55-60755
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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

BEFORE THE ADMINISTRATIVE JUDGE

In the Matter of	)	
	)	
Alfred J. Morabito	)	Docket No. 55-60755
	)	
(Senior Operator License for Beaver Valley Nuclear Power Station, Unit 1)	)	

JOINT AFFIDAVIT OF BARRY S. NORRIS AND DAVID M. SILK

Barry S. Norris and David M. Silk do depose and say:

1. I, Barry S. Norris, am a Senior Operations Engineer (Examiner/Inspector), in the Pressurized Water Reactor Section, Operations Branch, Division of Reactor Safety at the United States Nuclear Regulatory Commission, Region I. At the time of the examination of Alfred J. Morabito my position was Reactor Engineer (Examiner) within Section 1C of the Division of Reactor Projects. My responsibilities relative to that examination were as the certified examiner observing David M. Silk's administration of the simulator and oral examinations. I assisted in proctoring the written examination and I was responsible for the quality assurance review of the grading of that examination. See attachment to Joint Affidavit of Barry S. Norris and David M. Silk (dated October 9, 1987) for my professional qualifications.

2. I, David M. Silk, am an Operations Engineer (Examiner/Inspector) in the Pressurized Water Reactor Section, Operations Branch, Division of Reactor Safety at the United States Nuclear Regulatory Commission, Region I. At

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NUCLEAR REGULATORY COMMISSION

Docket No. 55-6075 Official Exh. No. 2

In the matter of Alfred Morabito

Staff X IDENTIFIED X

Applicant _____ RECEIVED _____

Intervenor _____ REJECTED _____

Cont'g Off'r _____

Contractor HR DATE 2/21/88

Other _____ Witness _____

Reporter Andrew Emerson

Case No. 55-6075

Docket/Reg. No. Staff Exh 2C

Morabito

Date 2/21/88

No. Pages

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the time of the examination of Alfred J. Morabito my position was Reactor Engineer (Examiner) within Section 1C of the Division of Reactor Projects. My responsibilities relative to that examination were that I prepared, administered, and graded the written examination and administered the oral and simulator examinations under the observation of Barry S. Norris. See attachment to Joint Affidavit of Barry S. Norris and David M. Silk (dated October 9, 1987) for my professional qualifications.

3. The purpose of this affidavit is to respond to a letter filed by Mr. Morabito dated November 7, 1987 (Rebuttal).

4. Written Examination Comments

Candidate comment on 6.03b (Rebuttal pp. 1 and 2):

The candidate states on p. 2 of the Rebuttal that he had to consider all possible plant conditions when answering the question and that all answers provided were correct from an operator's perspective. He states that he should receive full credit.

5. The candidate cites, as an example, a condition where the pressure in the component cooling water (CCW) system would be greater than reactor coolant system (RCS) pressure. In this case, a thermal barrier rupture would allow CCW to leak chromated water into the RCS. The candidate states that by observing the start of the backup cooling water pump due to the decreasing CCW pressure, and by observing the difference in the flow indicators of the thermal barriers, an operator could determine that a problem existed in a thermal barrier. The candidate then states that an outside operator could then be dispatched into containment, which

might be open and accessible, to isolate the leaking thermal barrier using the manual isolation valves; thus mitigating the consequences of having chromated water leaking into the RCS.

6. Staff response:

The Staff examiners make every attempt to develop examinations which will fairly examine the knowledge, or lack of knowledge, of the candidates for an operator license. See, Joint Affidavit of Barry S. Norris and David M. Silk, dated October 9, 1987 at paragraphs 3, 4, 5 and particularly paragraph 15. The examiners' primary function is to determine whether a license should be issued to a candidate based upon the level of knowledge, demonstrated on the day of the examination, to operate the plant in a safe and prudent manner during all situations of plant operations.

