12/31/99

NOTE TO: NRC DOCUMENT CONTROL DESK
MAIL STOP 0-5-D-24

FROM: Virgil Curley, LICENSING ASSISTANT
OPERATING LICENSING BRANCH _ REGION I

SUBJECT: OPERATOR LICENSING EXAMINATION ADMINISTERED ON
Sep 13, 14-16, 1999, AT Peach Bottom Units 2 & 3
DOCKET NO. 50-277 & 278

ON Sep 13, 14-16, 1999 OPERATOR LICENSING EXAMINATIONS WERE ADMINISTERED AT THE REFERENCED FACILITY. ATTACHED YOU WILL FIND THE FOLLOWING INFORMATION FOR PROCESSING THROUGH NUDOCS AND DISTRIBUTION TO THE NRC STAFF, INCLUDING THE NRC PDR.

Item #1 (a) FACILITY SUBMITTED OUTLINE AND INITIAL EXAM SUBMITTAL DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE A070.
(Preliminary Submittals)

b) AS GIVEN OPERATING EXAMINATION, DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE A070.

Item #2 EXAMINATION REPORT WITH THE AS GIVEN WRITTEN EXAMINATION ATTACHED, DESIGNATED FOR DISTRIBUTION UNDER RIDS CODE IE42.

DRC Master EXAM File

October 6, 1999

Mr. Michael B. Roche
Vice President and Director
GPU Nuclear, Inc.
Oyster Creek Nuclear Generating Station
P.O. Box 388
Forked River, New Jersey 08731

SUBJECT: OYSTER CREEK NUCLEAR GENERATING STATION SENIOR REACTOR OPERATOR INITIAL EXAMINATION REPORT NO. 50-219/99-301

Dear Mr. Roche:

This report transmits the results of the subject operator licensing examinations conducted by the NRC during the period of August 30 through September 2, 1999 at your facility. These examinations addressed areas important to public health and safety and were developed and administered using the guidelines of NUREG-1021, Interim Revision 8, "Examination Standards for Power Reactors". Based on the results of the examinations, 6 of 6 Senior Reactor Operator (SRO) applicants passed all portions of the examinations. The findings and performance conclusions as a result of the examinations were discussed by Mr. L Briggs with Mr. J. Kowalski and others of your staff via telephone conference call on September 28, 1999.

In accordance with 10 CFR 2.790 of the NRC's "Rules of Practice," a copy of this letter and its enclosures will be placed in the NRC Public Document Room.

No reply to this letter is required, but should you have any questions regarding this examination, please contact me at 610-337-5183, or by E-mail at RJC@NRC.GOV.

Sincerely,

ORIGINAL SIGNED BY:

Richard J. Conte, Chief
Human Performance and
Emergency Preparedness Branch
Division of Reactor Safety

Docket Nos. 50-219

Enclosure: Initial Examination Report No. 50-219/99-301
w/Attachments 1, 2, and 3

IE 42

cc w/encl; w/Attachments 1-3:
J. Vacarro, Manager - Training

cc w/encl; w/o Attachments 1-3:
M. Laggart, Manager, Licensing and Vendor Audits
G. Busch, Manager, Nuclear Safety and Licensing
State of New Jersey

Distribution w/encl and w/Attachments 1-3:
DRS Master Exam File
PUBLIC
Nuclear Safety Information Center (NSIC)

Distribution w/encl; w/o Attachments 1-3:
Region I Docket Room (with concurrences)
NRC Resident Inspector
H. Miller, RA/J. Wiggins, DRA
P. Eselgroth, DRP
N. Perry, DRP
C. O'Daniell, DRP
W. Lanning, DRS
B. Holian, DRS
L. Briggs, Chief Examiner, DRS
DRS OL Facility File (V. Curley, DRS)
DRS File

Distribution w/encl; w/o Attachments 1-3: **(VIA E-MAIL)**
M. Tschiltz, OEDO
E. Adensam, PD1, NRR
S. Bajwa, NRR
H. Pastis, NRR
T. Colburn, NRR
R. Correia, NRR
DOCDESK
Inspection Program Branch, NRR (IPAS)

DOCUMENT NAME: G:\HPEPB\BRIGGS\OC99301.WPD
To receive a copy of this document, indicate in the box: "C" = Copy without attachment/enclosure "E" = Copy with attachment/enclosure "N" = No copy

OFFICE	RI/DRS		RI/DRP		RI/DRS			
NAME	LBriggs LEB		PEselgroth		RConte RJC			
DATE	10/6/99		10/6/99		10/6/99			

OFFICIAL RECORD COPY

U. S. NUCLEAR REGULATORY COMMISSION

REGION I

Docket Nos:	50-219
License Nos:	DPR-16
Report Nos:	50-219/99-301
Licensee:	General Public Utilities
Facility:	Oyster Creek Nuclear Generating Station
Location:	Forked River, New Jersey
Dates:	August 30-September 2, 1999 (Administration) September 7-September 28, 1999 (Grading)
Chief Examiner:	Larry E. Briggs, Sr. Operations Engineer
Examiners:	Joseph M. D'Antonio, Operations Engineer Todd H. Fish, Operations Engineer
Approved By:	Richard J. Conte, Chief Human Performance and Emergency Preparedness Branch Division of Reactor Safety

EXECUTIVE SUMMARY

Oyster Creek Nuclear Generating Station
Examination Report No. 50-219/99-301

Operations

Six instant SRO applicants were administered initial licensing exams. All applicants successfully passed all portions of the exam.

Overall, the as-submitted written examination met the guidance of NUREG 1021. Only one written test question required more than minor revision; however, post-exam analysis by the licensee resulted in comments, concerning technical subject matter or word usage issues, for 9 questions (see Attachments 1 and 2). The overall JPM set developed by the licensee met the guidance of NUREG 1021 but required the JPMs to be reorganized to satisfy sampling of 7 different safety functions for the simulator JPMs. Scenarios submitted were acceptable with two exceptions. Two scenarios required the addition of an instrument failure or an instrument/component combination failure to obtain a malfunction that required some operator action to prevent plant degradation, to meet the guidance of NUREG 1021.

Report Details

I. Operations

O3 Operations Procedures and Documentation

As a result of the examiners review of material developed or used in the administration of the initial examination process, the examiners observed implementation and related adequacy of facility procedures.

The need for a procedural enhancement was noted during the dynamic simulator scenario performance. The alarm response procedure for "CRD HIGH TEMP" annunciator did not contain instructions or direct the operator to a procedure that provided instructions to the applicant for placing the CRD flow control valve's controller in manual. Although certain actions are considered skills of the trade (in this case a reactor operator) the applicants during two dynamic simulator exercises would not place the controller in manual without procedural guidance when they experienced a controller instrument failure. Licensee management stated that operators are trained to use procedures for all equipment operations with the exception of specific actions identified in the Conduct of Operations, procedure No. 106. Manual control of the CRD flow control valve was not one of the exceptions. The licensee stated that they would review this issue and take appropriate corrective actions to prevent recurrence.

05 Operator Training and Qualifications

05.1 Senior Reactor Operator Initial Exams

a. Scope

The NRC examiners reviewed the written and operating initial examinations submitted by the facility staff to ensure that they were prepared and developed in accordance with the guidelines of the "Examination Standards for Power Reactors" (NUREG-1021, Interim Revision 8). The review was conducted both in the Region 1 office and at the Oyster Creek facility. On August 30 through September 2, 1999, the NRC examiners administered the operating portion of the exam to all applicants. On August 27, 1999, the written exams were administered by the facility's training organization. Due to post-examination written test comments by the license and NRC resolution of those comments, final grading was not completed until September 28, 1999.

b. Observations and Findings

Grading and Results

The results of the exams are summarized below:

	SRO Pass	Fail
Written	6	0
Operating	6	0
Overall	6	0

Attachment 1 provides the NRC staff resolution of facility post-examination comments.

Attachment 2 provides the facility's post examination comments.

Examination Preparation and Quality

The written exams, job performance measures (JPMs) and simulator scenarios were developed by the facility and their contractor representative using the guidelines of the examination standards. The exam development team was comprised of training and operations representatives. Individuals signed onto a security agreement once they became involved in the development of the examination. The NRC subsequently reviewed and validated all portions of the proposed exams. Some changes and/or additions to the proposed exams were requested by the NRC prior to and during the on-site review. Licensee personnel subsequently incorporated the agreed to comments and finalized the exams.

The written examination, initial submittal satisfied the guidance of the examination standards. There were several changes requested by the NRC to clarify question stems and to several distractors to make them more plausible.

One administrative JPM was changed to eliminate same system testing duplication. JPMs were reorganized to ensure that seven different safety function areas were tested in the simulator (control room) JPM portion of the exam.

Written Test Administration and Performance

The facility training department performed an analysis of questions missed on the written exam for generic and individual weaknesses. There were 20 questions that were missed by 50 percent or more of the applicants. Discussions with the licensee indicate that these questions' subject areas will be discussed with all applicants prior to assumption of any licensed duties and will also be reviewed for incorporation into subsequent initial licensing classes and/or requalification training. The licensee's action was determined to be acceptable.

As a result of the licensee's analysis, comments concerning answer changes and multiple correct answers for 9 questions were provided to the NRC for evaluation and resolution. The licensee's comments are detailed in Attachment 2 of this report. The NRC resolution of those comments is discussed in Attachment 1.

Operating Test Administration and Performance

During the preparation week two of three scenarios required the addition of an instrument failure or instrument/component failure combination that would require operator actions to prevent plant degradation, as detailed in the examination standards, NUREG 1021, Interim Revision 8. The nature of the proposed failures involved automatic control swap-over when an instrument fails and, therefore, no substantive operator action was needed.

The applicants demonstrated satisfactory communications and teamwork during the simulator exercises in both the routine and emergency portions of the exercise. Briefings were routinely conducted by the candidates when in the senior reactor operator position. The briefings were, overall, well controlled and ensured that all personnel knew the plant (simulator) status.

c. Conclusions

Six instant SRO applicants were administered initial licensing exams. All applicants successfully passed all portions of the exam.

Overall, the as-submitted written examination met the guidance of NUREG 1021. Only one written test question required more than minor revision; however, post-exam analysis by the licensee resulted in comments, concerning technical subject matter or word usage issues, for 9 questions (see Attachments 1 and 2). The overall JPM set developed by the licensee met the guidance of NUREG 1021 but required the JPMs to be reorganized to satisfy sampling of 7 different safety functions for the simulator JPMs. Scenarios submitted were acceptable with two exceptions. Two scenarios required the addition of an instrument failure or an instrument/component combination failure to obtain a malfunction that required some operator action to prevent plant degradation, to meet the guidance of NUREG 1021.

V. Management Meetings

X1 Exit Meeting Summary

On September 2, 1999, the Chief Examiner discussed preliminary observations with members of the training staff and operations management. On September 28, 1999, the Chief Examiner discussed final conclusions of the examination and provided final results via telephone.

The Chief Examiner also expressed appreciation for the cooperation and assistance that was provided during both the preparation and exam week by the licensee's examination team.

Since there were no observed discrepancies between the simulator and the plant, none were discussed at the exit meeting or in this report.

