

$$T_{RCS} = T_{RHR\ HX\text{-}in} = T_{RHR\ HX\text{-}out}$$

  - For this reason, RHR/RHS temperature, as stated in Answer “A,” can be substituted for RCS temperature.

- Answers “B” and “D” are still incorrect as stated in the original exam submittal.

- From an operational and reactor safety perspective, the overall intent of the Loss of RHR/RHS procedure is to either restore reactor core cooling via the RHR/RHS system or establish an alternative means of cooling the reactor core. The necessity to establish an alternative means of core cooling is governed by the time to RCS saturation. Many of the candidates selected answer “A” based on this reactor safety perspective.

- It is for these reasons that for question #48, answers “A” and “C” should be accepted as being correct answers and “B” and “D” should be considered as incorrect answers.

NRC RESOLUTION:

The NRC staff reviewed the abnormal and emergency operating procedures (noted above in the licensee discussion section) for this question.

In regard to answer “C” (the original correct answer):

Answer “C” states that the reason for monitoring RHS temperature is if temperature exceeds 180 degrees F, the RHR/RHS pumps must be tripped to prevent seal damage.

The status of the RHR/RHS pumps is not provided in the question stem. If actions are taken based on at least one pump running, then in accordance with procedure 2.10.1, Rev.1, “RHR System Loss,” step 5.b. is to “Log RHR/RHS Pump amps every 10 minutes until degraded condition is terminated.”

Additionally, the question stem states that CCP pumps cannot be started. Procedure 2.10.1, step 9, states “Verify Component Cooling Water Operation” and the RNO column for step 9.c. states “If RHS temperature is greater than 180 degrees F, Then stop RHR/RHS pumps to prevent damage to mechanical seals.”

Therefore, based on the procedural steps described above and the stem not stating the status of the RHR/RHS pumps, the staff concludes that answer “C” is correct.

In regard to answer “A” (the proposed additionally correct answer):

Answer “A” states that the reason for monitoring RHS temperature is that RHS temperature must be logged to determine time to RCS saturation. The status of the RHR/RHS pumps is not provided in the question stem. If actions are taken based on no pumps running, in accordance with procedure 2.10.1, step 11.b, the action required is to “perform Attachment 4 or request STA to calculate time to saturation using computer program while continuing with this procedure.”

Therefore, based on the procedure steps described above and the question stem not stating the status of the RHR/RHS pumps, the staff concludes that answer “A” is correct.

In regard to answers “B” and “D”:

Based upon procedural review, the staff determined that these answers are not correct. (No change from original submittal.)

Conclusion

The NRC staff reviewed the procedure references (noted above in the licensee discussion section) for this question. Based upon procedure review and the lack of specificity in regard to the exact status of the RHR/RHS pumps in the question stem, it is reasonable to determine that “A” and “C” could be considered as correct. Therefore, the staff concludes that answer “A” as well as the original answer “C,” be accepted as correct.

Original Question # 58:

Given the following conditions:

The Unit is operating at 100% power, with all systems in NSA.

- The RO recognizes that Control Bank “D,” Group 2, and Control Bank “B,” Group 2 control rods drop just prior to a reactor trip.

Which ONE of the following is the cause of the failure?

A. Logic Cabinet Oscillator failure

B. Logic Cabinet Master Cycler failure

C. Power Cabinet Thyristor failure

D. Power Cabinet Logic error

LICENSEE’S JUSTIFICATION FOR CHANGE:

- The BVPS position is to accept two answers to this question; Answers “C” or “D.” The original correct answer is “C.”
- Answers “A” and “B” are wrong because they deal with a Rod Control “Logic Cabinet” failure which would affect all four power cabinets and thus, all control rods.
- Answer “C” is correct if more than one thyristor in Power Cabinet 2BD failed. The only thyristor failure that could cause rods to drop when rods are not being moved, is the failure of the Half Wave Phase Controlled Bridge Thyristor circuit in the Stationary Gripper section of the Power Cabinet. However, failure of a single thyristor will cause only a single group of rods to drop, not two groups as described in the stem of the question. Therefore, two or more

thyristors must fail in order to drop two groups of rods. (Reference BVPS Operating Manual 1.1.5, Figure 1-46 and 2.1.5 Figure 1-44.)