7. Candidates are directed in the examination guidelines, prior to the start of the written examination, to state all assumptions so that the examiners may grade the candidate's response(s) accordingly. For the candidate to assume a plant condition other than normal operating temperature and pressure, and to not state that in his answer (such as claimed on p. 2 of the Rebuttal), would not be following the directions provided to him. If a specific plant condition was intended to be considered other than normal operating temperature and pressure, the question would have specified it (e.g. 6.06a - "cold solid plant operations"). Mr. Morabito argues at p. 2 in the Rebuttal that he should receive full credit for his answers which he claims were graded incorrect. Since the specific assumptions of low RCS temperature and

pressure were not stated by the candidate, the Staff appropriately did not give credit for this answer in accordance with its conservative grading approach. To do otherwise, the Staff would have had to assume knowledge on the part of the candidate.

8. If the RCS pressure was less than the CCW pressure, and if the CCW system was in operation, then his response that the cooling water backup pump would automatically start on decreasing pressure is a true statement. However, since the CCW system contains chemicals harmful to the RCS, the cooling water entering the RCS would not minimize the effects of a thermal barrier rupture, but would increase the effect of the rupture.

9. In summary, on the day of the examination, Mr. Morabito did not state any assumptions to support or clarify his answers; even though the candidates were given direction to state all assumptions. Additionally, Mr. Morabito's original answer that the back-up CCW pump would start to minimize the effects of a thermal barrier rupture is incorrect because the chemicals in the CCW system would be adverse to the RCS.

10. Candidate comment on 6.06a (Rebuttal p. 3):

The candidate provides information to support his position that the pressurizer power operated relief valves (PORVs) are used to control RCS pressure. He references Appendix pp. 4 through 6 to show that PORVs are often referred to as pressure control components and receive signals from instrumentation designated control channels vice protection channels. He also asserts that: alarms associated with PORV operation are referred to as pressure control alarms (Appendix p. 7); one of the three PORVs is controlled by the pressurizer pressure controller (Appendix p. 8);

failure of the PORVs to function is a symptom for AOP 13, " Malfunction of Pressurizer Pressure Control" (Appendix p. 9); and operating a PORV to reduce increasing pressure is a control action (Appendix p. 10).

11. The candidate claims that the distinction between control and protection regarding the PORVs is not clear, and that the use of the word "what" in the question is ambiguous. The candidate contends that volumes of literature lean towards the definition of the PORVs as pressure control components.

12. Staff response:

It should be noted at the onset that the date on the referenced Appendix pp. 3 through 5 is July 9, 1987, almost one year after the date of the examination. This information was not available on the date of the examination and could not have been considered by Mr. Morabito at the time of the examination.

13. Question 6.06a specified cold solid plant operations. The setpoints and figure from Appendix pp. 7 and 8 are for normal operating temperature and pressure. Appendix pp. 3 through 5 are from a letter addressing "FSAR Loss of External Electrical Load Turbine Trip Event" (a plant condition of normal operating pressure and temperature). The use of the PORVs in these instances, when the plant is at normal operating pressure and temperature, may provide limited control capability for increasing pressure with the pressure safety valves available to provide RCS overpressure protection. However, during cold solid plant operations, the safety valves' setpoint is too high to protect the RCS from sudden pressure surges. In accordance with the Technical Specifications, during

cold solid plant operations, the PORVs are required to be operable and to function as the Overpressure Protection System (OPPS). Furthermore, based on the wording of the question, there was no indication that an emergency condition existed that would require the use of the PORVs, nor did the candidate state an emergency condition as an assumption.

14. The Beaver Valley Technical Specifications (page B 3/4 4-10) state "The OPERABILITY of two PORVs ... ensures that the RCS will be protected [emphasis added] from pressure transients ... when one or more of the RCS cold legs are $\leq$ 275°F." To be in cold solid plant operation, the RCS would be less than 200°F.

15. In summary, the candidate provided information inconsistent with the conditions specified in the question; and, in one case, the information was not available on the day of the examination. Additionally, the Beaver Valley Technical Specifications consider the PORVs to be a protective feature during cold solid plant operations.