Attachments:
1. NRC Resolution of Facility Comments
2. Facility Comments on the Written Examination
3. SRO Written Exam w/Answer Key

PARTIAL LIST OF PERSONS CONTACTED

PARTIAL LIST OF PERSONS CONTACTED

FACILITY

J. Custer	Instructor
J. Kowalski	Director, Plant Training
J. Milligan	Instructor
K. Mulligan	Plant Operations Director
S. Sowell	Instructor, Initial Programs
J. Vaccaro	Operations Training Manager
G. Young	Operations Training Supervisor

NRC

L. Briggs	Senior Operations Engineer
J. D'Antonio	Operations Engineer
T. Fish	Operations Engineer

ATTACHMENT 1

RESOLUTION OF POST-EXAM WRITTEN EXAMINATION COMMENTS

Question 12 summary: The question asked what system actions would occur if the isolation condensers (IC) received an initiation signal when they were lined up for control from the remote shutdown panel (RSP). The answer (D) was that the initiation signals are bypassed and the "B" IC must be manually placed in service.

Licensee's comment summary: The "A" IC initiation logic is not bypassed and would automatically initiate on the conditions given in the question stem. The licensee recommended accepting "A" as an additional answer. The "D" answer is also correct since the "B" IC is the only one that can be operated from the RSP.

NRC resolution: The chief examiner reviewed the schematic diagrams for both the "A" and "B" isolation condensers to verify system operation and agreed with the licensee's recommendation. The answer key was changed to accept both "A" and "D" as correct.

Question 20 summary: The question asked what conditions, in addition to a Flow Comparator Rod Block, would occur when Flow Converter 1 input to the APRMS failed downscale. The original correct answer was "C" a flow biased rod withdrawal block on APRM's 1, 2, 3, and 4.

Licensee's comment summary: The question did not distinguish between a signal failure from the flow converter or a failure of the flow converter. A flow converter failure would generate an INOP signal and cause a Half-Scram on the same APRMS stated in the "C" answer. The licensee recommended accepting answer "A" as an additional correct answer.

NRC resolution: Agree with licensee's comments. The question stem was not specific enough to prevent applicant assumption of a different failure mode. The answer key was changed to accept both "A" and "C" as correct.

Question 36 summary: The question provided recirculation pump seal pressures and temperature information that indicated a degrading No. 2 seal.

Licensee's comment summary: The licensee noted that data indicated that the seal was in the process of failing and that it was plausible that an applicant could extrapolate that the seal had failed. The licensee recommended that "B" also be accepted as a correct answer.

NRC resolution: Disagree with licensee comments. The question clearly provided information that indicated a degraded No. 2 seal. No. 2 seal pressure is presented as 450 psig, only 50 psig less than normal and although it may be proceeding toward failure it is currently only degraded. The ability to identify a degraded seal or abnormal seal indications is within the expected skills of a licensed operator. The answer key was not changed.

Question 45 summary: What is the impact on plant operations if instrument air is lost and cannot be restored? Original answer (A) was the CST will drain to the condenser hotwell affecting makeup to the isolation condenser's shell side.

Licensee's comment summary: The licensee noted that the original answer would not come into play because makeup to the ICs would be lost after 5 cycles of the air operated makeup valve anyway. Answer "C" would be correct. The MSIVs would fail closed, isolating the main condenser, and require use of the EMRVs to control pressure. The licensee recommended accepting "A" and "C" as correct.

NRC resolution: Agree in part. In addition to the licensee's comments, Procedure 2000-ABN-3200.36, Instrument Air System Failure, was reviewed. The procedure requires the CST to be isolated if instrument air is not restored within 30 minutes to prevent it from draining to the CST. The question stem did not state that no operator action would be taken. This further discounts the original answer. The answer key was changed to accept only "C" as the correct answer.

Question 57 summary: The question asks what plant response would be if the EPR failed low. The MPR is adjusted in accordance with plant operating procedures. The original answer was (C), a high pressure scram will occur.

Licensee's comment summary: If the MPR is adjusted per plant procedures then a failure of the EPR low will result in control on the MPR at a slightly higher pressure. This corresponds to the "A" answer. The licensee recommended changing the correct answer to "A."

NRC resolution: Agree with the licensee's comments. A review of plant procedures indicates that the MPR adjusted IAW plant procedures will assume control on a low failure of the EPR. Answer key was changed to accept only "A" as the correct answer.

Question 59 summary: The question specifies several plant conditions which indicate a need to reduce a slow increase in drywell pressure with increasing airborne activity. The question asks for required actions to accomplish the task. The original correct answer was to vent the containment via the torus (provides additional scrubbing to remove some of the airborne activity).

Licensee's comment summary: The question also specified that drywell pressure was to be maintained below 1.3 psig. In order to vent via the torus, the drywell (if there is no leakage through the torus to drywell vacuum breakers) pressure must be at least 1.4 psig to clear the downcomer water leg. Typically, there is sufficient leakage past the vacuum breakers to keep the drywell pressure less than 1.3 psig using the torus vents. The licensee recommended accepting answers "A" and "B."

NRC resolution: Agree with licensee's comments. The reason the question was written was to verify that the applicant would take the conservative path and, with increasing airborne activity, vent via the torus and the standby gas treatment system to reduce the activity released. However the drywell pressure specified would be exceeded if venting via the torus (in a torus to drywell zero leakage environment). The chief examiner also reviewed Procedure 312.11, Nitrogen System and Containment Atmosphere Control, Revision 18. The procedure states that venting via the torus when radiation levels are higher than normal should be considered, but does not require it. Paragraph 4.3.4.1 allows venting via the torus or drywell as determined by the Group Shift Supervisor. In addition, the question did not specify an actual airborne activity level or state a high level. The answer key was changed to accept "A" and "B" as correct.

Question 83 summary: The question asks where the RPV water level is expected to be after completion of the Minimum Core Flooding Interval. The initial correct answer was "B" at the top of the active fuel.

Licensee's comment summary: The EOP Basis document states that the **MINIMUM** level will be at the top of the active fuel, however, depending on the size of the break and various injection combinations the actual level could be much higher. The licensee recommends accepting "A" and "B" as correct.

NRC resolution: The NRC agrees with the licensee's comments. Because the question asked for the **EXPECTED** level, not the **MINIMUM** level, any level above the top of the active fuel would be correct. The answer key was changed to accept "A" and "B" as correct.

Question 86 summary: The question states that with an ATWS in progress and in accordance with the EOP, if any EMRV is cycling on high pressure, direction is given to manually open EMRV's until any bypass valve starts to close. What is the reason for this direction? The original answer was "A," to prevent directing steam away from the condenser and into the torus.

Licensee's comment summary: Post-examination review indicated the applicants thought the question was asking for the adverse affects of allowing a solenoid operated EMRV to cycle on high pressure. The licensee recommends that answer, "D," to limit the number of EMRV lifts, thus reducing the chances of a stuck open EMRV, also be accepted as a correct answer.

NRC resolution: The NRC agrees with the licensee's comments. Based on review of the ATWS EOP Basis document, the question actually asks two questions. Why are EMRVs opened if an EMRV is cycling on high pressure and why do you close the EMRVs when one bypass valve starts to close. The answer to the first question is to prevent cycling of the EMRV. The answer to the second question is to prevent directing steam away from the main condenser and into the torus. The answer key was changed to accept "A" and "D" as correct.

Question 94 summary: The question asks what best describes the required action for a turbine building sump "1-5 RAD HI/LEVEL HI/TROUBLE" annunciator alarm. The original correct answer was "A," if aligned overboard and the rad monitor is high, confirm that the sump pumps are tripped.

Licensee's comment summary: Recommend deletion of the question because "A," "C," and "D" are all correct. Answer "A" is correct action for "RAD/HI." However, answer "C" is correct for a high level and answer "D" is correct if there is an oily sheen in the sump, as stated in the distractor.

NRC resolution: Agree with the licensee's comments. A review of Procedure 351.1, The Chemical Waste/Floor Drain System Operating Procedure, Revision 68, indicates that there are three correct answers to question No. 94. The answer key was changed to indicate that the question was deleted.

In addition to the above licensee comments, the licensee also submitted comments on four questions (60, 65, 78, and 79) that the applicants had raised during the post examination review. The applicant's comments were not supported by the licensee and no background information was supplied with the applicant's comments. No answer key changes were made based on those comments.

ATTACHMENT 2

LICENSEE'S POST-EXAMINATION COMMENTS

FACILITY RECOMMENDATIONS

Question #12:

The question asks what would happen if an Isolation Condenser initiation signal occurs while operating the plant from the Remote Shutdown Panel?

Oyster Creek recommends acceptance of an **additional** answer – A. "Only the "A" Isolation Condenser will automatically initiate."

During Post Examination Review, an applicant stated the "A" Isolation Condenser would automatically initiate upon receipt of a valid initiation signal regardless of the status of the Remote Shutdown Panel. Based on a review of the Isolation Condenser Initiation logic and associated procedures, we confirmed that the initiation signals to "A" Isolation Condenser are not bypassed when the Remote Shutdown Panel is activated. As such, the "A" Isolation Condenser would have initiated and the operators would be required to manually initiate the B Isolation Condenser.

In order to prevent spurious initiation of the "A" Isolation Condenser, the operator is directed to prevent automatic operation by placing the control switch for V-14-34 ("A" Isolation Condenser Condensate Return valve Panel 1F/2F) to CLOSE prior to evacuating the Control Room, or by electrically closing this valve, then turning off its supply breaker at DC-1, if not previously accomplished. This information was not provided in the stem of the question.

During the exam, the applicant who selected choice "A" asked the following question: *Are the control switches for the IC in the control room in their normal position?* Answer: *yes*

Reference: Control Room Evacuation 2000-ABN-3200.30
V-14-34 electrical elementary GE 157B6397
Remote Shutdown Panel Procedure 346

FACILITY RECOMMENDATIONS

Question #20:

The question asks for the impact on RMCS if a flow converter fails downscale.

Oyster Creek recommends acceptance of an **additional** answer- A.
" A flow biased half scram and a flow biased rod withdrawal block on APRM's 1,2,3 and 4."

During Post Examination Review, applicants indicated that they concluded the Flow Converter generated an INOP signal when the flow input failed downscale. The stem didn't distinguish between a failed input (INOPERABLE CONDITION / LOW FLOW SIGNAL) versus a valid downscale signal The stem statement that the "input to the APRM fails downscale" was interpreted to mean that an actual failure (INOP) produce this loss of flow signal. A flow converter inoperative signal is a RPS half scram signal.

Reference: Reactor Scram 2000-ABN-3200.01 Attachment 1
NI Electrical Elementary Diagram GE 706E812 Sheet 23
RPS Electrical Elementary Diagram GE 237E566 Sheet 1
RAP G-5-f

FACILITY RECOMMENDATIONS

Question #36:

The question gives Recirc Pump "A" seal parameters and asks for the condition of the Recirc Pump seals.

Oyster Creek recommends acceptance of an **additional** answer- **B.** "#2 seal has failed."

During Post Examination Review, an applicant stated that he determined that the #2 seal had failed because the #2 seal cavity pressure was 450 PSIG (which is 50 psig lower than normal) and slowly decreasing (had not stabilized).

Although the indications given are not indicative of a catastrophic seal failure, the #2 seal is in the process of failing. The stem indicates that the seal pressure is slowly decreasing and the seal temperature is slowly increasing. Since the stem doesn't provide any indication of pressure or temperature stabilizing, it's plausible to conclude that the seal has failed. Additionally, it is not common practice to distinguish between a degrading and failed recirculation pump seal.

FACILITY RECOMMENDATIONS

Question #45:

This question asks about the long term effect from a sustained loss of Instrument Air during a loss of Off Site power.