- Answer “D” is also correct for the following reasons.

  A “Power Cabinet Logic Failure” occurs when a simultaneous control signal of zero amps is issued to both the stationary and movable gripper coils for one or more control rods. Such a current order command could cause the affected rod(s) to drop. (Reference 1OM-1.1.D, page 21, Failure Detectors, #3 and 2OM-1.1.D page 16, Failure Detectors, #3.)

  By design however, the Power Cabinet “Urgent Failure” should actuate, and issue a hold current to the affected rods to prevent the rods from dropping, and actuate a control room annunciator (alarm). An Urgent Failure alarm was not listed in the initial conditions of the question.

  Many of the candidates stated that when answering this question, they reflected on the instructions that were read to them from NUREG 1021 just prior to starting this exam. Specifically the following statement:

  When answering a question, do not make assumptions regarding conditions that are not specified in the question unless they occur as a consequence of other conditions stated in the question. For example, you should not assume an alarm has activated unless the question so states or the alarm is expected to activate as a result of the conditions that are stated in the question. *(Reference NUREG 1021 Rev. 9, Appendix E, item 7, pg. 2 of 6)*

  The candidates concluded from this statement, and the conditions stated in the stem of the question, that the Urgent Failure alarm was not active, nor did it activate prior to the reactor trip that was stated in the stem of the question.

  Given then that the Urgent Failure alarm did not activate prior to the reactor trip, a Power Cabinet Logic Failure (zero current demand to the moveable and stationary gripper coils) could result in two groups of dropped rods.

- It is for these reasons that for question #54, answers “C” and “D” should be accepted as correct answers and “A” and “B” should be considered as incorrect answers.

NRC RESOLUTION:

The NRC staff reviewed the abnormal and emergency operating procedures (noted above in the licensee discussion section) for this question

In regard to answer “C” (the original correct answer):

Answer “C” states that the cause of the failure was a Power Cabinet Thyristor Failure. In accordance with BVPS operating Manual 2.1.5, Figure 1-46, two or more thyristors must fail in order to drop two groups of rods as stated in the question stem. Failure of a single thyristor, as stated in answer “C” would cause only one group of rods to drop. Therefore, answer “C” is not correct.

In regard to answer “D” (the proposed additionally correct answer):

Answer “D” states that the cause of the failure was a Power Cabinet Logic Failure. BVPS procedure 20M-1.1.D. “Reactor Protection System Instrumentation and Controls,” page 16, Alarm Circuits, states, in part, that any failure that affects the ability of the system to move rods is considered URGENT and that URGENT alarms are detected by inputs including the logic error detector. Additionally, in the Failure Detectors portion of the procedure, it was stated, in part, that four types of failure detectors (including the Logic Error Detector) were provided to monitor the system and operate the Urgent Alarm in the event of power or circuit failure.

The question stem does not state that an Urgent Failure Alarm exists and based on the system description as stated in 20M-1.1.D, if a Power Cabinet Logic Failure existed (as stated in answer “D”), an URGENT alarm would have been present. In the discussion above you stated that the applicants concluded, based on information in the question stem, that the URGENT alarm was not active, nor did it activate prior to the reactor trip. Therefore, based on the information in stem, the applicants’ conclusions on the question stem information, and the system description, one cannot assume that without an URGENT alarm a logic failure occurred. Therefore, answer “D” is not correct.

In regard to answers “A” and “B”:

Based upon procedure and print review, both answers deal with failures which would have affected all four power cabinets and all control rods. Therefore, they are both incorrect.

Conclusion

The NRC staff conducted detailed reviews of all references provided and concluded that given the information provided in the question stem, no correct answer for the question was given and the question should be deleted from the exam.

Original Question # 67:

Given the following conditions:

- The Unit has been at 100% power for 3 weeks. All systems are in NSA.
- RCS boron concentration is 1000 ppm.
- A controlled power reduction to 50% is to be performed.

Using the references provided and maintaining control rods at their current position, assuming no change in xenon concentration, which ONE of the following describes the approximate amount of boric acid required to initially maneuver the plant to 50% power?