16. Candidate comment on 6.06b (Rebuttal pp. 4 and 5):

The candidate admitted to providing an incorrect answer but provided the following information to support his claim that the point deduction was retaliatory. The candidate states that the pressurizer vapor space is the hottest temperature in the RCS (Appendix p. 11). He also states the 475°F interlock prevents the inlet valve to the Residual Heat Removal (RHR) System from being opened if the temperature is greater than the setpoint, so that the answer of 470°F would not have exceeded the temperature capacity of the RHR system. He states the saturation pressure for 475°F is 539 psia, which is greater than the pressure

interlock pressure of 430 psig. In order for the pressure interlock to be met, the candidate states the pressurizer vapor space temperature would be less than 455°F which is 15°F and 20°F less than his answer and the manual setpoint respectively. In addition, he states the operator is to ensure that RCS pressure and temperature are less than 430 psig and 350°F before placing the RHR system into service (Appendix p. 12). According to the candidate the tolerance for the accuracy of the gauge and calibration is at least ± 1% of full scale. The full scale reading of this instrument is 600°F which allows for an inaccuracy of ± 6°F. Thus, he claims the tolerance easily covers his answer of 470°F. The candidate also points out that a startup check list is completed before placing the RHR system into service (Appendix pp. 13 & 14) and again the operator is to check RCS temperature and pressure to verify they are more restrictive than the 475°F pressurizer vapor space temperature permissive.

17. Staff response:

The candidate's explanation to support his answer of 470°F suggests that any temperature within some broad range would have been adequate. The original question stated that setpoints were required. All of Mr. Morabito's justifications do not alter the fact that his answer was incorrect. As stated in our October 9, 1987, affidavit (paragraph 22), the examiners performing the regrade of the examination were not associated with the original grading to ensure that the grading was fair and correct.

18. Candidate comment on 6.07a (Rebuttal pp. 5 and 6):

The candidate states that at Unit 1 the control rods are never selected for automatic operation and that operator response is generally neglected in safety analysis for off-normal events. The candidate refers to Appendix pp. 15 through 17 to provide support to his claim that steam generator safety valves provide the first means of protection against violation of Section A of the Safety Limit Curve up to 78% power while other design features afford secondary protection.

19. Staff response:

Although Mr. Morabito contends that the control rod mode selector switch is never selected to automatic, the system is capable of performing automatic operations for the control of Tavg. In fact, on the day of Mr. Morabito 's simulator examination, the scenarios were conducted using the automatic mode of rod control.

20. The Technical Specification bases (p. B 3/4 7-1) state "The OPERABILITY of the main steam line code safety valves ensures that the secondary system pressure will be limited to within its design pressure of 1085 psig during the most severe anticipated system operational transient" (a turbine trip from 100% power with no condenser available). In the bases section of the Technical Specifications, which includes the Safety Limit Curve, the main steam line code safety valves are not discussed.

21. The reactor protection system monitors primary and secondary parameters to protect the core. The reactor trip setpoints are selected to ensure that the reactor core and RCS are prevented from exceeding safety limits during normal operations and design basis anticipated occurrences.

Therefore, the candidate's statement that the main steam line code safety valves provide the first means to prevent violating a safety limit has no basis. Additionally, the Staff was unable to determine the source of Appendix pp. 15 through 17.

22. If a loss of turbine load should occur, as presented in the bases for the main steam line code safety valves, several other systems would actuate before the safety valves. The atmospheric steam dump valves can provide a heat sink for the RCS equivalent to 30% reactor power. In addition, if a turbine trip occurs at greater than 10% power, an automatic reactor trip will occur. Also, the pressure increase in the steam generators, as a result of a turbine trip, will reduce the steam generator water level sufficiently to generate a reactor trip due to low steam generator level. Thus, the main steam line code safety valves are not the first means of protection but are at least tertiary.

