Attachment 2: Facility Comments on Written Examination

NMP33028

NIAGARA MOHAWK

NIAGARA MOHAWK POWER CORPORATION/301 PLAINFIELD ROAD, SYRACUSE, N.Y. 13212/TELEPHONE (315) 474-1511

March 31, 1988

Mr. William Russell
United States Nuclear Regulatory Commission
Region I
475 Allendale Road
King of Prussia, PA 19406

Dear Mr. Russell:

This letter concerns the NRC Hot License examinations administered to five (5) Nine Mile Point Unit #1 Reactor Operator candidates during the week of March 21, 1988. Ms. Tracey Lumb of Region I was lead examiner and was assisted by Mr. Chris Gratton, Mr. David Lange, Mr. Rich Miller and Mr. Sada Pullani.

The written exam was administered on March 22, 1988 with the operating exams on March 23 and 24, 1988. The exit meeting took place on Friday, March 25, 1988.

We felt that this exam was well-written and that in most cases, the questions and answer key accurately reflected the training material and plant procedures cited as references. Most of our comments were resolved during the exam critique. Please see Attachment 1 for those resolved and unresolved comments. Attachment 2 contains supporting documentation.

We appreciate the efforts of Ms. Lumb, Mr. Gratton, Mr. Lange, Mr. Miller and Mr. Pullani for ensuring that this examination was conducted in a very professional manner.

Please feel free to contact me if you need any additional information.

Very truly yours,

Thomas E. Lempges

Thomas E. Lempges
Vice President
Nuclear Generation

TEL/jrs
Attachments (2)
cc: Mr. R. Miller, Sonalysts, Inc.

Question	Part	Comment
1.04	b	With the recirc. pumps running at minimum speed no appreciable increase in flow will be noted. This should be an alternate answer.
1.05	b	The question does not indicate that the candidate needs to explain why position 40 was not chosen and should not be required for a full credit answer. Also, the candidate may have drawn a sketch of the differential rod worth curve, Figure 5-2 attached, and used it to aid in explaining why position 08 was chosen. This should be an alternate full credit answer.
1.09	a	An alternate answer should be YES. The candidate should explain that as recirc flow is increased critical power increases thereby increasing the Critical Power Ratio. Refer to pages 9-28 and 9-34 of the GE HTFF text attached.
1.10	a	An alternate answer should be DECREASE. Recirc. pump suction temperature actually increases as reactor power increases at NMP-1. (Refer to attached computer logs) The increased temperature and flow both act to decrease available NPSH.

Question	Part	Comment
1.11	c	Answer C.1 should not be required. Due to the fact that NMP-1 is a five loop, non jet pump type BWR. Increased recirc. pump speed would have a negligible effect on annulus level. Answer C.2 is the dominant reason for the change in feedwater flow.
1.11	e	An alternate answer should be that a greater percent of voids exists in the core and this will tend to turn reactor power. Also, fuel temperature has increased slightly which inserts negative reactivity and reduces power. Refer to Pages 7-18 and 7-19 of the Reactor Theory Text.
2.02	b	An alternate answer should be 2950 KW. Per N1-OP-45, page 3, it is assumed that for the use intended each unit is rated at 2950 KW. However, this is at the expense of increased maintenance.
2.02	d	An alternate answer should be other abnormal conditions that energize relay 86DG-2, or 86DG-3. Refer to OP-45 pages 21 and 33 and elementary C-19410-C sheet 5.

Relay Dev. No.	Abnormal Conditions
59/TOV	AC over voltage
40F	Loss of excitation
67NI	EDG Directional Gnd.
87DG-2(3)	EDG Differential

Question	Part	Comment
2.03	a	Alternate answers should be: 1) Emergency cooling vents and drains close 2) Reactor Water sample valves close Main Steam High radiation also initiates a vessel isolation. Refer to Ops Tech Chapter 11 pages 4 and 5 and Elementary C-19859-C sheet 10.
2.03	b	This question should be withdrawn from the exam. None of the answers reflect the actual installation of the MSL Radiation monitors at NMP-1. Refer to Ops Tech Chapter 31b page 2 and figure 31b-9 and Elementary C-19859-C sheet 2.
2.05	C.2	Alternate answers should be: 1) The Low-Low-Low Rosemount is reactor pressure compensated when it provides an input signal to the Fuel Zone Level Indicating System 2) The Low-Low-Low Rosemount level sensing point is at the core spray inlet line. Refer to P&ID C-18015-C.