Oyster Creek recommends the acceptance of an **additional** answer – **C.** "The outboard MSIV's will fail closed, isolating the reactor from the Main Condenser, requiring EMRV's for pressure control."

During Post Examination Review, several applicants stated they selected Answer "C" because makeup water to the Isolation Condenser shell side would be lost after 5 cycles of the makeup valve which ruled out Answer "A" and determined that Answer "C" was the 'best' choice. The outboard MSIV's could not have been be re-opened (loss of power and air supply) which would require pressure control to be transferred to the EMRV's because makeup to the Isolation Condenser shell side is lost upon a prolonged loss of Instrument Air. Additionally, the applicants stated that though the Condensate Storage Tank might eventually drain to the hotwell, it would not affect Isolation Condenser shell side makeup because Firewater and Core Spray makeup to the shell side was still available. Oyster Creek accepts these presumptions/comments as valid.

Reference: Instrument Air System Failure 2000-ABN-3200.35
Loss of Off Site Power 2000-ABN-3200.36

FACILITY RECOMMENDATIONS

Question # 57:

Oyster Creek recommends changing the answer key from "C" to "A".

During Post Examination Review, an applicant stated that he thought that Answer A was the correct answer. Upon further review, it was determined that Answer "A" is indeed the correct answer. Answer "C" would be correct only if the MPR was set lower than the EPR. However, conditions given in the stem stated that the MPR and the EPR are properly adjusted per the Plant Operating Procedures, meaning the MPR would respond as designed and control Reactor pressure at a higher value upon EPR failure, thus preventing a Reactor high pressure scram from occurring.

Reference: Turbine Control Diagram Prints 233R309

FACILITY RECOMMENDATIONS

Question #59:

The question asks for expected operator response to increasing Drywell Pressure.

Oyster Creek recommends acceptance of an **additional** answer – B. "Vent the Drywell to RBHVAC via Drywell Vent valves V-23-21 and V-23-22"

During Post Examination Review, an applicant stated that he determined that the Drywell Vent Valves V-23-21 & V-23-22 had to be used in order to maintain Drywell pressure at 1.3 PSIG. Drywell pressure must be at least 1.4 PSIG greater than Torus pressure in order to clear the water column in the downcomer legs.

Typically, there is leakage past the Torus to Drywell Vacuum Breakers. As such, it is possible to maintained Drywell pressure < 1.3 PSIG using the Torus vents, making Answer "A" also correct.

Reference: Procedure 312.11 Section 4.3.4

FACILITY RECOMMENDATIONS

Question # 60:

During Post Examination Review, an applicant stated that Answer "C" was the correct answer based on the temperature control leg of Primary Containment Control. The applicant stated that since Containment Spray was unavailable, he assumed that Drywell temperature would continue to increase and could not be maintained below 281° F; therefore, Emergency depressurization would be required.

This extrapolation of conditions given in the stem could be misinterpreted to mean the question was asking about the requirement to emergency depressurize the RPV when Drywell temperature could not be restored and maintained below 281° F. However, Answer "C" states *Based on current conditions in the Drywell, Emergency Depressurization is required.* Oyster Creek believes that emergency depressurizing based on the given conditions does not meet the intent of the EOP direction to WAIT until Drywell temperatures cannot be restored and maintained below 281° F.

Oyster Creek does not recommend accepting "C" as a correct answer.

FACILITY RECOMMENDATIONS

Question # 65:

During Post Examination Review, an applicant commented that continued use of the "A" EMRV could result in steam vent clearing of the EMRV piping, making Answer "C" the correct answer. The applicants' thought process was if the steam from the EMRV was not condensed, continued use of the same EMRV could lead to overpressurizing the Containment, and the long term effect of continued use of the same EMRV could lead to Containment failure.

Oyster Creek does not recommend acceptance of "C" as an additional correct answer.

FACILITY RECOMMENDATIONS

Question # 78

During Post Examination review, an applicant stated that it is better (more conservative) to reduce pressure during an ATWS with the given conditions (increasing Torus water temperature), making Answer "C" the correct answer. Oyster Creek believes that this is an incorrect application of the EOP direction to maintain RPV pressure below the HCTL curve based on the conditions given in the question.

Oyster Creek does not recommend accepting "C" as a correct answer.

FACILITY RECOMMENDATIONS

Question # 79:

During Post Examination Review, applicant comments were that if you did not emergency depressurize before exceeding HCTL, the Torus would not be able to handle the blowdown, thereby making choice "A" the correct answer. However, at Oyster Creek, the downcomers from the Drywell into the Torus are uncovered at 110" Torus water level, while the EMRV Y-quenchers are uncovered at 90" Torus water level. The EOP basis for HCTL is concerned with a LOCA occurring and the suppression system unable to prevent overpressurization of the Containment.

Oyster Creek does not recommend acceptance of "A" as an additional correct answer.

FACILITY RECOMMENDATIONS

Question # 83:

The question asks where RPV water level is at the completion of the Minimum Core Flooding Interval (adequate core cooling assured).

Oyster Creek recommends acceptance of an **additional** Answer- A. "At a level above the steam separators"

During Post Examination Review, an applicant stated that he selected Answer A because the question specifically asks "which of the following best describes where RPV water level is expected to be". As described in the EOP Basis document, **minimum** RPV water level will be at the top of active fuel; however, actual RPV water level will be much higher (off scale high on the RPV level indicators). Since the question emphasized 'expected level' versus minimum level, the applicant correctly concluded that actual (expected) RPV Water Level would be above the steam separators.

Depending on a multitude of variables, for example, the size of the leak from the RPV, the reason for why RPV instrumentation was lost, the capacity of injection sources into the RPV, Reactor water level could be very high in the vessel, above the range of RPV water level instrumentation, implying Answer "A" to be the correct answer.

Reference: EOP Basis document pages 8A-19 and 20

FACILITY RECOMMENDATIONS

Question #86:

The question asks for the reason why cycling EMRV's are manually opened on high pressure conditions during an ATWS.

Oyster Creek recommends acceptance of an **additional** answer – **D.**
"To limit the number of EMRV lifts, thus reducing the chances of a stuck open EMRV occurring."

During Post Examination Review, applicants stated they thought the question was asking for the adverse affects of allowing a solenoid operated EMRV to cycle on high pressure. The applicants stated that anytime you allow an EMRV to cycle for pressure control, you are increasing the chances of an EMRV to stick open. Since Oyster Creek is equipped with pilot operated solenoid actuated Electromatic Relief Valves, this poses a 'significant' concern.

Per the basis document, under ATWS pressure control, the cycling EMRV's pose several potential problems to the plant. One is the repeated challenges to EMRV operability with the possibility of the EMRV failing open.

Reference: EOP Basis Document RPV CONTROL- ATWS pages 1b-57 -59

FACILITY RECOMMENDATIONS

Question # 94:

The question asks for operator actions on a Turbine Building 1-5 Sump high level.

Oyster Creek recommends deletion of this question based on three possibly correct answers (A, C and D)

Answer "A" is the expected operator action for RAD HI. However, Answer "C" states to confirm sump controls are in AUTO. At Oyster Creek, CONFIRM means to ensure the controls are in AUTO, and if not, to place the controls in AUTO. If the sump controls *were* in AUTO, Answer "C" would be the correct answer for LEVEL HI.

The question as written does not specify whether the annunciator is RAD HI or LEVEL HI.

Answer "D" could also be a correct answer, for if the sump did have a high level in it and an oily sheen, the sump is not pumped using the installed 1-5 sump pumps. It is manually pumped into 55 gallon drums for processing.

Reference: Procedure 351.1 Section 16

ATTACHMENT 3

SRO WRITTEN EXAM W/ANSWER KEY

U.S. Nuclear Regulatory Commission
Site-Specific
Written Examination

Applicant Information	
Name:	Region: I
Date: August 27, 1999	Facility/Unit: Oyster Creek
License Level: SRO	Reactor Type: GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. The passing grade requires a final grade of at least 80.00 percent. Examination papers will be collected four hours after the examination starts.

Applicant Certification

All work done on this examination is my own. I have neither given nor received aid.

_____
Applicant's Signature

Results	
Examination Value	100 Points
Applicant's Score	_____ Points
Applicant's Grade	_____ Percent

G2.1.1-01

1. You are the on coming CRO. During the panel walkdown you observe a graph on a back panel which converts percentage of tank level to gallons. This graph was not there the last time you had this watch.

Which of the below describes the manner you can verify this graph is an approved operator aid?

a. The operator log contained an entry discussing the use of this aid

b. It is signed by the Plant Operations Director or designee

c. It is signed by the Group Operating Supervisor

d. It is initialed by the Site Shift Manager

G2.1.12-03

2. Given the following conditions:

- At 8 AM, July 6,1999, Diesel Generator 1 starting motor battery cable was discovered to be frayed and broken.
- At 9 AM, July 6, 1999, the GSS was informed of the broken cable
- At 10 AM, July 6, 1999, it was determined that the damage to the cable occurred at 4 AM July 6, 1999.

Which of the following is the correct time the Diesel Generator is to be declared inoperable?

a. 4 AM

b. 8 AM

c. 9 AM

d. 10 AM

G2-1-12-04

3. The plant is at 100% power. Chemistry has just completed its daily sample of the SLC Storage Tank.

Given the following information:

- SLC Storage Tank level: 3200 gallons
- SLC Storage Tank temperature: 100° F
- Weight % of sodium Pentaborate: 14%

Which of the following best describes the actions, if any, that need to be taken?

a. The weight % sodium pentaborate needs to be increased

b. The storage tank level needs to be increased

c. The temperature of the storage tank needs to be decreased

d. No actions are required

G2.1.33-01

4. Which one of the following situations, if not corrected within eight (8) hours, would require shutdown and cooldown of the reactor?

a. Drywell Sump Flow Integrator indicates 270 gallons pumped during the last hour; Drywell Equipment Drain Tank level has been increasing 300 gallons every 15 minutes.

b. Drywell Sump Flow Integrator indicates 210 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 330 gallons every 15 minutes.

c. Drywell Sump Flow Integrator indicates 90 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 345 gallons every 15 minutes.

d. Drywell Sump Flow Integrator indicates 150 gallons pumped during the last hour; Drywell Equipment Drain tank level has been increasing 315 gallons every 15 minutes.

G2.1.34-01

5. Given the following conditions:

- Reactor startup in progress
- Reactor power 5%
- Main turbine warm-up in progress
- Chemistry reports reactor coolant sample results:
  - conductivity 8 µS/cm
  - chlorides 0.3 ppm

Which one of the following best describes the required actions?

A. No action is required because no Technical Specification limitations have been exceeded.

B. A shutdown must be initiated immediately because the low steaming rate (< 100,000 lbm/hr) limitations have been exceeded

C. A shutdown must be initiated immediately because the high steaming rate (> 100,000 lbm/hr) limitations have been exceeded

D. No action is required as long as coolant quality does not maintain these values for greater than 72 hours for this incident.

G2.1.4-01

6. The plant is at 100% power with minimum staffing requirements when the CRO At-The-Controls becomes ill with 4 hours shift time remaining and must go home.

Which of the following best describes the actions needed for continued plant operation?

a. The ill CRO must be formally relieved by the other CRO and staffing requirements must be returned to minimum within 2 hours

b. The ill CRO can not leave the Control Room exclusion area until minimum staffing requirements are met

c. The ill CRO must be formally relieved by the other CRO and minimum staffing requirements are waived until shift change

d. The ill CRO can leave the control room provided both SRO licensed supervisors remain in the Control room until staffing requirements are returned to minimum.