A. 700 - 800 gallons

B. 850 - 950 gallons

C. 1000 - 1100 gallons

D. 1150 - 1250 gallons

LICENSEE'S JUSTIFICATION FOR CHANGE:

The BVPS position is to accept two answers to this question for the Unit 1 exam only, Answers "B" or "C." The original correct answer is "C."

- The answer to the Unit 2 exam should remain as-is because the calculated answer falls well within the desired range of the original correct answer.
- Answer "B" should be considered correct based on the tolerances and inaccuracies introduced to determine this answer. Specifically, in order to obtain an answer to this question, the candidate needs to read and obtain points from three different graphs, then interpolate two different logarithmic scales on a nomograph. It should also be noted that the candidates were NOT provided with a ruler to more accurately interpolate the logarithmic scales of the nomograph. The tolerances between the proposed correct answers ("B" or "C") fall within the tolerances and margin of error obtained when calculating the correct answer to this problem.
- As indicated in the revised question explanation, the boron addition change equals approximately 135 ppm based on mathematical calculations from numbers derived from three different graphs. (Reference BVPS Curve Book curves; CB-21 – Power Defect vs. Percent Power, CB-13 – Critical Boron Concentration Vs Burnup, and CB-28 – Boron Worth Vs Burnup).

- To determine the final answer, it is required to use a nomograph that has a combination of one linear and two logarithmic scales, The far left scale, PPM Boron in Coolant, is linear, and the two scales on the right, Boric Acid Volume and PPM Boron Addition, are logarithmic scales. (Reference BVPS Curve Book curve CB-31 – Boron Addition nomograph).

- It should be noted that the proper technique for reading a logarithmic scale is that half of the linear distance between two points on a logarithmic scale is equal to approximately one third of the delta between the two points, plus the initial point value. For example, given two points on a log scale of 100 and 200, half of the linear distance between these two points would equal approximately 133.

- Using curve CB-31, Boric Acid Addition nomograph, the desired boron addition of 135 ppm is plotted approximately one half of the linear distance between the values of 100 and 200 ppm on the far right logarithmic scale (PPM Boron Addition). Using 1000 ppm as the original RCS boron concentration (initial condition) on the far left scale (PPM Boron in Coolant), a line drawn between these two points results in the boric acid volume that needs to be added to the RCS, as read on the middle logarithmic scale of the nomograph (Boric Acid Volume).

- The point of intersection on the middle logarithmic scale (Boric Acid Volume) falls between the 900 and 1500 gallon marks. Since the scale is not graduated, an interpolation must be made. Using the thumbrule for logarithmic graph reading, half of the linear distance between these two points, results in a value of ~1100 gallons. It can now be seen that the point of intersection falls below the 1100 gallon point and above the 900 gallon point. One can now conclude then that the required amount of boric acid that needs to be added is between 900 and 1100 gallons.

- The difficulty now lies in trying to determine whether the required value is <950 gallons (Answer “B”) or >1000 gallons (Answer “C”). Because of the small size of the scale (~3/8 of an inch represents a difference of approximately 200 gallons, which is still on a log scale), the readability of this scale should be considered to fall within an acceptable margin of error to accept answers “B” or “C.”

- Additionally, the candidate needs to use three different graphs to obtain the desired boron concentration change (135 ppm) to plot on the far right column of the nomograph. Assuming a small error on reading each curve, the starting point on the nomograph of 135 ppm will have some numerical tolerance in addition to the interpolation tolerance.

- The intent of the question was to evaluate the candidate’s ability to calculate the amount of boric acid addition for a given power change. By choosing either answer “B” or “C” this knowledge and ability is demonstrated to be within an acceptable margin of error as explained above.

- It is for these reasons that for question #67 (Unit 1 only), answers “B” and “C” should be accepted as being correct answers and “A” and “D” should be considered as incorrect answers.

Attachment

<u>NRC RESOLUTION</u>:

The NRC staff reviewed the originally submitted draft question, NRC comments provided to the facility licensee related to the draft question, and the relevant pages from the Beaver Valley Unit 1 Curve Book.