23. Furthermore, the main steam line code safety valves' lift settings and relative capacities are established in accordance with the requirement of the ASME (American Society of Mechanical Engineers) Boiler and Pressure Vessel Code. Any effect that the main steam line code safety valves have on the primary system is coincidental. Even if a design feature that accomplishes an unintended effect is accepted as a possible correct answer, the candidate's answer is still incorrect. The answer provided by the candidate makes a blanket statement about the main steam line code safety valves: "They provide the first means of protection for Tavg increases above program to prevent violating the safety limit curve." In paragraph 6 on Appendix p. 17 of the Rebuttal the following statement

appears: "Of course, depending on the dynamic situation in the core, the steam generator safety protection line could be exceeded resulting in a trip from overtemperature delta T or high pressure." In his examination answer the candidate failed to state any assumptions regarding the dynamic situation of the core. Paragraph 1 of Appendix p. 16 says that the steam generator safety valves protect Section A of the curve up to approximately 78% power. The candidate failed to place any restrictions on his original answer, thus implying that the main steam line code safety valves protect the entire Safety Limit Curve (not just Section A) and cover all ranges of reactor power, even beyond 78% power.

24. In summary, Mr. Morabito's comments regarding the status of the control rods do not address all possible modes of operation. In addition, the supplied reference material (which could not be traced to its source document) is not supported by the Technical Specifications.

25. Candidate comment on 6.07b (Rebuttal pp. 6 and 7):

The original question asked specifically for two reasons, not conditions, why the main steam isolation valves (MSIVs) close on a steam line rupture. The candidate claims that he described two reasons why the MSIVs are required to close, and that the original NRC answer key describes two conditions. To support his argument, the candidate claims that the answer key describes two conditions which could occur if the main steam isolation valves (MSIVs) did not close. He claims that to avoid those conditions the leak must be isolated. The candidate claims that operability of the MSIVs ensures that the two conditions in the answer key do not occur (Appendix p. 18) and all MSIVs are needed to

isolate the affected, as well as the unaffected, steam generators.

26. Staff response:

The candidate's argument centers on his understanding of the words "reasons" and "conditions." Reason is defined as a statement offered in explanation or justification, condition is defined as something essential to the occurrence of something else. (Webster's Ninth New Collegiate Dictionary, copyright 1985 by Merriam-Webster Inc.) The reasons why it is important for the MSIVs to close in the event of a steam line rupture are (1) to minimize the positive reactivity effect from an RCS cooldown associated with a blowdown and (2) to limit the pressure rise within containment due to a steam line rupture. One condition that will cause the main steam isolation valves (MSIVs) to close is high containment pressure. Another condition that will cause the MSIVs to close is a steam line rupture. The question asked for the reasons for the closure of the MSIVs during a steam line rupture and thus was worded correctly.

27. A reasonable answer to the question, for partial credit, would be "to isolate the break." If the MSIVs are operable (and there was no reason for the candidate to believe otherwise nor did he state any assumptions to the contrary), then they would all close when required and isolate the break regardless of its location. Mr. Morabito received half-credit for his original two responses because his first answer "to isolate the faulted steam generator" would inherently incorporate his second answer "to prevent blowdown of the non-faulted steam generators through the break." Thus, the candidate's responses are redundant.

28. In summary, the meanings of the words "reasons" and "conditions" are

sufficiently distinct so as not to create any ambiguity in the question. The question, as written, was clear. Although Mr. Morabito received partial credit for his answer, full credit was not awarded because his responses were redundant.

29. Simulator Examination Comments

Compliance/Use of Procedures

Candidates comments (Rebuttal pp. 7 through 9):

The candidate claims he was checking the precision (not the accuracy) of the nuclear instruments, and there is no procedure available to an operator for such a determination. The candidate states that he had to determine whether or not he had a failed nuclear instrument. A failed instrument would have provided the necessary symptoms for use of AOP-10, "Malfunction of Nuclear Instrumentation."

30. The candidate then asked several rhetorical questions regarding the performance of immediate action steps in the emergency operating procedures.