G2.2.1-01

7. Given the following conditions:

- On July 1st, a reactor scram from 100% power occurred
- During this scram event, all systems operated as designed

It is now July 5th, and a reactor startup is to be performed in accordance with Procedure 201.1 APPROACH TO CRITICALITY.

Which of the following best describes the Pre-Critical check off that must be performed for the CRD hydraulic system?

a. The scram insertion times for all operable control rods have been evaluated and are within Technical Specification limits

b. The scram insertion times for the eight (8) control rods selected to the brush recorder have been evaluated and are within Technical Specification limits.

c. At least one (1)control rod shall be scram time tested.

d. All control rods must be operable.

G2.2.11-01

8. Which of the following situations does the GSS have sole authority for approval of a Temporary Procedure Change?

a. While reviewing EOP 3200.01A RPV Control-No ATWS, the LOS submits a Temporary Procedure Change to the EOP for a more accurate wording of the intent of a specific step

b. A Control Room Operator submits a Temporary Procedure Change for re-ordering the steps for placing a second Reactor Feed Water Pump in service

c. While preparing to place a RWCU Filter Demineralizer in service, the EO submits a Temporary Procedure Change deleting a prerequisite because it is not applicable for current conditions

d. While performing a surveillance, a Temporary Procedure Change is submitted to change a valve stroke time acceptance criteria

G2.2.22-03

9. Given the following conditions:

- Reactor at 90% power
- A planned outage is scheduled to start in 4 days
- EMRV NR-108C has just been declared inoperable
- The cause of the failure of the EMRV is under investigation

Which of the following best describes the required conditions for operation?

a. Reactor operation may continue until the scheduled shutdown because the minimum Technical Specification requirements are still met.

b. The reactor must be shut down and depressurized below 110 psig within 24 hours as required by Technical Specifications

c. Reactor operation may continue for up to 3 more days provided both Isolation Condenser isolation and makeup valves are verified operable on a daily basis.

d. If both loops of Core Spray and both Diesel Generators are operable, reactor operation can continue and the planned outage can occur as scheduled.

G2.2.29-01

10. Oyster Creek is in a refueling outage.

Which one of the following conditions would require a SRO *specifically assigned to refueling* to be present on the refuel bridge?

a. Partial core offload, fuel pool gates removed, removal of control rod 02-27 in progress from the refuel bridge

b. Partial core offload, fuel pool gates removed, processing new fuel from inspection stand to fuel pool racks

c. Full core offload, fuel pool gates removed, repositioning blade guides for control rod drive interference checks

d. Partial core offload, fuel pool gates removed, withdrawing control rod 02-27 from control room in preparation for uncoupling

11. "A" Recirc Pump is operating in MANUAL and is being transferred to AUTO.

Which of the following explanations best describes the expected plant response when the AUTO/MANUAL pushbutton on the controller is depressed?

a. A recirculation flow transient would occur if a deviation exists between the Master and Individual Controller setpoints

b. The Recirc Flow control system will not allow you to place the individual controller into AUTO unless the deviation signal has been balanced

c. A bumpless transfer from MANUAL to AUTO control will occur because the control system automatically adjusts setpoints

d. A Scoop Tube lockup occurs because going to AUTO without balancing the deviation between the Master and Individual controller would result in a recirculation flow transient

207000-02

12. Given the following conditions:

- Operation of the plant is being controlled from the Remote Shutdown Panel
- RPV pressure is 1050 PSIG and rising
- RPV water level is 100" and dropping
- Isolation Condenser Transfer Switches for Train "A" and "B" are in ALTERNATE

Concerning the Isolation Condensers, which of the following will occur if an initiation signal is received?

a. Only the "A" Isolation Condenser will automatically initiate

b. Only the "B" Isolation Condenser will automatically initiate

c. Initiation signals are bypassed; the operator must open the DC Condensate Return Valve to place "A" Isolation Condenser in service

d. Initiation signals are bypassed; the operator must open the DC Condensate Return Valve to place "B" Isolation Condenser in service

207000-04

13. Which of the following describes plant operation if 125 VDC MCC DC-2 is de-energized?

a. Operation can continue if "A" Isolation Condenser is operable

b. Operation can continue if "B" Isolation Condenser is operable

c. Operation can continue if both Isolation Condensers are operable

d. Operation can continue if DC-2 can be supplied from another DC source via an ATS

14. Given the following conditions:

- The plant is in cold shutdown.
- Core Spray system is in Standby readiness
- Core Spray System high Drywell pressure detector RV46A has failed high.

Which of the following best describes the response of Core Spray to this event?

a. Both "A" and "B" Main Pumps start, then "A" and "B" Booster Pumps start and all parallel valves open

b. Both "A" and "B" Main Pumps start, then "A" and "B" Booster Pumps start; parallel valves must be manually opened if injection is required

c. System 1 "A" Main Pump starts, then System 1 "A" Booster Pump starts, then System 1 parallel valves open. System 2 Pumps do not start

d. Core Spray SYSTEM 1 AUTOSTART and DEMAND FOR PUMPS ON annunciators alarm, but no pumps start

15. Given the following conditions:

- A valid Core Spray initiation signal is present
- System 1 Priority Booster Pump failed to start

Which of the following best describes the ***automatic*** response of the Core Spray system booster pumps?

a. ONLY "B" Booster Pump is operating

b. ONLY "C" and "B" Booster Pumps are operating

c. ONLY "C" Booster Pump is operating

d. ONLY "B", "C" and "D" booster Pumps are operating

209001-03

16. The plant is at 100% power

Given the following conditions:

- A loss of offsite power has occurred
- One of the Diesel Generators can NOT be started
- RPV water level is decreasing due to a LOCA

Which of the following assures increased confidence that at least one loop of Core Spray will inject into the vessel?

a. Coping strategy has the CT's energizing the 4160 VAC system within 1 hour

b. Parallel Injection valve V-20-41 can be powered from whichever Diesel Generator is operating

c. Both Core Spray Fill Pumps continue to operate, minimizing water hammer

d. Diesel Generator Sequential Timing assures that the Main and Booster Pumps do NOT start at the same time, overloading the available DG

212000-02

17. In accordance with 201.2 PLANT HEATUP TO HOT STANDBY, which of the following best describes when the mode switch can be placed to RUN?

a. When at least 2 Bypass Valves are fully open

b. When reactor pressure is greater than 850 PSIG

c. If operating in IRM Range 10, the mode switch must be in RUN prior to exceeding 25% power

d. All IRM's are reading high on Range 9 and all APRM downscale indicator lights have cleared

215004-01

18. Given the following conditions:

- A reactor startup is in progress
- Reactor power is approximately 5.5 x 10^4 cps on all SRM's

Which of the following describes how a SRM detector that cannot be fully withdrawn affects continued control rod withdrawals?

A. Control rod withdrawals will **NOT** be permitted because of administrative controls.

B. Control rod withdrawals will be possible as soon as the remaining SRM's are fully withdrawn and read less than 500 cps.

C. Control rod withdrawals will be possible until power reaches 1 x 10^5 cps. and then will not be allowed (Rod Block) until IRM's are at or above Range 8.

D. Control rod withdrawals will be possible until power reaches 1 x 10^5 cps. and then will not be allowed (Rod Block) until IRM's are at or above Range 8 **AND** the affected SRM is bypassed.

215005-01

19. Which of the following conditions requires an immediate manual scram to be inserted?

a. While reducing power using recirc flow, inadvertent entry into the Exclusion Region on the Power Operation curve occurs

b. Total Recirculation flow is 10×10^4 gpm and APRM's 4 and 8 show oscillations of 6% power peak to peak over a 3 minute period

c. Withdrawing control rods to establish the 100% rod pattern line when a single Recirc Pump trip causes entry into the Exclusion Area on the Power Operation curve

d. Recirc flow has been reduced to minimum and APRM's 4 and 8 indicate a 6% peak to peak oscillation

215005-02

20. The reactor is at 50% power when Flow Converter 1 input to the APRM's fails downscale.

In addition to a Flow Comparator Rod Block, which of the following conditions will occur?

a. A flow biased half scram and a flow biased rod withdrawal block on APRM's 1,2,3, and 4.

b. A flow biased half scram and a flow biased rod withdrawal block on APRM's 5,6,7,and 8.

c. A flow biased rod withdrawal block on APRM's 1,2,3, and 4

d. A flow biased rod withdrawal block on APRM's 5,6,7,and 8.

21. A plant transient is in progress.

- The ADS timers have initiated.
- Reactor pressure is 1055 PSIG and increasing.

Which of the following best describes the affect on EMRV "A" if its control switch is placed to OFF?

a. The valve will **not** function as a relief valve, but its ADS function remains operable

b. The valve will function as a relief valve and its ADS function remains operable

c. The valve will function as a relief valve, but its ADS function will **not** work

d. Neither the relief or ADS mode of operation will work.

218000-02

22. Given the following conditions:

- A plant transient has occurred.
- The ADS timers have initiated, BUT have NOT yet timed out.
- RPV water level is now 70" TAF and increasing

Which of the following best describes the response of ADS?

a. The timing sequence will not be affected. The ADS valves will open when the timer times out.

b. The timing sequence will stop. The ADS valves will **not** automatically open.

c. The timing sequence will stop, however, the timer will **not** reset to zero.

d. The timing sequence will re-set to time ZERO, then initiate the ADS timer again.

223001-02

23. While operating at rated power, a large break loss of coolant accident occurs inside the Drywell.

As the Drywell pressure and temperature began to rise, the operator noted that Torus pressure rose at the same rate and remained the same as Drywell pressure.

Which of the following identifies the possible explanation for this response?

a. This is the expected response due to the design of the Torus to Drywell Vacuum Relief system

b. This response may be due to the failure of the Torus to Drywell Vacuum Relief system valves to operate as designed

c. This response may be due to a crack in the Drywell vent pipes, discharging steam into the Reactor Building

d. This response may be due to the failure of the Reactor Building to Torus Vacuum Relief system to operate as designed

295001-01

24. Given the following conditions:

- The plant is at 100% power with all Recirc Pumps operating
- "C" Recirc Pump trips

Which of the following best describes the basis for the expected operator actions?

a. To satisfy Recirc MG Set Motor starting interlocks

b. Minimizes the possibility of a LOCA occurring on the affected loop

c. Minimizes reverse coolant flow through the affected loop

d. To prevent windmilling of the affected Recirc Pump

295001-02

25. The plant was initially at 100% power when it is noticed that Turbine Generator Megawatt output is changing 6 MWe peak to peak

Of the following, which one is most likely to cause this event to occur?

a. Extraction steam isolations

b. Recirc Pump speed control

c. A control rod is drifting

d. Condenser vacuum is degrading

295002-01

26. Given the following conditions:

- The plant is at 100% power
- Annunciator OFF GAS PRES HI alarms (Panel 10F)
- Radwaste Control Room has just called and reported a loud bang was heard in the AOG building.

