U. S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 50-341/OL-93-01

Docket Nos. 50-341 License No. NPF-43

Licensee: The Detroit Edison Company
6400 North Dixie Highway
Newport, Michigan 48166

Facility Name: Fermi 2 Nuclear Power Station

Examination Administered At: Newport, Michigan

Examination Conducted: Weeks of December 6 and 13, 1993

Examiners: R. Orton, Pacific Northwest Laboratories
T. Bettendorf, Pacific Northwest Laboratories

Chief Examiner: Dick R. McNeil 1/27/94
D. McNeil Date

Approved By: M J Jordan 1/28/94
M. J. Jordan, Chief Date
Operator Licensing Section 1

Examination Summary

Examinations were administered during the weeks of December 6 and 13, 1993 (Report No. 50-237/OL-93-01)

Written and operating examinations were given to ten (10) individuals applying for Reactor Operator (RO) licenses and to seven (7) individuals applying for Senior Reactor Operator (SRO) licenses. Six of the individuals applying for SRO licenses were previously licensed at Fermi Station.

Initial Licensed Operator Examination Results:

One applicant for a Reactor Operator license failed the Job Performance Measures portion of the RO examination. All other individuals taking the examinations (RO and SRO) passed all portions of their respective examinations and will be issued operator licenses.

The following is a summary of the strengths and weaknesses noted during the performance of this examination.

STRENGTHS/WEAKNESSES:

Strengths:

- Control room communications during the dynamic simulator scenarios. (See section 3.c.1)
- Realism provided by simulator operator/communicator during dynamic simulator scenarios. (See section 3.c.1)
- Use of and compliance with operating procedures during the JPMs and the dynamic simulator examinations. (See section 3.b.1, 3.c.1)

Weaknesses:

- Written examination pre-exam review. (See section 3.a.2)
- Notification of management personnel during dynamic scenarios. (See section 3.c.2)
- Classification of events. (See section 3.c.2)
- High number of simulator discrepancies. (See section 5.)

REPORT DETAILS

1. Examiners

*D. McNeil, Chief Examiner, NRC, Region III
*R. Orton, Pacific Northwest Laboratories (PNL)
*T. Bettendorf, PNL

2. Persons Contacted

Facility

*D. Gipson, Senior Vice President Nuclear Generation
*R. McKeon, Plant Manager
*J. Plona, Superintendent, Operations
*L. Goodman, Director, Nuclear QA
*W. Miller, Jr., Director, Nuclear Licensing
*D. Ockerman, Director Nuclear Training
*J. Tibai, Principal Engineer, Compliance
*S. Burt, Supervisor, On-Shift Training
*M. Casey, Supervisor, Initial Lic Op Training
*J. Nyquest, Supervisor, Safety Engineering
*J. Sahli, Supervisor, Nuclear Training Simulator
P. Tarwacki, Simulator Instructor

U. S. Nuclear Regulatory Commission (NRC)

*K. Riemer, Resident Inspector, Fermi
*M. Jordan, Chief OLSI, RIII
E. Plettner, RIII
D. Roth, RIII

*Denotes those present at the exit meeting on December 10, 1993.

3. Training Program Observations

The trainers appeared to be knowledgeable and courteous throughout the examination process. They put in a significant amount of extra time without complaint to support an aggressive examination schedule. They maintained a professional attitude through the examination.

The following information is provided for evaluation by the licensee via their SAT based training program. No response is required.

a. Written Examination

The initial license examination given was a standard 100 question examination as prescribed by NUREG 1021, Revision 7. The examination was altered as a result of the facility's post examination review. Four questions were deleted from the RO examination; three of the questions were also used on the SRO

examination and were simultaneously deleted from the SRO examination. The examination key was modified to accept more than one answer on an additional five questions. See Enclosure 3 for post exam comments and resolutions.

1. Strengths:

   No exceptional strengths were noted in this area.

2. Weaknesses:

   The pre-exam review conducted at the site is noted as a weakness. This was indicated by the facility's post examination review request to delete or accept multiple correct answers on nine questions. One question requiring multiple correct answers was not reviewed by the facility prior to the examination. The remainder of the challenged questions either had no facility comment during the pre-exam review or were changed in accordance with the facility's request after the pre-exam review.

b. Job Performance Measures

The performance of all SROs and nine ROs was judged to be satisfactory in this area. One RO improperly performed two JPMs and answered all questions incorrectly on a third JPM. His performance was judged to be unsatisfactory. Note that only ten of the twenty JPMs listed were administered to each licensee.

The JPMs performed in the simulator/control room were:

1. Uncoupled Control Rod (Low Power-Faulted)
2. Shift Operating Divisions of Control Center Heating Ventilation Air Conditioning (CCHVAC)
3. Place High Pressure Coolant Injection (HPCI) in the Test Mode
4. Open Main Steam Isolation Valves (MSIVs) Following an Isolation
5. Restore Offsite Power to an Emergency Safety Features (ESF) Bus
6. Residual Heat Removal Service Water (RHRSW) Crosstie to Residual Heat Removal (RHR)
7. Transfer Reactor Protection System (RPS) power from Motor Generator (MG) to the alternate supply
8. Start a Mechanical Vacuum Pump
9. Shutdown Division I Core Spray (Faulted)
10. Restore Reactor Recirculation (RR) Pump from Scoop Tube Lockout
11. Manually Initiate Division II
12. Unload Emergency Diesel Generator (EDG) from the Control Room

13. Close #1 Turbine Control Valve (TCV) w/Turbine On-Line
14. Restore Reactor Building Closed Cooling Water (RBCCW) following Emergency Core Cooling Water (ECCW) Initiation

The JPMs performed in the plant were:

1. Remove Pressure Regulator from Service
2. Isolate a Control Rod
3. Shift Operating Control Rod Drive (CRD) Flow Control Valves (FCVs)
4. Place Division I RHR is Shut Down (S/D) Cooling from Remote Shutdown Panel (RSP)
5. Startup RPS MG Set B
6. Place Recombiner in Operate

1. Strengths:

Operators were familiar with procedures and were able to promptly retrieve and execute the correct procedure in nearly all instances. SROs were normally able to retrieve procedures without referring to a master index list. Operators appeared well prepared in the JPM area of the examination.