Question	Part	Comment
2.09	b	The question required two (2) automatic actions. There is only one automatic action, pump trip on high suction temperature. The need to list two actions leads to confusion when answering the question. Answer C.2 should be deleted and the point value of the question adjusted. Refer to drawing C-19859 sheet 12 and C-19838-C sheet 2.
3.03	a	There is no low pressure scram at NMP-1. MSIV closure initiates a reactor scram. The MSIVs close when reactor pressure drops below 850 psig with the mode switch in RUN. Question 3.03.a should be deleted. Refer to Ops Tech Chapter 10 pages 6 and 7 and Chapter 21 page 12.
3.05	a and c	Answers to parts a and c are wrong. The answer to parts a and c should be IMMEDIATELY. Refer to elementary drawings C-19438-C sheet 3, C-19859-C sheet 9 and C-19423 sheet 5.
3.08	c	Although the N2 vent and purge bypass switch still exists, it is no longer used. This comment by the candidate should be acceptable.

Question	Part	Comment
3.10	d	All of the answers given are confusing and do not properly describe the SELECT ERROR alarm light. This portion of the question should be deleted. Refer to Ops Tech Chapter 6 page 7.
4.01	b	An alternate answer should be; by preparing or completing an annunciator/relay log. When the annunciator relay log is properly completed the CSO and SSS log entries will be made. Refer to AP-3.3.2 page 13 and figure 1a.
4.04	b	This portion of the question should be deleted. The NMP-1 learning objectives and the NRC K/A do not require the knowledge to perform this type of calculation. The reactor operators in this example would use S-RP-3 to determine the actual dose and stay time. Refer to S-RP-3 pages 19, 20 and 21 and Tables 4 and 5.

Question	Part	Comment
4.06	a	The answer to this part of the question is wrong. An alternate answer should be: 1) Ensure a make-up source of water is provided to the core before aligning the vent path and 2) Provide the required NPSH to the core spray pumps. The note does not pertain to the caution. The note explains why the vent path is aligned per step G.2.a. Refer to N1-OP-13 page 7 and Emergency Cooling System Description pages 2,6 and 22.
4.07	a	An alternate answer should be: Dispatch an operator to "Valve Monitoring System" panel (or acoustic monitoring panel) in the Aux. Control Room to confirm and identify open relief valve. Refer to N1-OP-1 page 16.

ATTACHMENT 3

NRC RESPONSE TO FACILITY COMMENTS

The following represents the NRC resolution to the facility comments (listed in Attachment 2) made as a result of the current examination review policy. Only those comments resulting in significant changes to the master answer key, or those that were "not accepted" by the NRC, are listed and explained below. Comments made that were insignificant in nature and resolved to the satisfaction of both the examiner and the licensee during the post examination review are not listed (i.e.: typographical errors, relative acceptable terms, minor set point changes).

Question 1.04b: Comment not accepted. Core flow is expected to increase by approximately 10% due to increased natural circulation as seen in Figure 7-2 (pg 7-14) of the G.E. Reactor Theory reference material. No additional reference material was provided by the facility. Answer key not modified.

Question 1.05b: Comment partially accepted. The answer provided by the candidate need not be worded as the answer key for full credit. A sketch of the differential rod worth curve alone would be given partial credit, while this curve with a brief explanation of the peak worth versus the nearly full out worth would be given full credit. In order to fully explain why the rod at position 08 is of greater worth, it must be compared to the rod at position 40. Answer key modification not required.

Question 1.09a: Comment not accepted. Critical Power Ratio (CPR) DECREASES as bundle power is increased by a recirculation flow increase. Although the reference material does not specifically state this response, the BWR Thermal Limits Lesson Plan (pg 9-38a and b) and the G.E. Heat Transfer and Fluid Flow Series (pg 9-38 and 39) address the need for flow biasing the steady state MCPR limit and its basis. The basis for the flow biasing requires an understanding of the change in CPR with flow. The BWR Thermal Limit Lesson Plan (pg 9-33a and b) also discusses critical power versus actual bundle power in terms of channel quality and boiling length. In addition, lesson objective number 5 for the BWR Thermal Limits Lesson Plan requires the candidates to define CPR, explain the purpose of the flow biasing correlation factor, and define critical quality and boiling length. Answer key not modified.

Question 1.10a: Comment partially accepted. Based on the additional reference material provided with the comments, the correct answer is that the available NPSH for the recirculation pumps decreases due to a decrease in the subcooling to the suction of the recirculation pumps. Answer key modified.

Question 1.11c: Comment not accepted. Although NMP-1 does not have jet pumps, a rapid increase in recirculation pump speed increases the flow rate out of the annulus prior to any change in the feed flow rate into the annulus. The core flow rate must increase before reactor power can increase to generate more steam. Therefore, initially annulus level will begin decreasing due to the increased pumping rate of the recirculation pump. No additional reference material was provided by the facility to substantiate a significantly different response. Answer key not modified.