Which of the following best describes the plant response to this event?

a. SJAE Steam supply valve V-1-11 closes

b. SJAE Air Inlet Valves close

c. Air Extraction Valves V-7-1 through V-7-6 close

d. AOG system trips into ISOLATE

295002-02

27. Given the following conditions:

- The plant is at 75% power
- SJAE STEAM HI/LOW PRES annunciator has just alarmed
- SJAE inlet steam pressure as read on 7F indicates 75 PSIG and dropping
- Condenser vacuum is 27.5" and degrading

Which one of the following diagnostic actions would **NOT** be successful in terminating this event and stabilizing the plant??

a. Swapping Pressure Controllers from V-1-37 to V-1-38

b. Verifying Steam Supply valve V-1-11 is full open

c. Placing all SJAE elements in service

d. Locally verifying air pressure supply is available to the pressure regulator

295005-01

28. Which of the following best describes the reason why reactor power shall not exceed 40% until all Bypass Valves are closed??

a. If the turbine tripped, the scram could be from Reactor high pressure instead of Fast Closure of the Turbine Stop Valves

b. If the turbine tripped, the additional steam loading on the condenser could result in degrading condenser vacuum

c. If the turbine tripped, a drop in Main Steam Line pressure could causes the MSIV's to close

d. If a loss of Stator Water Cooling occurred, a runback signal would not be generated

295005-02

29. Given the following conditions:

- The plant is at 100% power
- A neutral ground overcurrent condition is detected on Auxiliary Transformer 1A and trips the AUX TRANS LOCKOUT relay on Panel 12R

Which of the following best describes the plant status due to this event?

a. Bus 1A dead bus transfers to Startup Transformer SA.
A manual reactor scram is required due to loss of multiple major plant pumps.

b. Bus 1A de-energizes.
EDG #1 fast starts and re-energizes Bus 1C.
A manual reactor scram is required due to loss of multiple major plant pumps.

c. A Turbine trip / reactor scram occurs.
Bus 1A is de-energized.
EDG #1 fast starts and re-energizes Bus 1C.
Bus 1B dead bus transfers to Startup Transformer SB.

d. A Turbine trip / reactor scram occurs.
Bus 1A transfers to Startup Bus SA.
Bus 1B transfer to Startup Bus SB

295008-02

30. Assuming no operator actions are taken to control RPV water level after a scram, AND all equipment operates as designed, which of the following best describes the plant response?

a. If ROPS is in NORMAL, all operating Feedwater Pumps will trip

b. If ROPS is BYPASSED, all operating Feedwater Pumps will trip

c. RPV water level will continue to rise due to CRD and leakage past the MFRV

d. RPV water level will continue to drop due to steaming demand of SJAE and Bypass Valves

295008-03

31. Given the following conditions:

- The plant was at 100% before a reactor scram occurred due to a loss of condenser vacuum
- "A" and "B" Reactor Feedwater Pumps are manually tripped.
- Direction is given by the GOS to control RPV water level low in the control band

Which of the following best describes why this direction would by given?

a. Exceeding 175" TAF will require the operator to trip "C" RFP

b. Isolation Condensers may be used for pressure control

c. The loss of condenser vacuum makes use of RWCU letdown unavailable

d. Decay heat could cause RPV water level to swell up above 175"

295018-01

32. Given the following conditions:

- The plant is at 50% power
- 1-2 RBCCW Pump is tagged out of service for maintenance
- 1-1 RBCCW Pump trips and cannot be restarted

Which of the following best describes the plant response AND the expected operator actions?

a. The cleanup system will isolate.
Recirc Pump motor temperatures will increase.
The operators are required to perform a normal plant shutdown, then trip all operating Recirc Pumps

b. The cleanup system will isolate.
Recirc Pump motor temperatures will increase.
The operators are required to scram the reactor and trip all operating Recirc Pumps

c. The cleanup system will continue operating.
Recirc Pump motor temperatures will increase.
The operators are required to perform a normal plant shutdown, then trip all operating Recirc Pumps

d. The cleanup system will continue operating.
Recirc Pump motor temperatures will increase.
The operators are required to scram the reactor and trip all operating Recirc Pumps

201001-01

33.

Prior to a reactor startup with plant cold, the CRO adjusts the CRD Drive Water Pressure Control Valve to maintain 250 PSID between drive water header pressure and reactor pressure.

How is this pressure differential maintained as reactor pressure increases during the ensuing startup? **(Assume the CRD system is operating as designed)**

A. The Pressure Control Valve automatically operates to maintain CRD system pressure above reactor pressure

B. The CRO will periodically adjust the Flow Control Valve to maintain CRD system pressure above reactor pressure

C. The operator needs to continuously adjust the Pressure Control Valve to maintain the required differential pressure

D. The Flow control valve automatically opens to maintain constant flow, therefore a constant differential pressure across the Pressure Control Valve

34. Given the following conditions:

- A reactor startup is in progress
- No control rod is selected for withdrawal
- Control Rod 24-17 is banked at position 12

One minute later

- ROD DRIFT annunciator H-6-a is in alarm
- Control Rod 24-17 is found at position 16 and drifting out

Which of the following describes the expected operator actions?

a. Apply an EMERG ROD IN signal using the NOTCH OVERRIDE switch, then turn off rod power when the rod is returned to position 12

b. Apply an EMERG ROD IN signal using the NOTCH OVERRIDE switch, insert the rod to position 00, then turn off rod power

c. Apply an insert signal to the rod and return the rod to position 12

d. Apply an insert signal to the rod and insert the rod to position 00

201006-01

35. Which of the following describes the LOW POWER MODE OPERATION of the Rod Worth Minimizer?

A. It enforces the rod sequence to limit the rate of heat production to < 280 calories/gram of fuel during rod withdrawal when reactor power is < 10%

B. It enforces a rod insert sequence to ensure the correct rod pattern is established prior to initiating a reactor shutdown

C. It enforces rod withdrawal with a banked position withdrawal sequence to minimize clad damage if a control rod drop accident were to occur

D. It enforces rod movement to provide insert and withdraw blocks during a rod sequence exchange

36. The plant is at 100% power.

Given the following conditions:

- Increased leakage to the DWEDT

and the following indications on "A" Reactor Recirc Pump

- Seal Cavity # 1 pressure constant @ 1050 PSIG
- Seal Cavity # 1 temperature slowing increasing
- Seal Cavity #2 Pressure @ 450 PSIG and slowly decreasing
- Seal cavity #2 temperature slowly increasing

Which of the following best describes the condition of "A" Reactor Recirc Pump?

a. # 2 seal is degrading, # 1 seal is operating as designed

b. # 2 seal has failed

c. # 1 seal is degrading, # 2 seal is operating as designed

d. # 1 seal has failed

204000-01

37. Given the following conditions:

- Reactor at 100% power
- Cleanup System Pressure Control Valve PCV–ND11 set to maintain system pressure at 90 psig
- The air supply line to PCV–ND11 fails at the connection to the valve positioner.

Which of the following explanations correctly describes the expected system response?

A. The PCV fails open, and the RWCU system isolates on a Filter high flow isolation signal.

B. The PCV fails shut, diverting flow through the bypass orifice, with system pressure stabilizing at some new value less than 125 psig.

C. The PCV fails open, raising system pressure and lifting relief valves to the condenser, and, if necessary, to the Torus.

D. The PCV fails shut, and the RWCU system isolates on a Filter Low Flow isolation signal.

204000-02

38. While operating at power, annunciator D–1–d "RWCU HELB (I)" alarms.

Which of the following best describes the expected plant / operator response?

a. If annunciator D-2-d RWCU HELB (II) is in alarm, confirm automatic isolation of RWCU has occurred.

b. RWCU will isolate.

c. If RWCU is still in service, RWCU has failed to isolate as designed; immediately isolate RWCU by closing motor operated isolation valves.

d. Verify RWCU system temperature, RBCCW operation and supply temperature, and adjust as required to restore Cleanup Room temperature to less than 180°F.

204000-03

39. Following a scram from rated conditions, RWCU is being used to lower RPV water level.

Which of the following best describes a possible effect of raising letdown flow during this evolution?

a. The system may isolate due to high filter demin differential pressure

b. The system may isolate due to high pressure in the system downstream of HP PCV

c. The system may isolate due to high system temperature

d. The system may isolate due to low flow from diverting flow to the reject line

205000-01

40. Given the following conditions:

- A loss of Shutdown Cooling has occurred
- Reactor water temperature is 180 ° F
- No Recirc Pumps are in operation

Which of the following best describes why reactor water level is raised > 185" TAF?

a. To increase the volume of cold water in the reactor vessel

b. To flood up to the Isolation Condenser Steam lines for Alternate Decay Heat Removal

c. To submerge the Steam Separators to enhance natural circulation in the core

d. To prevent cavitation of the Cleanup Pumps, which will now be used for decay heat removal

215003-01

41. A reactor startup is in progress following a forced outage.
During the shutdown, IRM 11 drawer voltage preamplifier was replaced.

Step 5.11 of Procedure 201.2 PLANT HEATUP TO HOT STANDBY requires IRM Range 6/7 overlap check to be performed.

This is required because:

a. it assures a proper overlap between the SRM's and the IRM 11 reading.

b. it verifies the correct correlation between Range 6 & 7 when the voltage pre-amplifier switches from the low frequency to the high frequency amplifier.

c. further calibration of the IRM's can not be performed when the range attenuation is selected for Range 7 or higher.

d. it assures that when the IRM's are positioned at various heights in the core, the correct reading is obtained and used for Rod Block/RPS instrumentation.

245000-01

42. Given the following conditions:

- The plant is at 55% power (363 MWe)
- At T = 0, STATOR COOLING TROUBLE annunciator alarmed due to high outlet temperature
- At T = 5 minutes, STATOR TEMP HI annunciator alarms, and generator Mwe starts decreasing

Which of the following best describes the required operator action(s) for the given conditions?

a. Verify Generator Amps decrease to less than 4800

b. Verify Generator output drops to less than 264 MWe and 3 Bypass Valves are open

c. Trip the turbine when < 264 MWe

d. Manually scram the reactor

271000-01

43. Given the following conditions:

- Reactor power was increased from 55% to 65%
- Following the power increase, an increase in Off Gas activity was noted. (OFF GAS HI (10F-2-C) is in alarm)
- OFF GAS HI-HI (10F-1-C) annunciator has just alarmed
- Operator actions are being performed IAW Procedure 2000-ABN-3200.26 INCREASE IN MAIN STEAM LINE/OFFGAS ACTIVITY
- OFF GAS MODE SELECTOR SWITCH (10XF) is in NORMAL; Drain Valve handswitch for OG-AOV-016 and V-7-29 is in AUTO (10XF)

Which of the following best describes the response of AOG?

a. AOG will ISOLATE and BYPASS

b. AOG will ISOLATE after a 15 second time delay

c. If the OFF Gas HI-HI alarm does not clear after 15 minutes, AOG will ISOLATE

d. If the OFF Gas Hi and HI-HI alarms do not clear after 15 minutes, AOG will ISOLATE

290003-02

44. In accordance with plant procedures, when is Control Room HVAC placed in Full Recirculation Mode?

a. During normal plant operations

b. During conditions of fire or smoke

c. During radiological releases

d. During toxic/hazardous gas releases

300000-01

45. A reactor scram from 100% has occurred due to a loss of offsite power.

Which of the following best describes the impact on plant operations if the Instrument Air compressors can NOT be restarted?

a. The Condensate Storage Tank will drain to the hotwell, affecting Isolation Condenser shell side makeup

b. The MFRV's lockup, requiring the Heater String outlet valves to be used for RPV water level control

c. The outboard MSIV's will fail closed, isolating the reactor from the Main Condenser, requiring EMRV's for pressure control

d. The CRD Flow Control Valve will fail closed, making CRD unable to maintain RPV water level

295018-02

46. Given the following conditions:

- The plant is at 100% power
- Leakage into RBCCW from a Recirc Pump Seal Cooler has been confirmed to be greater than 6 gph.