Operators were familiar with component locations in the plant. They were able to rapidly proceed to equipment and simulate operation of the equipment as directed by procedures.

2. Weaknesses:

No significant weaknesses were noted in this area.

c. Simulator Scenarios

Dynamic Scenarios - All operators were graded as satisfactory in the dynamic simulator scenarios. Simulator scenarios required three days. Five scenarios were used during the three days.

Scenario 1 was used on the first day and included: 1) a reactor shutdown, 2) a shift of operating CRD pumps, 3) an RHR Loop A isolation valve failure, 4) a recirculation pump B scoop tube lock-up, 5) a "B" Reactor Core Isolation Cooling (RCIC) relay logic power failure, 6) an inadvertent HPCI pump start, 7) a loss of offsite power, a failure (open) of two Safety Relief Valves (SRVs) and 8) a failure of RHR pump "B" to auto start. A modified Scenario 1 was also used on another crew where the reactor shutdown and scoop tube lock-up were not required.

Scenario 2 was used on the first day and included: 1) a reduction in reactor power, 2) removal of the south Reactor Feed Pump (RFP) from service, 3) fuel clad failure, 4) an Average Power Range Monitor (APRM) (Channel E) upscale failure, 5) a CRD hydraulic flow control valve failure (shut), 6) an East turbine bypass valve failure (open), 7) pressure regulator oscillations, 8) a failure of the "A" pressure regulator, 9) a failure of CRD "A" flow control outlet valve (15%) and 10) an Anticipated Transient Without Scram (ATWS).

Scenario 3 was used on the second day and included: 1) a reduction in reactor power, 2) a RCIC pump start for surveillance, 3) a failure of the RCIC speed controller, 4) a failure of SRV B21-F013K (open), 5) a failure of steam flow instrument "A" (high), 6) condenser air in-leakage, and 7) a turbine trip with accompanying scram and steam leak in the drywell.

Scenario 4 was used on the third day and included: 1) a reduction in reactor power, 2) securing the south RFP, 3) a Reactor Pressure Vessel (RPV) level transmitter failure (low), 4) a trip of the CCHVAC Division I return fan, 5) a failure of a drywell pressure transmitter, 6) an inadvertent RCIC Start, 7) condenser air in-leakage and 8) a turbine trip with accompanying scram and steam leak in the drywell.

Scenario 5 was used on the second day and included: 1) starting an additional heater drain pump, 2) an up-power maneuver, 3) a drywell pressure transmitter failure, 4) a HPCI aux oil pump oil leak, 5) an RR MG A speed controller failure, 6) APRM oscillations, 7) an RR MG B trip, 8) a Standby Liquid Control (SLC) pump "B" failure to start, 9) a steam leak that causes an MSIV isolation, and 10) a RCIC trip that cannot be reset.

1. Strengths:

Operators consistently retrieved and executed the correct procedures for the conditions they were given. Operators were familiar with and rapidly went to the correct panel locations to find the indications they needed or operate systems required to be in service.

Communications between operators was judged as a strength. The crews consistently used three-way, closed-loop communications. Operators quickly corrected communications errors when they occurred.

The trainers assigned to assist the examination team during dynamic simulator examinations were well prepared and contributed to the success of the examination by providing realistic, timely cues when required by the scenarios.

2. Weaknesses:

Operators had difficulty classifying events during the dynamic simulator scenarios. The procedure provided for classifying events was difficult to use. Although none of the operators under-classified an event, almost all operators took additional time beyond what is normally expected to arrive at a classification. One operator took twenty minutes to classify an event even though the dynamic simulation had stopped. The training department has indicated the procedure is being replaced with a new procedure based on the NUMARC classification methodology. The new procedure will be evaluated on subsequent visits.

Operators did not notify plant management of problems in the plant during the dynamic scenarios. One operator ordered the plant shut down per tech spec requirements and had not notified plant management of any problems in the plant. Only one of seven SROs examined notified management of plant problems on a consistent basis.

4. Operations, Security, Rad Protection, Other

a. Strengths:

Training, Operations, and Security were all professional in their dealings with the examination team. The examination team was able to quickly process through the gate house and into the plant. The examination team was able to quickly obtain all materials needed for efficient administration of the examination.

b. Weaknesses:

No significant weaknesses were noted in this area.

5. Simulator Observations:

While conducting the second dynamic scenario on the first group of candidates, the simulator inserted a major transient (station blackout) without action from the simulator console operator. At the end of the scenario the simulator was shut down and re-booted to prevent a recurrence of the problem. In addition to the simulation failure, several simulator discrepancies were identified. The training department has now issued simulator deficiency reports for the noted deficiencies. See enclosure 4 for details of the deficiencies noted.

6. Exit Meeting

a. An exit meeting with the Fermi Nuclear Station management was held at the Fermi training offices on December 10, 1993. Those attending the meetings are listed in Section 2 of this report. The following items were discussed during the exit meeting:

- Strengths and weaknesses noted in this report.

- The general observations relating to the plant noted in Section 4.

Facility Comments and Comment Resolution

RO Question #14

During steady-state, full-power operation, annunciator 3D5, CRD CHARGING H2O PRESSURE LOW, alarms. The NSO verifies that Control Rod Drive Charging Water Pressure is 1250 psig. The NSO should:

a. send an auxiliary operator to shift and clean CRDH pump discharge filters.

b. adjust CRD cooling water flow to raise CRDH system pressure above 1300 psig.

c. verify that rods can still be inserted. If so, continue plant operations while maintenance trouble-shoots.

d. shut the flow control valve, close C11-F003, and start the standby pump. Restore normal system pressure and flow.

Expected Response: d.