31. Staff response:

From the procedure cited by the candidate in Appendix p. 19 (AOP-10), a symptom of a failed channel may be evidenced by erratic indication or a drift of indication. Contrary to the candidate's claim, with two instruments reading lower than the other two, the symptom of erratic indication did exist and the candidate should have utilized AOP-10 (Abnormal Procedure). Furthermore, if all channels of instrumentation are not in agreement, and if no channel of instrumentation has been determined to be malfunctioning (as stated by Mr. Morabito), then a

surveillance test should have been performed to verify the calibration accuracy of each of the instruments. The candidate did not request that a surveillance test be performed. Therefore, whether or not the candidate considered the instruments to be malfunctioning, the appropriate actions were not taken.

32. The candidate's rhetorical comments regarding the emergency operating procedures do not alter the fact that he failed to perform an immediate action step of an emergency operating procedure (step 11b of E-0). Immediate action steps are required to be done from memory in accordance with Beaver Valley procedure - O.M. 1/2.48.2, page 8, paragraph C.3.

33. In summary, the candidate's actions were incorrect with respect to the discrepancy between the nuclear instruments because the operability of the instruments was still in question. The candidates rhetorical comments regarding the emergency operating procedures have no bearing on the fact that he did not perform immediate action steps as required.

34. Control Board Operations

Candidate comments (Rebuttal pp. 9 and 10):

The candidate claims that incorrect actions should be commented on but that those comments should not be so significant as to lead to an unsatisfactory rating, especially if the error did not cause the bounds of analyzed accidents to be exceeded. He applies this claim to the reading of RCS pressure instrumentation (which resulted in the tripping of the reactor coolant pumps) and to the verification of the position of the residual heat release valve.

35. Staff response:

As a control board operator, the failure to properly read process instrumentation is a significant deficiency. The inability to make an independent valve position verification is also a significant deficiency. The fact that a reactor accident did not occur as a result of his incorrect actions is irrelevant because a control board operator must be able to properly read process instrumentation and verify valve positions. The candidate's efforts to de-emphasize his operational errors demonstrates an unconservative approach to nuclear safety.

36. Supervisory Ability

Candidate comments (Rebuttal pr. 10 and 11):

The candidate repeats the claims made in his Specification that he was the first to notice that the feedwater regulating valve was open and that there was no alarm to call his attention to the malfunction. He states that the balance of plant (BOP) operator had moved from in front of the valve position indication and that he finally noticed the open indication during the performance of the emergency operating procedures. He also claims to have been preoccupied with other events in the scenario and that he had to prioritize the problems.

37. The candidate then refers to his past experience as demonstration of his supervisory abilities.

38. Staff response:

The fact that the candidate claims to have been the first to notice the valve open is irrelevant, since the valve had already been open for twenty minutes. Moreover, in the scenario in question, there were no

competing events occurring because the opening of the bypass valve was the first malfunction inserted. When the bypass valve opened, its associated feedwater regulating valve then partially closed to maintain programmed steam generator water level. The candidate was notified by one of the board operators of the feedwater regulating valve movement; any alarm received would have been in addition to this verbal notification. Mr. Morabito, along with the other two crew members, stood directly in front of the feedwater portion of the control board and looked, without any obstruction of view, at the controls and indications. The candidate, not observing the mispositioned bypass valve, then walked away from the board. The candidate failed to diagnose the malfunction or to actively pursue correction of the problem.

39. The candidate's reference to past experience to support his supervisory ability is not relevant to this examination. Examiners base their evaluation on what they observe on the day of the examination.

40. In summary, the candidate's claims are not supported by the examiner's notes of the sequence of events for the scenario in question. In addition, Mr. Morabito's past experience has no bearing on this examination.

41. Communications/Crew Interactions

Candidate comments (Rebuttal pp. 11 and 12):

The candidate states that the hand signal was proper. He contends that a verbal report could have introduced several potential errors because a numerical reading would have had to have been extracted from a logarithmic scale. Those errors are: (1) choosing an incorrect integer,

(2) choosing an incorrect exponent of 10, and (3) parallax. The candidate claims that he would then have had to picture in his mind how far above background the reading was, thus introducing another opportunity for error.