Which of the following best describes the required actions?

a. Remove the suspected Recirc Pump from service; commence a plant shutdown

b. Remove the suspected Recirc Pump from service and isolate the loop; commence a plant shutdown

c. Remove the suspected Recirc Pump from service, then idle the loop

d. Scram the reactor, then trip all Recirc Pumps. Isolate the suspected Recirc Pump loop and 3 additional loops

295019-01

47. Given the following conditions:

- An Instrument Air header line break occurs on the discharge of the Air Receivers
- The break can NOT be isolated
- Instrument Air pressure as read on Panel 7F is dropping
- CONTROL AIR PRESSURE LO annunciator has just alarmed
- The direction is now given to manually scram the reactor.

Which of the following best describes the systems available for level / pressure control? (Assume Instrument Air header pressure continues to decrease)

a. Bypass Valves, LFRV "A" and/or "C", CRD

b. EMRV's, CRD, RWCU letdown

c. Bypass Valves, Feedwater on "A" or "C" block valve, RWCU letdown

d. EMRV's, Isolation Condensers, Feedwater using heater string outlet valve(s).

295021-01

48. The plant is in a cold shutdown with Shutdown Cooling in service.

A loss of RBCCW occurs (neither RBCCW pump can be started).

Given the following conditions:

- The MSIV's are closed; condenser vacuum is not established
- No Reactor Recirc Pumps are operating
- RPV coolant temperature is 155 °F and increasing at 1°/ minute
- RPV water level is 190" and slowly increasing

Which of the following methods would be used to restore cooling to the RPV?

A. Start at least one Reactor Recirculation Pump, allowing forced circulation to cool the RPV

B. Manually initiate the Isolation Condensers

C. Establish Torus Cooling, then open at least one EMRV to allow the RPV to steam to the Torus

D. Establish Torus Cooling, then raise RPV water level to establish a flow path through an open EMRV to the Torus

295022-01

49. Given the following conditions:

- A reactor startup is in progress.
- Reactor pressure is 600 PSIG; MSIV's are open; condenser vacuum is 26"
- "A" CRD PUMP has tripped

Which of the following best describes the expected operator actions?

a. If CRD HI TEMP annunciator alarms, manually scram the reactor

b. If a CRD Pump cannot be restarted and two Accumulator alarms have been received, manually scram the reactor

c. If ACCUMULATOR PRESS LO/LEVEL HI annunciator alarms, manually scram the reactor

d. If a CRD Pump cannot be restarted, manually scram the reactor

295028-01

50. Given the following conditions:

- At 12:00 AM, the Reactor scrammed due to a LOCA inside the Drywell
- At 12:30 AM, RPV Flooding due to loss of level instrumentation was entered
- At 1:00 AM, Torus pressure is 8 PSIG and ALL EMRV's are open; RPV pressure is steady at 75 PSIG
- At 1:30 AM, RPV pressure dropped to 60 PSIG, but was quickly raised to 85 PSIG and is now steady; Torus pressure is 8 PSIG

At what time will the conditions of Table FLD-3 be initially established?

a. 2:05 AM

b. 2:35 AM

c. 2:42 AM

d. 3:14 AM

295032-01

51. Given the following conditions:

- Reactor power is 100% when a leak occurs in Cleanup system
- CU ROOM HI TEMP annunciator is in alarm
- Cleanup can NOT be isolated
- Temperature in the CU Hx Room (IB06-13) is 200° F and increasing
- All other Cleanup area temperatures are < 180° F

Which of the following best describes the required actions?

a. Continue efforts to isolate Cleanup

b. Commence a reactor shutdown

c. Manually scram the reactor

d. Emergency Depressurization is required if IB06-13 exceeds 210° F

295033-01

52. Given the following conditions:

- The plant is at 100% power
- A steam leak from the "B" Isolation Condenser Condensate return line is in progress
- All attempts to isolate the leak have failed

- Rx Building pressure indicates +0.5" WC
- 75' Isol Cond Vlvs West is 220° F
- 95' Isol cond area North is 165° F
- 95' Isol Cond area radiation level > 1000mr/hr
- 95' Liquid Poison area radiation level > 1000mr/hr
- Rx Building Ventilation has isolated on high radiation
- 1-7 Sump high level alarm is annunciated

Which of the following best describes the required actions?

a. Commence a reactor shutdown

b. Manually scram the reactor

c. Emergency Depressurization is required

d. Implement Support Procedure 50 to re-establish Rx building Ventilation

600000-01

53. Given the following conditions:

- A plant transient is in progress
- The GOS directs "A" EMRV to be placed in "DISABLE"

Which of the following is **NOT** a reason for this action to be performed?

a. To prevent spurious operation of the EMRV

b. A fire in the Recirc MG Set room

c. The EMRV is open and reactor pressure is 920 PSIG and decreasing

d. To ensure the EMRV is available for pressure control, if needed

54. Given the following conditions:

- Reactor power was at 50% when a small LOCA occurred.
- Drywell Pressure is 4.5 PSIG and slowly increasing
- Drywell Temperature is 180° F and slowly increasing
- RPV water level dropped as low as 100"

Which of the following best describes the status of Drywell Cooling?

a. RBCCW to the Drywell is isolated; all operating Drywell Cooler fans are tripped

b. RBCCW is still being supplied to the Drywell; all operating Drywell Cooler fans have tripped

c. RBCCW to the Drywell is isolated; Drywell Cooler fans are still operating

d. RBCCW is still being supplied to the Drywell; Drywell Cooler fans are still operating

223001-04

55. Which of the following best describes the affect of a loss of both Nitrogen Compressors during power operation?

a. Drywell oxygen concentration would increase

b. Inboard MSIV's could drift closed

c. Drywell pressure control is lost AND Drywell pressure will decrease

d. Nitrogen Makeup to the Drywell is lost

241000-01

56. The plant is at 100% power with the EPR providing normal pressure control.

Which of the following describes the plant response if the EPR pressure setpoint fails high?

a. Reactor power will be higher because reactor pressure will be lower.

b. Reactor power will be lower because reactor pressure will be higher.

c. Reactor power will be higher because reactor pressure will be higher.

d. Reactor power will remain constant because reactor pressure remains constant

241000-02

57. Given the following conditions:

- A reactor startup is in progress; the Mode Switch is in STARTUP
- All IRM's are operable and on Range 10
- Reactor power is 10%
- Reactor pressure is 1020 PSIG on the EPR; the MPR is properly adjusted per operating procedures

Which of the following best describes the plant response if the Reactor pressure input (*steam line pressure detector*) to the EPR fails low?

(Assume No Operator actions are performed)

a. The MPR will now control reactor pressure

b. At 850 PSIG, the MSIV's will close

c. A Reactor high pressure scram will occur

d. At 600 PSIG, a reactor scram will occur.

259002-01

58. Given the following conditions:

- Reactor power is 25% with the generator on line
- Feedwater flow is 1.65 $X10^6$ lbm/hr with A and C Feedwater pumps operating

- A Feedwater Level control malfunction causes feed water flow to increase to 2.4 x 10^6 lbm/hr
- Reactor Water level reaches 177" for 10 seconds

Which of the following best describes the plant response?

a. The Main Turbine trips,
The Reactor scrams due to the turbine trip,
All Feedwater Pumps trip

b. The Main Turbine trips,
The Reactor does not scram,
A and C Feedwater Pumps trip

c. The Main Turbine trips,
The Reactor does not scram,
A and C Feedwater Pumps do not trip

d. The Main Turbine does not trip,
The Reactor does not scram,
A and C Feedwater Pumps trip

261000-01

59. Given the following conditions:

- The plant is at 100% power
- Drywell pressure has slowly increased from 1.1 to 1.2 PSIG
- The GSS has decided to vent the Primary containment via SBGTS to maintain Drywell pressure below 1.3 PSIG
- Drywell Airborne Activity is increasing

Which of the following best describes the required actions in order to accomplish this task?

A. Manually start SGTS, shutdown RBHVAC, and vent the Primary Containment via Torus vent valves V-28-47 and V-28-18

B. Vent the Drywell to RBHVAC via Drywell Vent valves V-23-21 and V-23-22

C. Vent both the Drywell and the Torus via SBGTS

D. Implement Support Procedure 31

295003-02

60. The plant was at 100% power when a Station Blackout occurred.

Given the following conditions:

- All control rods are full in.
- RPV pressure is 700 PSIG and decreasing
- RPV water level is +30" fuel zone indication and decreasing
- Drywell pressure is 14 PSIG and increasing
- Torus pressure is 12 PSIG and increasing
- Fire Protection is aligned in accordance with support Procedure 5

Which of the following best describes the required actions?

a. When RPV water level < 0", Emergency Depressurization is required

b. Initiate Drywell Spray

c. Based on current conditions in the Drywell, Emergency Depressurization is required

d. Lower RPV pressure as necessary to allow Firewater to inject

295003-03

61. Given the following conditions:

- A LOCA inside the Drywell concurrent with a loss of off-site power has occurred
- Only one (1) EDG has started and is supplying its respective bus

Which of the following combinations of operating equipment can be possible for the given conditions?

a. Containment Spray Pump 51A
ESW Pump 52A
Core Spray Main Pump 1A
Core Spray Booster Pump 3C

b. Containment Spray Pump 51B
ESW Pump 52D
Core Spray Main Pump 1D
Core Spray Booster Pump 3D

c. Containment Spray Pump 51B
ESW Pump 52A
Core Spray Main Pump 1A
Core Spray Booster Pump 3D

d. Containment Spray Pump 51C
ESW Pump 52D
Core Spray Main Pump 1B
Core Spray Booster Pump 3D

295006-01

62. Procedure 203.4 PLANT COOLDOWN FOLLOWING RX SCRAM has been entered following a scram from 75% power.

Which of the following best describes the correct operating requirements for the Recirc Pumps during the cooldown?

a. If all operating Recirc Pumps have tripped, start at least one Recirc Pump for forced circulation through the core

b. Maintain total Recirc flow > 6.4×10^4 gpm and comply with Reactor Recirc Pump Speed limitations

c. Maintain total Recirc flow > 4.8×10^4 gpm and comply with Reactor Recirc Pump speed limitations

d. Reduce Recirc Pump speed to minimum of 11.5 hz on the Master Recirc Speed Controller (Panel 4F)

295007-01

63. In which of the following conditions has a Safety Limit been exceeded?

a. Core flow is 4.8×10^4 gpm
RPV pressure is 825 PSIG
MCPR is determined to be 1.05

b. The reactor is in cold shutdown
SDC is in service; No Recirc Pumps are operating
RPV water level drops to 61" TAF

c. Core flow is 4.8×10^4 gpm
RPV pressure is 750 PSIG
Reactor power is 2.5%

d. A RPV pressure transient occurred
The reactor automatically shutdown on high pressure
A Safety Relief Valve lifted for 1 second, then closed

295010-01

64. Which of the following best describes what could be lost if the Primary Containment Pressure Limit were exceeded?

a. Ability to operate containment vent valves

b. Ability to monitor containment pressure

c. Ability to operate RPV head vents

d. Ability to monitor containment water level

295013-01

65. Given the following conditions:

- A low power ATWS with MSIV isolation is in progress
- Reactor pressure is being maintained between 800 and 1000 PSIG using Isolation Condensers and EMRV "A".