Facility Comment:

Information provided in the stem of the question includes indication that Control Rod Drive Charging water Pressure is 1250 psig. This pressure value indicates a Control Rod Drive Hydraulic pump is in operation, eliminating answer D as an appropriate response. Since the stem of the question only provides an annunciator actuation and a matching value for Control Rod Drive Charging Water Pressure, candidates that selected responses A or B have demonstrated appropriate system knowledge as well as Annunciator Response and Abnormal Operating Procedure knowledge. Those candidates selecting response A recognize a CRDH pump is still in operation and an obstruction to flow caused by the CRDH pump discharge filters can result in low system pressure. Those candidates selecting response B also recognize a CRDH pump is still in operation, and other system parameters which would include cooling water flow require adjustment to return CRDH to normal operating values. Supporting information can be found in the following references Annunciator Response Procedure 3D5, Abnormal Operating Procedures 20.106.01 and 20.106.03 and ST-OP315-010-001.

Facility Recommendation:

Two responses, A or B, should be accepted as answers for question 14 of the Reactor Operator exam. Response D should not be accepted as an answer for question 14 of the Reactor Operator exam.

NRC Response:

The facility's comments are accepted. The answer key is amended to accept answers a. and b. and answer d. is deleted. The pre-exam review made comment on this question stating that if "annunciator 3D5, CRD CHARGING H2O PRESSURE LOW, alarms," was added to the stem, the correct answer would be d.

RO Question #22, Senior Reactor Operator (SRO) Question #24

Which one of the following ADMINISTRATIVELY prevents resetting the Reactor Protection System following a Reactor Scram?

a. RCIC failed to operate during scram follow-up.

b. Cause of scram is identified and corrected.

c. RPS Channels A and B are in a tripped condition.

d. Trip System A and B blue Pilot Scram Valve Solenoid lights are ON.

Expected Response: d.

Facility Comment:

The answer required is not solicited by the question. Most importantly, the question requires Licensed Operators to memorize the Prerequisites of a section of a System Operating Procedure, 23.610, which is not in accordance with NPP-PR1-01. Referring to selection D, the Reactor Protection System (RPS) is in the normal reset condition when the Trip System A and B blue Pilot Scram Valve Solenoid lights are on, thereby precluding the necessity to reset the Reactor Protection System. The stem of the question combined with the required answer suggests resetting the RPS when it is already in the reset condition. For this reason, the System Operating Procedure 23.610 lists Trip System A and B blue Scram Pilot Valve Solenoid lights off as a prerequisite (not an administrative limit) to reset a reactor scram. This prerequisite represents a required system configuration or condition to perform the procedurally prescribed evolution, and is not an administrative limit. In other words, there are no administrative requirements to preclude resetting a reactor scram that is already reset. There are no correct answers to the question as written. Response A is associated with a reactor startup, and addresses aspects of post scram investigations in accordance with NPP-OP1-06. Response B allows. versus precludes resetting a reactor scram, in accordance with System Operating Procedure 23.610, and therefore is not correct. Response C is not correct since it describes a prerequisite or required system configuration as opposed to an administrative limit. Supporting information can be found in System Operating Procedure 23.610 and NPP-PR1-01, section 5.4.3.2.a, on page 5.

Facility Recommendation:

Question 22 of the RO and question 24 of the SRO examinations should be deleted.

NRC Response:

NUREG 1123 (BWR K/A Catalog) allows questions concerning system limits and precautions. Please refer to page 3.7-21 (Reactor Protection System), System Generic K/As, item number 10, which states that operators must have the: "Ability to explain and apply all system limits and precautions." As pointed out in the facility comments, answers a., b. and c. are incorrect, leaving only d. as the only possible correct answer. The intent of the question was to determine if operators could recognize the fact that they cannot reset the reactor protection system when the reactor protection system is already in a reset condition. It is apparent the question wording was not precise and the operators were unable to determine what was being asked. The question is deleted. No comment was made by the facility on this question during the pre-exam review.

RO Question #24

What is the IRM UPSCALE (Hi) alarm set point in Range 7, and what should be done if it actuates?

a. 35 of 40 scale; stop withdrawing control rods, scale up range switches, reset IRM UPSCALE ALARM.

b. 39 of 40 scale; Bypass IRM in accordance with 23.603 "Intermediate Range Monitoring System.

c. 108 of 125 scale; stop withdrawing control rods, scale up range switches as necessary, reset IRM UPSCALE ALARM

d. 122 of 125 scale; Bypass IRM in accordance with 23.603 "Intermediate Range Monitoring System.

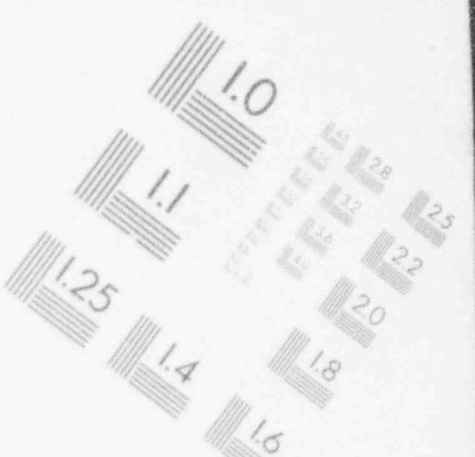
Expected Response: a.

Facility Comment:

Regardless of range switch position, each Intermediate Range Monitor indicates a value associated with the 0 - 40 scale and the C - 125 scale. The 0 - 40 scale is physically positioned above the 0 - 125 scale on the recorders such that 35 of the 0 - 40 scale is over 108 of the 0 - 125 scale. Therefore, an indication of 35 on the 0 - 40 scale is the same as an indication of 108 on the 0 - 125 scale while on range 7 or any other range switch position. For these reasons, responses A and C are correct. Supporting documentation can be found in ST-OP-315-023-001 on pages 20 and 21, Fermi 2 Technical Specification 3.3.6, Table 3.3.6.2 on page 3/4 3-44a and Annunciator Response Procedure 3D63.