<u>In regard to question development</u>:

The originally submitted question stem asked for the “minimum” amount of boric acid required to “initially” maneuver the plant to 50% power. The NRC challenged this approach to the question based on the potential confusion that might be caused by asking a candidate to decide a “minimum: amount to initiate a downpower maneuver. Rather, the NRC suggested asking the applicant to determine the “approximate” amount of boric acid to accomplish the 50% power decrease. The NRC further suggested the answers and distractors be ranges of boric acid quantities, only one of which should include the correct answer.

The facility licensee’s original correct answer submitted to the NRC, derived from the stem conditions and the applicable curve book pages, was 900 gallons. Initial NRC review of the draft question indicated the answer was closer to 950 gallons. For these reasons, the NRC believed that answer “B” (850-950 gallons) of the revised question was adequate to capture the correct amount of boric acid.

<u>In regard to post-exam comments and review</u>:

Facility licensee post-exam comments described that a more-detailed solution to the question stem conditions revealed a correct answer of approximately 966 gallons of boric acid. The NRC performed an additional independent solution to the question and determined that the answer was indeed approximately 970 gallons

<u>In regard to answer “B” (the original correct answer)</u>:

The range of boric acid quantity provided by this answer, 850-950 gallons, appeared correct during examination development; however, post-exam review revealed that this range did not in fact contain the correct answer. Since the correct answer was determined to be approximately 970 gallons, the NRC determined this answer to be incorrect.

<u>In regard to answer “C” (the proposed additionally correct answer)</u>:

This answer provided a range of 1000-1100 gallons of boric acid, and while this range was eventually shown to be closer to the real answer than originally thought, this amount of boric acid would have resulted in a power change greater than that requested in the stem of the question. The NRC determined this answer remained incorrect.

<u>In regard to answers “A” and “D”</u>:

The NRC determined the ranges of boric acid quantity provide by these two distractors (700-800 gallons and 1150-1250 gallons, respectively) remained well away from the correct answer, and therefore, these answers are still incorrect. (No change from the original submittal.)

<u>Conclusion</u>:

The NRC reviewed the facility licensee’s submittal and agreed with their determination that the correct answer for this question was approximately 970 gallons of boric acid. This precise answer was not captured by any of the ranges of boric acid quantity provided by the four answers/distractors. The NRC determined that if both answers “B” and “C” were accepted as correct, the correct answers would cover a range of 850-1100 gallons of boric acid, and that larger of a range would challenge the discriminatory value of the question. Since none of the provided answer choices captured the actual correct answer, the NRC concluded that no correct answer for the question was given and that the question should be deleted from the exam.

<u>Original Question # 74:</u>

During the performance of EOP actions, the crew observes a **NOTE** prior to Step 1 of the EOP, and a **CAUTION** prior to Step 3 of the EOP.

Which ONE of the following describes the applicability of these statements during the performance of the EOP?

A. The NOTE is applicable throughout the entire procedure. The CAUTION applies to Step 3 ONLY.

B. The NOTE applies to Step 1 ONLY. The CAUTION applies to Step 3 ONLY.

C. The NOTE is applicable throughout the entire procedure. The CAUTION applies to all steps of the procedure that succeed it.

D. The NOTE applies to Step 1 ONLY. The CAUTION applies to all steps of the procedure that succeed it.

<u>LICENSEE’S JUSTIFICATION FOR CHANGE</u>:

- The BVPS position is to accept two answers to this question; Answers “A” or “C.” The original correct answer is “A.”
- The BVPS Emergency Operating Procedures (EOP) Executive Volume Users Guide states the following in reference to cautions and notes; (Reference 1/2OM-53B.2 pg. 2)

CAUTIONS contain information about potential hazards to personnel or equipment. They also advise on actions or transitions which may become necessary depending on changes in plant conditions.

In general, NOTES and CAUTIONS apply to the step which they precede. A NOTE or CAUTION which precedes the first operation action step may also apply to the entire procedure.

- **Answer "A" -** *"The NOTE is applicable throughout the entire procedure. The CAUTION applies to Step 3 ONLY"* can be broken down into two distinct statements.
    - **Answer "A" first statement:** *"The NOTE is applicable throughout the entire procedure."* This statement is supported by the 2nd sentence of the 2nd statement from the BVPS EOP Executive Volume Users Guide and from the examples contained in Attachment 1, NOTE's At the Beginning of EOP's.