Which of the following best describes the adverse effect of manually opening and closing ONLY EMRV "A" for pressure control?

a. Localized heating of the Torus

b. Failure of the EMRV blowdown piping vacuum breakers to operate

c. Over-pressurization of the Torus, which could lead to Containment failure

d. Violation of the EMRV solenoid EQ temperature rating

295014-02

66. Given the following conditions:

- The plant is at 42% power on the 80% rod pattern line
- A loss of extraction steam to Feedwater Heater 1A3 occurs

Which of the following best describes the required actions?

a. Reduce Recirc Flow until minimum flow is reached

b. Insert Cram rods to exit the Exclusion Region

c. Secure Extraction Steam to any other operating high pressure feedwater heater

d. Manually scram the reactor

295015-01

67. Given the following conditions:

- An ATWS is in progress; Reactor power is 10%
- All Scram Group solenoid lights are NOT illuminated
- Individual HCU red scram indicating lights are NOT illuminated
- SDV Vent and Drain Valves are open
- SCRAM CONTACTOR OPEN (G-1-c) is in alarm
- MSIV's are closed

Which of the following methods for scramming the control rods could be effective for the given conditions?

a. Operating sub-channel test switches

b. Opening the 100 AMP breakers

c. Venting the Scram Air Header

d. Resetting and then manually re-initiating a scram

295015-02

68. Given the following conditions:

- A manual scram was inserted due to Main Generator electrical control problems
- Six (6) control rods did not fully insert; they are stuck at various positions between 48 and 24 and can NOT be moved
- All other systems operated as designed

- Reactor Engineering has determined the reactor is shutdown even though boron has NOT been injected.
- The decision is made to cooldown the reactor and establish SDC.

Which of the following potential adverse affects could occur because of the cooldown?

a. Thermal stratification of the lower inlet plenum

b. The depressurization could cause re-criticality to occur

c. SLC will need to be initiated, resulting in Cleanup isolation

d. Torus water temperature could exceed HCTL limitations

295016-01

69. Given the following conditions:

- Reactor startup is in progress; reactor power is 10%
- The GSS orders a Control Room Evacuation due to a fire

Which of the following best describes the expected operator actions?

a. Reduce Recirculation flow to minimum;
Manually scram the reactor
Transfer house loads to the Startup transformers, then trip the turbine

b. Manually scram the reactor and confirm all rods inserted past 02;
Ensure one (1) Feedwater Pump is in service;
Ensure feedwater level control is set for post scram level;
Trip all operating Recirc Pumps, then trip the Turbine

c. Manually scram the reactor and start a second CRD pump;
Trip all operating Feedwater Pumps;
Trip all operating Recirc Pumps;
Transfer house loads to the Startup Transformers. then close the MSIV's

d. Manually scram the reactor and confirm all rods inserted past 02;
Trip all operating Recirc Pumps;
Close the MSIV's and trip all operating Feedwater pumps

295023-01

70. Given the following conditions:

- Refueling activities are in progress
- A bundle from the Fuel Pool is being placed in the core
- All SRM's read 4 cpm

As the fuel bundle is being lowered into the core, SRM count rate starts increasing.

Which of the following is the expected operator action?

a. At 16 cpm, stop any fuel movement until directed by the GSS

b. At 32 cpm, return the bundle to the Fuel Pool

c. At 64 cpm, return the bundle to the Fuel Pool

d. At 128 cpm, return the bundle to the Fuel Pool

295023-02

71. During fuel movement over the Spent Fuel Pool, the BACKUP HOIST LIMIT light on the Interlock Status Display Module illuminates.

Which of the following best describes why that light would illuminate?

a. The Fuel Hoist is extended too far

b. The Fuel Hoist is overloaded (too much weight)

c. The Fuel Hoist is at its Maximum up limit

d. The Fuel Hoist is clear of the Spent Fuel Racks

295024-01

72. Given the following conditions:

- A LOCA has occurred. All control rods are full in.
- Torus pressure is 25 PSIG; Torus water level is 150" and decreasing
- Torus water temperature is 108° and increasing
- RPV water level decreased to +30" TAF, and is now increasing
- RPV pressure is 200 PSIG and decreasing
- CHRMS reads 200 R/hr

All systems have responded as designed.

Which of the following best describes the required actions?

a. Stop injection from Core Spray, then manually open all EMRV's

b. Vent the Torus through Nitrogen Purge Valves V-23-15 and V-23-16

c. Initiate Drywell sprays

d. Emergency Depressurization is required

261000-02

73. Given the following conditions:

- EF 1-5 is OOS
- EF 1-7 is operating on the Turbine Building
- EF 1-6 is operating on the Reactor Building
- Reactor Building Vent Monitor Channel 1 alarms HIGH due to a faulty power supply

What is the expected response of the Plant Ventilation system?

A. SGTS automatically starts after a 2 minutes TD, EF 1-6 trips, EF 1-7 continues to operate

B. SGTS automatically starts after a 2 minute TD, EF 1-6 and 1-7 trip

C. SGTS instantaneously automatically starts, EF-1-6 trips, EF-1-7 continues to operate

D. SGTS instantaneously automatically starts , EF 1-6 and 1-7 trip

74. Given the following conditions:

- Reactor power is at 1%; the mode switch is in STARTUP
- A reactor scram occurs due to a loss of Off-site power
- Both EDG's start and re-energize their respective buses

Which of the following systems will automatically restart?

a. Both CRD Pumps and Core spray Pumps A and B

b. Both SGTS systems and ESW Pumps A and B

c. Service Water Pumps and RBCCW Pumps

d. Drywell Cooler Fans and TBCCW Pumps

264000-02

75. Given the following conditions:

- The plant was at 75% power when a LOCA occurred
- Drywell pressure is 5 PSIG
- Breaker S1B failed to close
- EDG 2 DISABLED alarm is annunciated due to low lube oil pressure

Which of the following best describes the current status of the EDG's?

a. EDG 1 has Fast Started and is unloaded; EDG 2 is tripped

b. Both EDG 1 and EDG 2 have Fast Started and are running loaded.

c. EDG 1 has Idle Started; EDG 2 is tripped

d. EDG 1 has Idle started; EDG 2 has Fast Started and running loaded

290001-01

76. Which of the following conditions would violate Secondary Containment Integrity requirements?

a. One of the doors at the Reactor Building Southeast corner Elevation 23' is open; the other door is closed

b. Only one Standby Gas Treatment System (SGTS) is operable

c. Reactor Building Vent Exhaust Valve V-28-21 is open and determined to be inoperable

d. Reactor Building Pressure is being maintained at 0.27" water vacuum

295026-02

77. Which of the following correctly describes the basis for initiating boron injection ***before*** exceeding the Boron Injection Initiation Temperature (BIIT)?

a. Ensures that Torus temperature will not exceed 150° F during the blowdown phase if a LOCA were to occur

b. Ensures the reactor will be shutdown and in hot standby before the Torus reaches the heat capacity temperature limit

c. Ensures that Torus temperature will not be so high that it results in increasing Drywell pressure

d. Ensures the reactor will be shutdown and in hot standby conditions before the Torus reaches the heat capacity level limit

295026-03

78. Given the following conditions:

- An ATWS is in progress
- RPV pressure is 900 PSIG with two (2) EMRV's manually opened
- Both Isolation Condensers are in service; the Main Condenser is unavailable
- Torus water level is 160"; Torus water temperature is 141° F and increasing
- Reactor power is 15%; SLC failed to initiate

Which of the following best describes the required actions?

a. When Torus water temperature reaches 160°, Emergency Depressurization is required

b. When Torus water temperature reaches 180°, Emergency Depressurization is required

c. When Torus water temperature reaches 160°, take action to reduce RPV pressure < 900 PSIG

d. When Torus water temperature reaches 180°, take action to reduce RPV pressure < 900 PSIG

295030-01

79. Given the following conditions:

- An ATWS is in progress
- Torus temperature has risen due to EMRV operation, but is now stable
- Torus water level is lowering for unknown reasons

Which of the following is the bases for the Torus level at which the Heat Capacity Temperature limit will be exceeded irrespective of Torus temperature?

a. EMRV Y-quenchers are uncovered

b. Lowest indicated value for Torus level

c. Lowest safety related indicated value for Torus level

d. Drywell Vent header ram's head openings are uncovered

295030-03

80. Given the following conditions:

- A LOCA has occurred
- Two Core Spray Pumps are injecting
- Two Containment Spray Pumps are operating; total flow is 5,000 GPM
- Torus water temperature is 160° F
- Torus Pressure is 10 PSIG
- Torus Water level is 75"

Based on these conditions, which of the following is the Maximum Core Spray flow available?

a. 8,000 gpm

b. 9,000 gpm

c. 10,000 gpm

d. 11,000 gpm

295031-01

81. Given the following conditions:

- A plant scram has occurred due to a loss of feedwater
- Core Spray is available
- RPV pressure is 750 PSIG
- RPV water level is approaching 0" TAF

Which of the following should be performed and why?

a. Open an EMRV to reject heat to the pool while still within design limits

b. Emergency Depressurize to establish steam cooling flow path conditions

c. Open all Bypass Valves to cause a level swell to drop the fuel temperature

d. Lower reactor pressure to allow maximum flow from available injection systems

295031-02

82. During STEAM COOLING, Emergency Depressurization is required at –42" TAF RPV water level.

Which of the following best describes the basis for this action?

a. to reduce pressure for the low pressure injection systems

b. to minimize energy in the RPV prior to a loss of the Torus

c. to provide final cooling of the fuel since all other sources of adequate core cooling have failed

d. to provide adequate steam flow to maintain fuel clad temperature less than 1500° F

295031-03

83. RPV FLOODING – NO ATWS is in progress.

At the completion of the Minimum Core Flooding Interval, which of the following best describes where RPV water level is expected to be?

a. At a level above the Steam Separators

b. At the top of active fuel

c. At Minimum Steam Cooling Water Level

d. At Minimum Zero injection Water level

295031-04

84. Given the following conditions:

- The plant is at 100% power
- At 12:00 AM, a large break LOCA occurred in the Drywell
- At 12:30 AM, RPV Flooding- NO ATWS is entered.

- At 1:00 AM, the conditions of Table FLD-1 have been met
- At 1:30 AM, the conditions of Table FLD-2 have been met

- At 2:00 AM, it is determined that the conditions of Table FLD-3 have been met.

Based on these conditions, which of the following times is the Maximum Core Uncovery Time Limit?

a. 5 minutes

b. 5 ½ minutes

c. 6 minutes

d. 7 minutes

295037-02

85. Given the following conditions:

- A transient occurred which resulted in a failure to scram
- EMG 3200.01B RPV CONTROL – with ATWS has been entered

Which of the following actions for inserting rods could result in Reactor Building airborne activity levels increasing?

a. De-energizing the scram solenoids

b. Increasing CRD cooling water differential pressure

c. Operating individual scram test switches

d. Bypassing the RWM and manually inserting control rods

295037-03

86. An ATWS is in progress.

In accordance with the EOP, if any EMRV is cycling on high pressure, direction is given to manually open EMRV's until any Bypass Valve starts to close.