1

IMAGE EVALUATION TEST TARGET (MT-3)



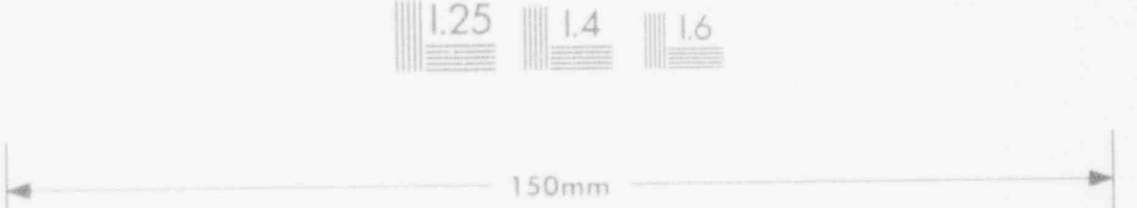


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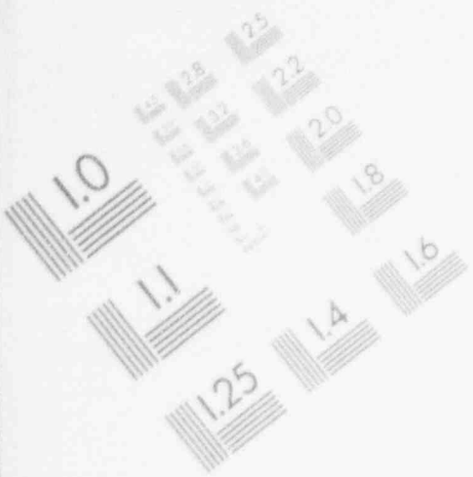
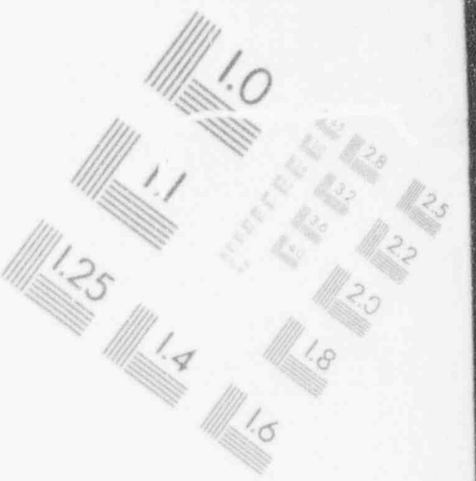
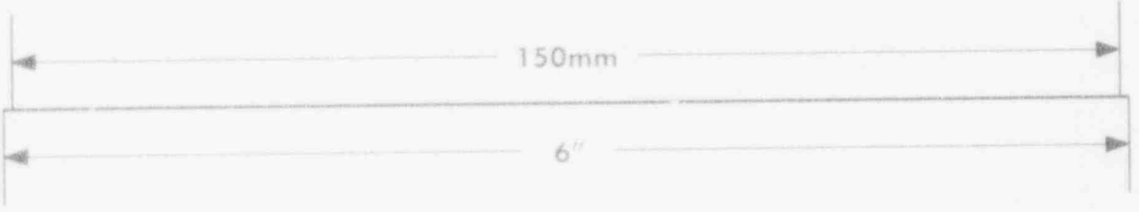
IMAGE EVALUATION TEST TARGET (MT-3)







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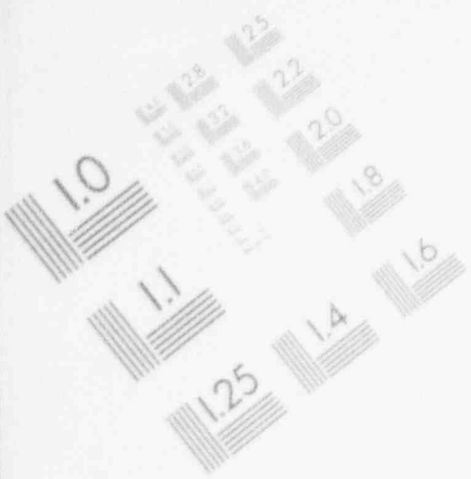

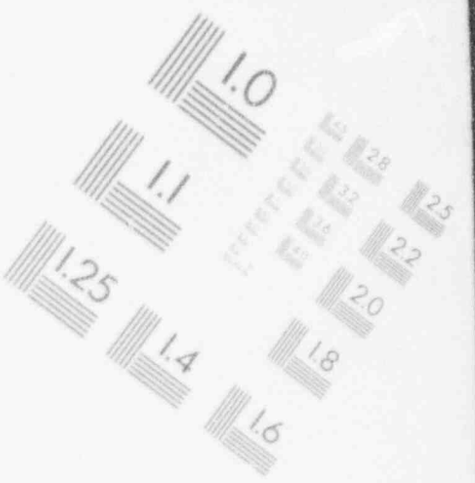

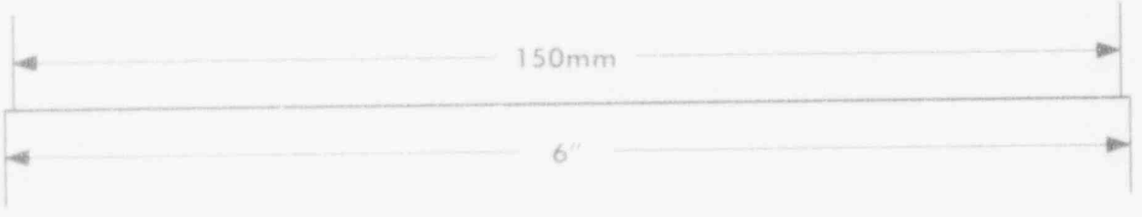

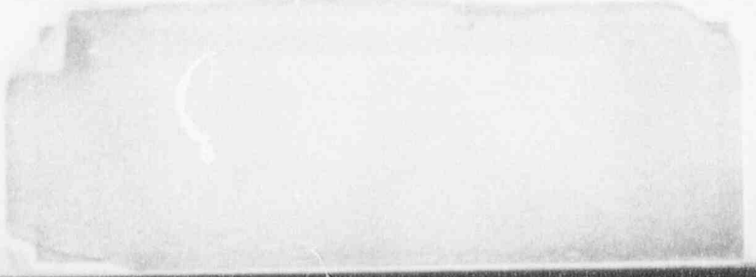

Facility Recommendation:

Two responses A and C should be accepted as correct answers to question 24 on the Reactor Operator examination.

NRC Response:

The facility recommendation is accepted. The answer key is modified to accept answers a. and c. as correct answers. There were no comments on this question during the pre-exam review.