      Attachment 1, NOTE's At the Beginning of EOP's, contains the first page of all BVPS Emergency Operating Procedures that contain a NOTE prior to Step 1. In reviewing these NOTE's, it is evident that in ALL cases, the NOTE's apply throughout the entire procedure. In the cases where the NOTE refers to Step 1 for starting a Reactor Coolant Pump (RCP), Step 1 is a continuous action step, and is therefore applicable throughout the entire procedure, making the NOTE also applicable throughout the entire procedure.

    - **Answer "A" second statement:** "*The CAUTION applies to Step 3 ONLY"* is supported by the 1st sentence of the 2nd statement from the BVPS EOP Executive Volume Users Guide and from the examples contained in Attachment 2, Cautions Applicable to Specific Steps.

      Attachment 2, Cautions Applicable to Specific Steps, contains examples of CAUTION's used in the BVPS EOP's. In reviewing these CAUTION's, it is evident that they are only applicable to the steps that they precede.

    - For these reasons, the answer "A" is correct.

- **Answer "C" -** *"The NOTE is applicable throughout the procedure. The CAUTION applies to all steps of the procedure that succeed it."* can also be broken down into two distinct statements.
    - **Answer "C" first statement:** *"The NOTE is applicable throughout the procedure."* This statement is correct as described above for answer "A."

    - **Answer "C" second statement:** "The CAUTION applies to all steps of the procedure that succeed it." Is supported by portions of the 1st and 2nd statements from the BVPS

EOP Executive Volume Users Guide, and from the examples contained in Attachment 3, Cautions Applicable to All Subsequent Steps.

- The specific parts of the BVPS EOP Executive Volume Users Guide statements identified above are:

"They also advise on actions or transitions which may become necessary depending on changes in plant conditions."

And

"A NOTE or CAUTION which precedes the first operation action step may also apply to the entire procedure"

- Attachment 3, Cautions Applicable to All Subsequent Steps, contains examples of CAUTION's used in the BVPS EOP's. In reviewing these CAUTION's it is evident that they are applicable throughout the remainder of the procedures being performed.

- For these reasons, answer "C" is also correct.

- Answers "B" & "D" both contain the statement: *"The NOTE applies to step 1 ONLY."*
  - This statement is incorrect as described above in **Answer "A" first statement**.
  - Therefore, Answers "B" and "D" are clearly incorrect.
- It is for these reasons that for question #74, answers "A" and "C" should be accepted as being correct answers and "B" and "D" should be considered as incorrect answers.

NRC RESOLUTION:

The NRC staff reviewed the procedure references (noted above in the licensee discussion section) for this question.

The BVPS Emergency Operating Procedures (EOP) Executive Volume Users Guide, 1/2OM-53B.2, pg. 2 states the following in reference to cautions and notes:

"1. CAUTIONS contain information about potential hazards to personnel or equipment. They also advise on actions or transitions which may become necessary depending on changes in plant conditions.

2. In general, NOTES and CAUTIONS apply to the step which they precede. A NOTE or CAUTION which precedes the first operation action step may also apply to the entire procedure."

The staff also reviewed examples in the EOPs in which caution steps applied to the step they preceded or to the entire procedure. These examples were referenced in the licensee comments attachment.

In regard to answer “A” (the original correct answer):

Answer “A” stated that “The NOTE is applicable throughout the entire procedure. The CAUTION applies to Step 3 ONLY.” This answer is correct based upon the references noted above and reviewed by the staff.

In regard to answer “C” (the proposed additionally correct answer):

Answer “C” stated, “The NOTE is applicable throughout the procedure. The CAUTION applies to all steps of the procedure that succeed it.” This answer is correct based upon the references noted above and reviewed by the staff.

In regard to answers “B and D”:

Answers “B” & “D” both contain the statement: “The NOTE applies to step 1 ONLY.” This statement is incorrect based upon the EOP users guide reference noted above and therefore the answer is incorrect.

Conclusion:

Based upon procedure review and the lack of specificity in regard to exactly at which particular EOP step the situation occurred, it is reasonable to determine “C” as a correct answer. There was not enough specificity in the question stem to rule out answer “C” as correct. Therefore, the staff concludes that answer “C” as well as the original answer “A,” be accepted as correct.