Which of the following best describes the reason for this direction?

a. To prevent directing steam away from the condenser and into the Torus

b. To provide adequate operating margin below the setpoints of "A" and "D" EMRV's

c. To ensure pressure reduction is within the design of the operating Isolation Condenser

d. To limit the number of EMRV lifts, thus reducing the chances of a stuck open EMRV occurring

295038-01

87. The following statement exists in the Radioactivity Release Control EOP:

"IF...THE RELEASE IS FROM THE TURBINE BUILDING
THEN...OPERATE AVAILABLE TURBINE BLDG VENTILATION PER SUPPORT PROC 51"

Which of the following best describes the basis for keeping Turbine Building Ventilation in operation while executing Radioactivity Release Control?

a. Maintains Turbine Building pressure above Reactor Building pressure

b. Prevents a reactor scram due to high temperature in the Turbine Building Steam Tunnel

c. Prevents having an unmonitored ground release from the Turbine Building

d. Ensures adequate dilution of the gases discharged through the Main Stack

500000-01

88. Given the following conditions:

- Torus pressure is 32 PSIG and increasing
- Torus level is 461"
- Hydrogen Concentration is 2%
- RPV pressure is 60 PSIG
- CHRRMS read 200 R/hr
- All control rods are fully inserted

Which of the following best describes the required actions to control containment pressure?

a. Vent the Drywell through V-23-21 and V-23-22

b. Vent the Drywell through V-27-3 and V-27-4

c. Vent the Torus through V-28-17

d. Vent the Drywell through V-27-1 and V-27-2

500000-02

89. Which of the following best describes the required vent path used to maintain the Torus pressure below the Primary Containment Pressure Limit curve during conditions of high hydrogen concentrations in the Containment and Containment water level below the vents?

a. The Drywell hardened pipe vent

b. The Torus hardened pipe vent

c. The Standby Gas Treatment system

d. The Reactor Building Exhaust Ventilation system

201003-01

90. Given the following conditions:

- Reactor power is being increased using control rods.
- The selected control rod has been inadvertently withdrawn two notches past its intended position.
- The mis-positioned control rod is still selected

Which of the following describes the required initial action?

a. Insert the control rod to its intended position

b. Notify the GSS and core engineering

c. Insert an Administrative Rod Block

d. If a Rod Block condition does not exist, continue power increase in accordance with the Control Rod Withdrawal Sequence

91. Given the following conditions:

- During a plant startup, control Rod 10-19 drifts out
- The drifting control rod is inserted and isolated

Which of the following describes the possible cause if this control rod were to drift out after it has been isolated?

a. Stuck collet fingers

b. Leaking directional control valve

c. Leaking scram outlet valve

d. Stuck open ball check valve

233000-01

92. Which of the following reasons describes why the Spent Fuel Pool temperature must be maintained less than 125° F?

a. Structural thermal gradient limits between the Spent Fuel Pool floor and the Shutdown Cooling Room

b. Evaporation of the Spent Fuel Pool, resulting in increased radiation levels

c. Inadvertent criticality occurring in the Spent Fuel Pool

d. Spent fuel Pool water level rising over the weir walls and flooding ventilation ducts

239001-01

93. The MSIV's have automatically closed.

Select the plant condition that caused the auto closure of the MSIV's.

a. A loss of feedwater from 30% power caused a reactor scram to occur; RPV water level decreased to 96" TAF

b. The Main Generator was being synchronized to the grid when Turbine pressure regulation caused additional Bypass Valves to open; Reactor pressure decreased to 845 PSIG

c. A reactor startup was in progress; Reactor pressure was 875 PSIG when an IRM was selected to Range 10

d. The plant had scrammed from 100% power; The mode switch was placed in Shutdown, Reactor pressure then decreased to 850 PSIG

G2.3.11-01

94. Turbine Building Sump 1-5 RAD HI / LEVEL HI/ TROUBLE annunciator has just alarmed.

Which of the following best describes the required actions?

a. If the sump has been aligned overboard AND the Radiation Monitor indicates HIGH, confirm the sump pump(s) are tripped

b. If the sump has been aligned to the High conductivity tank AND the Radiation Monitor indicates HIGH, confirm the sump pump(s) are tripped

c. If the sump has a high water level, confirm the pump controls are in AUTO and at least one of the pumps is operating, then check the area for the source of leakage into the sump

d. If the sump has a high water level AND shows indication of an oily sheen, the sump can NOT be pumped

G2-4-18-01

95. Which of the following EOP curves allows actions *irrespective of adequate core cooling* to ensure it is not violated?

a. Primary Containment Pressure Limit (PCPL)

b. Containment Spray Initiation Limit (CSIL)

c. Maximum Primary Containment Water Level Limit (MPCWLL)

d. Pressure Suppression Pressure (PSP)

G2.4.18-02

96. Which of the following best describes the basis for 60 PSIG above Torus pressure as stated in EMG-3200.8a "RPV FLOODING – NO ATWS" ?

(*Assume all EMRV's are open*)

a. Adequate core cooling is NOT assured *and* injection rate must be increased if RPV pressure remains 60 PSIG above Torus pressure

b. Insufficient natural circulation through the core exists to provide adequate core cooling if RPV pressure remains 60 PSIG above Torus pressure,

c. Adequate core cooling is assured if RPV pressure is less than 60 PSIG above Torus pressure

d. Steam flow through the core provides adequate core cooling when RPV pressure is greater than 60 PSIG above Torus pressure

G2.4.18-03

97. Given the following conditions:

- A design basis LOCA has occurred in the Drywell
- RPV water level is UNKNOWN due to reference leg flashing
- The requirements of Table FLD-1 can NOT be met.

- Eight (8) hours later, Containment Water level is 366" and RPV water level is still UNKNOWN
- It is determined that RPV venting is required

Which of the following is the basis for venting the RPV under these conditions?

a. provides a vent path for the Drywell to allow air and non-condensible gases to escape, thus preventing overpressurization of the Containment during containment flooding

b. prevents steam and non-condensible gases from building up pressure in the RPV, thus preventing reflooding of the core

c. to prevent the possibility of the line break being submerged, thus causing RPV pressure to increase above shutoff head of the injection systems

d. to help maintain the RPV depressurized in order to allow injection from fire Water and Condensate Transfer if Core Spray is unavailable.

G2.4.25-01

98. A continuous Fire Watch is required IAW Procedure 120.2 FIRE SYSTEM IMPAIRMENT REPORTING AND FIRE WATCH INSTRUCTIONS.

Concerning Fire Watch requirements, which of the following is the responsibility of the Lead CRO?

a. The LCRO shall review and sign the Fire Watch Inspection Log once per shift

b. The LCRO shall tour the affected area at least once per shift

c. The LCRO shall contact the Fire Watch if the Continuous Fire Watch has not called the control room by 45 minutes after the hour

d. The LCRO shall designate when the continuous Fire Watch can be relieved.

G2.4.25-02

99. Which of the following conditions will require a continuous fire watch?

a. Battery Room A & B Halon 1301 System tank at 96% full charge weight and 91% full charge pressure

b. One thermal Fire Detection instrument for Emergency diesel Generator # 1 is inoperable; all other detectors are operable

c. Emergency Lighting Unit (ELU) # 40 has been declared inoperable.

d. The 4160 Volt Switchgear CO_2 roll down fire door has been accidentally damaged and may not be able to perform its designed function.

G2.4.41-01

100. An Unusual Event has been declared.

Prior to any required notification being performed, plant conditions changed and entry conditions for declaring an ALERT occurred, but immediately cleared, and conditions returned to the Unusual Event level.

Which of the following best describes the classification of this event?

a. An Unusual event will be reported.

b. An Unusual Event will be reported, with mention of the Alert Conditions being met but now cleared.

c. An Alert is to be declared and reported.

d. An Alert will be declared but an Unusual Event will be reported.

Name: KEY

Oyster Creek NRC SRO License Examination

August 27, 1999

1.	A	**B**	C	D	
2.	**A**	B	C	D	
3.	**A**	B	C	D	
4.	A	**B**	C	D	
5.	A	B	C	**D**	
6.	**A**	B	C	D	
7.	A	**B**	C	D	
8.	A	**B**	C	D	
9.	A	B	**C**	D	
10.	**A**	B	C	D	
11.	**A**	B	C	D	
12.	**A**	B	C	**D**	A&D ✓B
13.	**A**	B	C	D	
14.	**A**	B	C	D	
15.	**A**	B	C	D	
16.	A	**B**	C	D	
17.	A	B	C	**D**	
18.	A	B	**C**	D	
19.	A	B	C	**D**	
20.	**A**	B	**C**	D	A&C ✓B
21.	**A**	B	C	D	
22.	**A**	B	C	D	
23.	A	**B**	C	D	
24.	A	B	**C**	D	
25.	A	**B**	C	D	
26.	A	B	**C**	D	
27.	A	B	**C**	D	
28.	**A**	B	C	D	
29.	A	B	C	**D**	
30.	A	B	**C**	D	
31.	A	**B**	C	D	
32.	A	**B**	C	D	
33.	A	B	C	**D**	
34.	A	B	**C**	D	
35.	A	B	**C**	D	
36.	**A**	B	C	D	
37.	A	B	C	**D**	
38.	**A**	B	C	D	
39.	A	B	**C**	D	
40.	A	B	**C**	D	
41.	A	**B**	C	D	
42.	A	B	C	**D**	
43.	A	B	**C**	D	
44.	A	B	C	**D**	
45.	~~A~~	B	**C**	D	C ONLY ✓B
46.	A	**B**	C	D	
47.	A	B	C	**D**	
48.	A	B	C	**D**	
49.	A	B	C	**D**	
50.	A	**B**	C	D	

REVISIONS TO KEY BASED ON POST EXAM COMMENT RESOLUTION.
J Briggs, Chief Examiner

Name: KEY

Oyster Creek NRC SRO License Examination

August 27, 1999

51.	A	B	**C**	D	
52.	A	**B**	C	D	
53.	A	B	C	**D**	
54.	A	B	C	**D**	
55.	**A**	B	C	D	
56.	A	B	**C**	D	
57.	**A**	B	~~C~~	D	A ONLY YES
58.	A	B	**C**	D	
59.	**A**	**B**	C	D	A+B YES
60.	**A**	B	C	D	
61.	A	B	**C**	D	
62.	A	B	**C**	D	
63.	**A**	B	C	D	
64.	**A**	B	C	D	
65.	**A**	B	C	D	
66.	A	**B**	C	D	
67.	A	B	**C**	D	
68.	A	**B**	C	D	
69.	A	B	C	**D**	
70.	A	**B**	C	D	
71.	A	B	**C**	D	
72.	A	B	**C**	D	
73.	A	B	**C**	D	
74.	A	B	**C**	D	
75.	A	B	C	**D**	
76.	A	B	**C**	D	
77.	A	**B**	C	D	
78.	A	B	C	**D**	
79.	A	B	C	**D**	
80.	A	B	**C**	D	
81.	A	B	C	**D**	
82.	A	B	**C**	D	
83.	**A**	**B**	C	D	A+B YES
84.	A	B	**C**	D	
85.	A	B	**C**	D	
86.	**A**	B	C	**D**	A+D YES
87.	A	B	**C**	D	
88.	A	**B**	C	D	
89.	A	B	C	**D**	
90.	A	**B**	C	D	
91.	**A**	B	C	D	
92.	**A**	B	C	D	
93.	A	**B**	C	D	
~~94.~~	~~A~~	~~B~~	~~C~~	~~D~~	DELETE YES
95.	A	B	**C**	D	
96.	A	B	C	**D**	
97.	A	**B**	C	D	
98.	A	B	**C**	D	
99.	A	B	C	**D**	
100.	A	B	**C**	D	