RO Question #35, SRO Question # 36

An operator has been directed to shift sample points on the PRIMARY CONTAINMENT MONITORING SYSTEM (PCMS) manually. Which one of the following describes what will occur if the Div I Drywell Supply Valves are closed while the Div I Suppression Pool Line Isolation Valve is closed?

a. Auto-trip of the running PCMS subsystems

b. Damage to the in-service Radiation Monitor System

c. Auto-opening of the Div I Suppression Pool Line Isolation Valve

d. Damage to the in-service Hydrogen and Oxygen Monitor System

Expected Response: b.

Facility Comment:

The Primary Containment Monitoring System (PCMS) consists of two divisions. Each division has a sample pump associated with Hydrogen and Oxygen monitoring. The Primary Containment Radiation Monitoring System (PCRMS) is connected to Division I of PCMS. The PCMS pumps are interlocked with PCMS inlet and return valves to trip upon loss of a flow path, therefore selection A is a correct response. The PCRMS sample pump is not interlocked with PCMS inlet and return valves. Operators are warned to recognize PCRMS is not interlocked with PCMS inlet and return valves to prevent damage to associated PCRMS equipment in System Operating Procedure, 23.408, therefore selection B is also a correct response. Supporting documentation can be found in ST-OP-315-049-001 pages 17, 18 and 32 as well as the System Operating Procedure 23.408 page 7 and 13.

Facility Recommendation:

Two responses A or B should be accepted as correct answers to question 35 of the RO exam and question 36 of the SRO exam.

NRC Response:

The facility's comments are accepted. The answer key is amended to accept answers a. and b. The facility's pre-exam review made no comment on this question.

RO Question #57

The plant has been operating at 100 percent power for over thirty days. Channel number 34 (TB2 near office area) of the turbine building area radiation monitor is reading 5.0 mr/hr. Which of the follow actions should the NSO take?

a. This is a normal reading thus no action is required.

b. Verify that Standby Gas Treatment System, has auto started.

c. Call an instrument and control technician to investigate the down scale reading.

d. Request chemistry sample the off-gas system for percent hydrogen and verify proper hydrogen monitor operation.

Expected Response: d.

Facility Comment:

The condition described in the stem of the question is not complete or accurate. Area Radiation Monitor Channel 34 is the Off Gas Area as opposed to the turbine building second floor office area. A value of 5.0 mr/hr is above the alarm setpoint for this channel which would normally result in actuation of annunciator 16D8. Actuation of this annunciator and verification of the alarming condition would require the operators to enter and execute Abnormal Operating Procedure 20.000.02. Operators are required to recognize Abnormal Operating Procedure entry conditions and subsequently execute the immediate operator actions from memory. The immediate operator actions for Abnormal Operating Procedure 20.000.02 are not included in the selection of responses to this question. The required answer for this question as it is currently written is in response to an Off Gas System Explosion. Abnormal Operating Procedure 20.712.02 includes Area Radiation Monitor Channel 34 as a symptom and possible entry condition to this procedure, however the stem of the question is a subsequent action specified by Abnormal Operating Procedure 20.712.02, and as such is not required to be memorized by Licensed Operators. Supporting documentation can be found in LP-OP-802-502, page 11 section 3.c., Annunciator Response Procedure 16D8, Abnormal Operating Procedure 20.000.02, Abnormal Operating Procedure 20.712.02 and NPP-PR1-01, page 5 section 4.a.

Facility Recommendation:

Question number 57 should be deleted from the RO exam.

NRC Response:

The facility's comments are accepted. The RO answer key is amended to delete question number 57. During the facility's pre-exam review it was requested that "(TB2 near off gas area)" be added to the question. This was erroneously read as "(TB2 near the office area)" making the question incorrect.

RO Question #60, SRO Question #54

The control center HVAC was in recirculation Mode with the emergency air intake selector switch in AUTO when the N control center emergency air inlet radiation monitor failed high. The control center emergency air inlet radiation monitor system auto-isolates the N inlet path. How often is this inlet reopened to verify high radiation still exists if no operator action is taken?

a. five minutes.

b. ten minutes.

c. fifteen minutes

d. twenty minutes

Expected Response: a.

Facility Comment:

A correct answer to this question is not included in the selection of responses. Upon a high radiation trip, the Emergency inlet path will isolate as described in the stem of the question, however the system will unisolate the inlet path every 60 minutes and sample for a period of 5 minutes. If the trip condition is no longer present, the system remains in the unisolated condition. If the trip condition is still present, the system will isolate and sample again for a period of 5 minutes, one hour later. A correct response of 60 minutes is not included in the selection of answers. Supporting documentation can be found in the System Operating Procedure 23.413, section 3.4.1, page 5.

Facility Recommendation:

Question 60 of the RO exam and Question 54 of the SRO exam should be deleted.

NRC Response:

The facility's comments are accepted. The answer keys are amended to delete the question. The facility had opportunity to comment on this question during the pre-exam review. The facility's pre-exam comments were incorporated exactly as requested.

Reactor Operator Question #79

Upon a loss of UPS, which one of the following indications is still available?

a. RPV Pressure

b. Full Core Display

c. Neutron Monitoring

d. Narrow Range RPV Level

Expected Response: c.

Facility Comment:

There are two correct answers for this question. Abnormal Operating Procedure 20.300.12 provides information regarding the effect on equipment/systems supplied by the Uninterruptable Power Supply System. This procedure delineates the effects of a loss of power in the Subsequent Operator Actions section as well as in Enclosure A of the procedure. Reactor Pressure instruments associated with the Feedwater System (C32) will be lost as indicted in the procedure and Enclosure. However, Reactor Pressure indications will still be available from instrumentation associated with other systems. Specifically, the Post Accident Pressure and Level Recorders will still function, providing the Operators with this important parameter. Operators selecting A or C have demonstrated sufficient system and system interrelations knowledge, recognizing the effects of a loss of UPS as well as understanding the availability and operability of other control room indications, particularly noting that all neutron monitoring will not be lost upon a failure of the Uninterruptable Power Supply System. Supporting documentation can be found in Abnormal Operating Procedure 20.300.12.

Facility Recommendation:

Two responses A and C should be accepted as correct answers question 79 of the RO exam.