Question 1.11e: Comment accepted. Either of the following two alternate answers was accepted for full credit:

1. The doppler effect adds negative reactivity as the fuel temperature increased due to the power increase at point 3.
2. The void fraction increased due to the power increase at point 3.

Answer key modified.

Question 2.02b: Comment accepted. A continuous load rating of 2950 KW with increased maintenance was accepted. Answer key modified.

Question 2.02d: Comment accepted. The answer key was modified to include the 86DG-3 Lockout relay. In addition credit was given for providing conditions which would cause the actuation of the lockout relay.

Question 2.03a: Comment accepted. The answer key was incomplete since the training material chapters describing the Process Radiation Monitoring System and the Main Steam System did not provide all of the automatic actions initiated by a main steam line high radiation condition. Answer key modified.

Question 2.03b: Comment accepted, Question 2.03b deleted. This question was incorrectly phrased due to the ambiguity of the Ops Tech Chapter 31b and the Process Radiation Procedure, OP-50B description. Answer key modified.

Question 2.05c: Comment accepted. In addition, based on the P&ID sent with the comments, an alternate answer, that the Low-Low-Low Rosemount control room level indicator (LI-36-20) is not density compensated was accepted. Furthermore, the training material (Ops Tech Chapter 3, pg 9) mislead the examiner and some candidates to believe that all Rosemount level transmitters are mechanically temperature compensated. Answer key modified.

Question 2.09b: Comment accepted. The discussion of the high pressure interlock in the training material was very misleading and resulted in the inclusion of a misleading question and an incorrect answer in the examination. The answer key was modified to accept the shutdown cooling system pump trip on high suction temperature at 350 degrees F for full credit.

Question 3.03a: Rather than delete the question, an alternate answer, explaining that the MSIV closure at 850 psig in the RUN mode results in a scram, was accepted for full credit. The examiner misinterpreted Table 10-2 RPS alarms (Ops Tech Chapter 10) as alarms indicating RPS trips and bypasses of trip functions. Answer key modified.

Question 3.05: Comment accepted. The training material (Ops Tech Chapter 17, pg 12) should be revised since it incorrectly states that the relays which trip the recirculation pumps and isolate the Core Spray test valves will deenergize when reactor pressure decreases to 365 psig following an automatic initiation signal. Answer key modified.

Question 3.08c: Comment accepted; however, the purpose and the signal bypassed by the switches must be provided for full credit. The training material referenced in the answer key should be revised to reflect present plant operations. No additional reference material was provided. Answer key modification was not required.

Question 3.10d: Comment not accepted. The correct answer for this question specifically describes the operations of the select error exactly as described in Ops Tech Chapter 6 (pg 14). Answer key not modified.

Question 4.01b: Comment partially accepted. Completion of the annunciator/relay log was accepted for partial credit. For full credit, completion of a log entry in the CSO or SSS log must be included. Answer key modified.

Question 4.04b: Comment not accepted. The Unit 1 Ops Lesson Plan on Health Physics requires the operators to define a point source and to state the inverse square law; and thus, the operators should be able to apply the inverse square law to a basic calculation of exposure. In addition, the BWR K/A Catalog requires the operator to be knowledgeable of 10 CFR 20 radiation control requirements and 10 CFR 55 section 41.b(12) requires operators to be knowledgeable of radiological safety principles and procedures. Answer key not modified.

Question 4.06a: Comment accepted. The layout of the Emergency Cooling System procedure (N1-OP-13, pg 7) was misleading and resulted in the inclusion of an incorrect answer on the answer key. The comment was accepted as an alternate answer since some candidates also misinterpreted the procedure. An additional alternate answer, that torus level should be above 8.5 feet to ensure the Emergency Condenser vent line is covered by water, was also accepted. Answer key modified.

Question 4.07a: Comment accepted. Exact wording of the answer was not required. Answer key modification not required.

ATTACHMENT 4

SIMULATION FACILITY FIDELITY REPORT

Facility Licensee: Niagara Mohawk Power Corporation

Facility Licensee Docket No.: 50-220

Facility Licensee No.: DPR-063

Operating Tests administered at: Nine Mile Point 1

Operating Tests Given On: March 23 and 24, 1988

During the conduct of the simulator portion of the operating tests administered March 23 and 24, 1988, the following apparent performance and/or human factors discrepancies were observed:

- Malfunction TC10 (BPV #1 sticks open) did not function when inserted during bypass valve testing.

- Certain Guarded Initial Conditions (ICs) required the simulator instructor to perform some control manipulations after initialization to bring the plant to the conditions described for the IC (i.e. ready to startup FW Pump 13 in IC 12) or to put the plant in a stable condition so that a turnover could be conducted for the candidates. This additional setup time lengthened the operating examinations.