42. Staff response:

The candidate's claim that he was concerned with the possibility of errors that could have been introduced by a verbal report has no basis in fact because the operators in the control room are expected to be able to properly read the meters. Furthermore, regardless of whether the information was communicated verbally or visually, the candidate would have had to picture in his mind how far above background the instrument was reading. Thus, the possibility for error, as expressed by the candidate, would be present in either case.

43. Overall Summary:

In the Rebuttal the candidate repeated several previous claims, as well as raise several new issues. The new issues are perceived by the Staff as: (1) plant conditions are stated that could lead to the start of the back-up CCW pump to support his answer for Question 6.03b; (2) the normal operational mode of the control rods is stated to support his answer for Question 6.07b; (3) the lack of procedural guidance is contested when the operability of instrumentation is in question to support his argument for the competency of Compliance/Use of Procedures; (4) rhetorical comments are listed regarding the emergency operating procedures to support his arguments for the area of Compliance/Use of Procedures; (5) distracting events during the scenario should be considered in evaluating the

competency of Supervisory Ability; and (6) additional errors would be introduced if verbal communications had been used vice hand signals, and that this should be considered in the competency of Communications/Crew Interactions.

44. The Staff response to each of Mr. Morabito's new issues as numbered in paragraph 43 above, is as to (1), the candidate failed to follow directions by not stating his assumptions; additionally, due to the chemicals in the CCW system, the starting of the backup CCW pump aggravates the effects of a thermal barrier rupture. As to (2), the control rods can be used in the automatic mode of operation to mitigate the effects of increasing temperature in the RCS. As to (3), the procedure provided by Mr. Morabito in his Rebuttal did, in fact, contain guidance if the indication was erratic. Moreover, even if Mr. Morabito did not consider the indication to be erratic, a surveillance should have been performed to verify the accuracy of the instruments. The candidate did not consider the instrument inoperable, nor did he request that a surveillance be performed. As to (4), the rhetorical comments relative to the final examination grade do not negate the fact that the candidate failed to perform a required immediate action step from memory. As to (5), there were no distracting events occurring, as Mr. Morabito contended, because the opening of the bypass valve was the first event to occur during that scenario. As to (6), the candidate's argument that the control board operators might have incorrectly read the meter is without merit because it is expected that licensed operators in the control room will be able to properly read the meters and indications.

45. The Staff contends that the candidate has failed to provide sufficient new information to demonstrate an error in grading of his examination. Thus, it is our opinion that the Mr. Morabito failed to adequately demonstrate a sufficient level of knowledge on the day of the examination to warrant receipt of a license.

46. The foregoing is true and correct to the best of my knowledge and belief.

Barry S. Norris

David M. Silk

Subscribed and sworn to before me
21st day of December 1987.

Michael A. Perkins
Notary Public

My commission expires: March 20, 1989

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NOTICE OF APPEARANCE

Notice is hereby given that the undersigned attorney enters an appearance in the above-captioned matter. In accordance with 10 CFR §2.713(b) the following information is provided.

Name:	Jay M. Gutierrez
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Admissions:	Supreme Court of the Commonwealth of Pennsylvania West Virginia State Supreme Court
Name of Party:	NRC Staff

Respectfully submitted,

Jay M. Gutierrez
Regional Counsel

Dated at Bethesda, Maryland
this 21st day of December 1987

Woodhead

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CERTIFICATION OF SERVICE

I hereby certify that copies of "Joint Affidavit of David M. Silk and Barry S. Norris," dated December 21, 1987, and "Notice of Appearance" of Jay M. Gutierrez in the above-captioned proceeding have been served on the following by deposit in the United States mail, first class, or as indicated by an asterisk through deposit in the Nuclear Regulatory Commission's internal mail system, this 21st day of December, 1987:

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