NRC Response:

The facility's comments are accepted. The answer key for the RO exam is modified to accept answers a. and c. as correct answers to question number 79. The facility had no comment on this question during the pre-exam review.

RO Question #82, SRO Question #74

The plant has been operating at 100% for several days. Annunciator 3D62, GEN SERV H20 EFFLUENT RADN MONITOR UPSCALE, energizes. The control room operators should:

a. announce the condition over the Hi-Com, have chemistry verify the annunciator.

b. begin a controlled shutdown. The plant must be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.

c. prepare to scram the reactor in preparation for the auto isolation of service water if the alarm is not cleared within 30 minutes.

d. immediately start SGTS, begin dose assessments in accordance with the Offsite Dose Calculation Manual, Section 3.11, Radioactive Effluents

Expected Response: c.

Facility Comment:

The answer required by this question is not correct. The General Service Water System does not have [illegible] Auto Isolation features as described in the response. Response D is not correct since it is associated with a Reactor Building Ventilation Exhaust Radiation Monitor Upscale trip. Response B is not correct since there are no Technical Specification actions or Offsite Dose Calculation Manual responses required with the information given in the stem of the question. Operators selecting response A are recognizing a condition requiring actions in accordance with the Abnormal Operating Procedure 20.000.02 as well as the Annunciator Response Procedure 3D62. Additionally, those Operators selecting response A are demonstrating a knowledge level exceeding the minimum required standard by recognizing Annunciator Response Procedure actions from memory. Supporting documentation can be found in Abnormal Operating Procedure 20.000.02, Annunciator Response Procedure 3D62 and MPP-PR1-01 section 5.4.3.3 and 4, on page 5.

Facility Recommendation:

Response A should be accepted as the only answer for question 82 of the RO exam and question 74 of the SRO exam.

NRC Response:

The facility's comments are accepted. The answer key is amended to accept only answer a. to the question. This question was not available to the facility during the pre-exam review.

Attachment 1
Enclosure 4

SIMULATION FACILITY REPORT

Facility Licensee: Fermi 2 Nuclear Station

Facility Docket No.: 50-341

Operating Tests Administered on: December 6 - 11, 1993

This form is used only to report observations. These observations do not constitute audit or inspection findings and are not, without further verification and review, indicative of noncompliance with 10 CFR 55.45(b). These observations do not affect NRC certification or approval of the simulation facility other than to provide information that may be used in future evaluations. No licensee action is required in response to these observations.

While conducting the simulator portion of the operating tests, the following items were observed:

ITEM	DESCRIPTION
CRD Brg Alarm	When CRD Pump B was swapped with CRD Pump A, a motor bearing temperature alarm on the B CRD pump was received after about 30-40 minutes of operation of the B CRD pump.
OG Chillers	East and Center Off-Gas Chillers were noted to cycle on and off to Pre-Cool Mode several minutes after placing the simulator in RUN in IC-7. Both chillers were in AUTO.
AVR Channels	When AVR Channel B was tripped manually, Channel A indication increased to approximately 225 amps DC. This appears too high when both channels indicate approximately 70 amps DC (140 amps) when both channels are in service.
T50R802A	Recorder T50R802A (Drywell/Torus Pressure - H11P601) channel 2 indication was oscillating between 0.5 psig and 2.4 psig. Attempted reset and power off/on of recorder to correct problem without success. Later in scenario, recorder worked as expected.
Drywell Cooling Fan #13	Drywell Cooling Fan #13 ammeter is reading in the red zone continuously.
Hi-Com	The Hi-Com Handset at P603 does not work.

Core Spray Check Valve	Dual indication was observed on E21-F006A (Div I Core Spray Check Valve) after E21-F005A was closed following injection of Division I Core Spray System to the RPV. This occurred in IC-2. This evolution was performed approximately 5 times and dual indication was observed to occur only once. The simulator was reset prior to each performance of this evolution.
Main Turbine	Speed/Load demand indication on the Main Turbine goes to indicated +1 when the Speed/Load Demand pushbutton is depressed too long. This action is directed by SOP 23.109, section 7.1. Indication should stop rising at some higher value.
Alarm Window 6D7	Alarm Window 6D7 light flashes without the horn sounding while simulation is running. This appears to be the old FREEZE light and it coincides with the snapshot interval set at 1 minute.
Power Failure	Loss of Division I Offsite Power (Bus 101) occurred during conduct of a scenario for no apparent reason. No major transient or activity was in progress at the time Div I power was lost. Power was only lost momentarily, but long enough to cause a major transient during the scenario.
EECW/EESW	EECW/EESW Systems (Div I & II) were automatically initiated by shutting down an operating RBCCW pump. During restoration following automatic initiation, B EESW pump was observed to shut down on one occasion by itself following shutdown of the B EECW pump. This evolution was conducted several other times with no unexpected behavior.
CRD Cooling Water d/p	CRD cooling water d/p is too high per SOP 23.106. The simulator is reading approximately 30 psid. The SOP states the d/p should be 10 to 13 psid.
EDG 11	EDG 11 would not shut down following restart after a previous trip. When EDG 11 was shutdown per SOP 23.307, the EDG tripped. The GENERATOR TROUBLE alarm occurred. Alarms and the engine were reset locally using remote functions as directed by the SOP, with alarms clearing. Upon subsequent restart of the EDG from the COP, the alarms occurred again and the CMC was observed to have both STOP and START quadrants of the CMC switch lit. The EDG could not subsequently be shutdown from either the COP or using remote functions. A reset was needed to clear this condition.
Recirc MG Set M/A station	The observed length of time for Recirc MG Set M/A stations to come out of saturation during recovery from scoop tube lock conditions appears to be excessive.

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
REACTOR OPERATOR LICENSE
REGION 3

CANDIDATE'S NAME: MASTER

FACILITY: Fermi 2

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: 93/12/13

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

TEST VALUE	CANDIDATE'S SCORE	%	
96.0 ~~100.00~~		____ %	TOTALS

FINAL GRADE

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

Candidate's Signature

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE

001	a	b	c	d	___	023	a	b	c	d	___
002	a	b	c	d	___	024	a	b	c	d	___
003	a	b	c	d	___	025	a	b	c	d	___
004	a	b	c	d	___	026	a	b	c	d	___
005	a	b	c	d	___	027	a	b	c	d	___
006	a	b	c	d	___	028	a	b	c	d	___
007	a	b	c	d	___	029	a	b	c	d	___
008	a	b	c	d	___	030	a	b	c	d	___
009	a	b	c	d	___	031	a	b	c	d	___
010	a	b	c	d	___	032	a	b	c	d	___
011	a	b	c	d	___	033	a	b	c	d	___
012	a	b	c	d	___	034	a	b	c	d	___
013	a	b	c	d	___	035	a	b	c	d	___
014	a	b	c	d	___	036	a	b	c	d	___
015	a	b	c	d	___	037	a	b	c	d	___
016	a	b	c	d	___	038	a	b	c	d	___
017	a	b	c	d	___	039	a	b	c	d	___
018	a	b	c	d	___	040	a	b	c	d	___
019	a	b	c	d	___	041	a	b	c	d	___
020	a	b	c	d	___	042	a	b	c	d	___
021	a	b	c	d	___	043	a	b	c	d	___
022	a	b	c	d	___	044	a	b	c	d	___
						045	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

046	a	b	c	d	___	069	a	b	c	d	___
047	a	b	c	d	___	070	a	b	c	d	___
048	a	b	c	d	___	071	a	b	c	d	___
049	a	b	c	d	___	072	a	b	c	d	___
050	a	b	c	d	___	073	a	b	c	d	___
051	a	b	c	d	___	074	a	b	c	d	___
052	a	b	c	d	___	075	a	b	c	d	___
053	a	b	c	d	___	076	a	b	c	d	___
054	a	b	c	d	___	077	a	b	c	d	___
055	a	b	c	d	___	078	a	b	c	d	___
056	a	b	c	d	___	079	a	b	c	d	___
057	a	b	c	d	___	080	a	b	c	d	___
058	a	b	c	d	___	081	a	b	c	d	___
059	a	b	c	d	___	082	a	b	c	d	___
060	a	b	c	d	___	083	a	b	c	d	___
061	a	b	c	d	___	084	a	b	c	d	___
062	a	b	c	d	___	085	a	b	c	d	___
063	a	b	c	d	___	086	a	b	c	d	___
064	a	b	c	d	___	087	a	b	c	d	___
065	a	b	c	d	___	088	a	b	c	d	___
066	a	b	c	d	___	089	a	b	c	d	___
067	a	b	c	d	___	090	a	b	c	d	___
068	a	b	c	d	___	091	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

092 a b c d ___

093 a b c d ___

094 a b c d ___

095 a b c d ___

096 a b c d ___

097 a b c d ___

098 a b c d ___

099 a b c d ___

100 a b c d ___

(********** END OF EXAMINATION **********)

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.

2. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.

3. To pass the examination, you must achieve a grade of 80 percent or greater.

4. The point value for each question is indicated in parentheses after the question number.

5. There is a time limit of 4 hours for completing the examination.

6. Use only black ink or dark pencil to ensure legible copies.

7. Print your name in the blank provided on the examination cover sheet and the answer sheet.

8. Mark your answers on the answer sheet provided and do not leave any question blank.

9. If the intent of a question is unclear, ask questions of the examiner only.

10. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.

11. When you complete the examination, assemble a package including the examination questions, examination aids, and answer sheets and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.

12. After you have turned in your examination, leave the examination area as defined by the examiner.

QUESTION: 001 (1.00)

During steady-state operations at 100% power, annunciator 3D109 "CONTROL ROD DRIFT" alarms. The Full Core Display indicates rod drift for a rod which was fully withdrawn (when the rod is selected, 4-Rod display shows rod motion). The NSO should immediately:

a. fully insert the drifting rod.

b. verify that a CRD pump is in operation.

c. restore the rod to its withdrawn position and verify that it stays.

d. alert a second licensed operator of the need to bypass the RWM.

QUESTION: 002 (1.00)

Condensate Polishing Demin has been isolated for preventive maintenance. During the course of work, the GMJs find that F041A (Precoat Return Drain Valve) needs to be operated. Permission is granted and a Log Book Entry is made. What are the requirements for the GMJs to leave this normally-closed valve open?

a. F041A needs to be added to the existing ALS

b. This valve cannot be left in the open position.

c. An additional Control Room Log Entry is required to document the valve position.

d. There are no special requirements. A valve lineup will be performed prior to returning the system to service.

QUESTION: 003 (1.00)

EDG #12 is operating due to a loss of off-site power. Diesel fuel is accumulating around the engine due to a fuel line leak. Which of the following should you do if the fuel ignites?

a. Attempt to extinguish the fire using a fire hose.

b. Manually activate CO2 and evacuate the diesel room.

c. Let the automatic suppression system actuate, but stand by with a CO2 extinguisher.

d. Attempt to extinguish the fire using the Class A extinguisher located near the engine.

QUESTION: 004 (1.00)

What does the RHR HVAC System do upon initiation of the EDG 11 CO2 system?

a. Fans trip and the dampers close in Division 1.

b. Fans trip and the dampers close in the EDG 11 room.

c. EDG 11 fan dampers align to the Recirculation Mode.

d. All fans trip and all dampers close to the RHR complex.

QUESTION: 005 (1.00)

What happens when the operator uses the Alarm Acknowledge Function of the Process Computer alarm display? Unacknowledged alarms change from:

a. yellow to green AND no alarms are deleted.

b. yellow to green AND items no longer in an alarm state are deleted from the display.

c. red to green AND all previously acknowledged alarms are deleted from the display.

d. yellow to green AND all previously acknowledged alarms are deleted from the display.

QUESTION: 006 (1.00)

Which one of the following events should be recorded in the Control Room NSO Log Book?

a. A diesel fuel delivery.

b. A nuclear fuel delivery.

c. Start and stop of NPDES releases.

d. An injury to a guard on a back shift.

QUESTION: 007 (1.00)

Which one of the following REQUIRES you to exit a high temperature area? Assume you are wearing an ice vest.

a. One-half of the ice melts.

b. You reach one-half the time limits given in the safety manual.

c. You reach the time limits given in the safety manual OR all the ice has melted.

d. You reach one-half the time limits given in the safety manual AND approximately one-half the ice is melted.

QUESTION: 008 (1.00)

The plant is operating at 100% reactor power. While performing valve verifications, an auxiliary operator finds C11-F113 (Charging Water Isolation Valve) for HCU 185 shut. How does this affect the movement of control rod 185?

a. The control rod CANNOT be moved.

b. The control rod CANNOT be inserted, but CAN be scrammed.

c. The control rod CAN be withdrawn, but CANNOT be scrammed.

d. The control rod's movement is not affected by closure of C11-F113.

QUESTION: 009 (1.00)

The Standby Gas Treatment System (SGTS) just started due to 5mr/h at the Fuel Pool Exhaust. Which one of the following describes how the NSO would confirm the SGTS auto start in the control room? Verify:

a. Air inlet from refuel area damper F410 is closed and SGTS exhaust flow recorder showing 3800 CFM flow.

b. DIV I/DIV II SGTS AUTO START on, SGTS Exhaust Flow Div I Recorder showing 3800 CFM, Div I Exhaust Fan running.

c. SGTS Div. I Exhaust Fan running and air inlet from reactor building ventilation damper (F407) is closed.

d. SGTS DIV I/II RB VENT EXH RADN MONITOR UPSCALE TRIP alarm on, exhaust flow recorder showing 3800 CFM flow and Div I Cooling Fan running.

QUESTION: 010 (1.00)

Which one of the following statements about performing valve, electrical, and instrument lineups is FALSE?

a. Fully qualified operators should be used for system lineups.

b. Valve positions should be verified by first trying to close the valve slightly.

c. Entry into contaminated areas to check valve positions is not required if previous lineup documentation showing the valve position exists.

d. Non-severe discrepancies noted when performing the lineups do not have to be brought to the attention of the NSS until the end of the shift.

QUESTION: 011 (1.00)

While conducting a plant tour, you see a radiation protection technician walk past the EECW Div. 2 Heat Exchanger carrying something in a clear plastic bag. Assuming the technician is following all applicable procedures, which one of the following describes the contents of the bag? An item:

a. from the hot-tool crib.

b. with fixed radiation contamination.

c. which is NOT radioactively contaminated.

d. removed from a radioactively contaminated area.

QUESTION: 012 (1.00)

Of the following, who must ask permission of the Control Room NSO before entering the marked (darker brown) areas in front of the control room.

a. NRC Resident Inspectors

b. Plant Manager

c. Superintendent, Operations

d. Security Shift Supervisor

QUESTION: 013 (1.00)

While verifying an electrical lineup, you observe a maintenance technician preparing to reach into a potentially energized 480 VAC MCC. He is wearing safety glasses, low voltage rubber gloves and a shirt with long sleeves. You should:

a. let the technician continue with the electrical work, no safety problem exists.

b. stop the technician and tell him a face shield is required to work in the MCC.

c. stop the technician and tell him high voltage rubber gloves are required to work in the MCC.

d. stop the technician and tell him to roll up his sleeves or get a shirt with short sleeves to work in the MCC.

QUESTION: 014 (1.00)

During steady-state, full-power operation, annunciator 3D5, CRD CHARGING H2O PRESSURE LOW, alarms. The NSO verifies that Control Rod Drive Charging Water Pressure is 1250 psig. The NSO should:

a. send an auxiliary operator to shift and clean CRDH pump discharge filters.

b. adjust CRD cooling water flow to raise CRDH system pressure above 1300 psig.

c. verify that rods can still be inserted. If so, continue plant operations while maintenance trouble-shoots.

d. shut the flow control valve, close C11-F003, and start the standby pump. Restore normal system pressure and flow.

QUESTION: 015 (1.00)

A turbine trip from high power has occurred. The following plant conditions exist:

The reactor mode switch is in SHUTDOWN.
Both CRD pumps are inoperable.
All MSIVs are shut.
Reactor power is 12%,
Recirc pumps have been tripped.
ARI has been initiated.
Annunciator 3D6 "SCRAM VALVE PILOT AIR HDR PRESS HIGH/LOW" illuminated.

The NSO should:

a. Rescram by:
   - resetting the scram,
   - defeating RPS logic trips if necessary,
   - draining the scram discharge volume,
   - initiating a manual scram.

b. Vent the scram air header by:
   - closing the Scram Air Header Pressure Gauge Isolation Valve (F088),
   - opening the Scram Air Header Supply Valve (F095).

c. Rapidly insert rods by:
   - Closing the HCU accumulator charging water header valve (F034),
   - rapidly inserting control rods manually by using EMERGENCY IN (23.623),
   - bypassing RWM if necessary.

d. Vent the scram air header by:
   - closing the Backup Scram Header Isolation Valve (F095),
   - closing the Scram Air Header Pressure Source Valve to PI-R013 and PSE-N012 (F088),
   - Disconnecting the piping to the Scram Air Header Pressure Gauge (R013),
   - re-opening F095.

QUESTION: 016 (1.00)

Which one of the following is NOT a VALID rod block?

a. SRM HI, reactor mode switch in RUN.

b. RWM WITHDRAWAL ERROR, reactor mode switch in STARTUP.

c. IRM DETECTOR WRONG POS, reactor mode switch in REFUEL.

d. Refuel bridge over core, Reactor Mode Switch in STARTUP.

QUESTION: 017 (1.00)

The NSO is moving a control rod from 46 to 48. Which of the following responses on the Full Core Display would NOT require entry to a Technical Specification?

a. Readout increments to 48, red FULL-OUT light comes on.

b. Readout increments to 49, red FULL-OUT light comes on, readout decrements to 48.

c. Readout increments to 48, red FULL-OUT light comes on, red FULL-OUT light turns off after rod settles at 48.

d. Readout increments to 48, red FULL-OUT light comes on, overtravel annunciator turns on, overtravel annunciator turns off as rod settles to 48.

QUESTION: 018 (1.00)

The following conditions exist:

- Mode switch in STARTUP/HOT STANDBY
- RECIRC A & B FLOW LIMITER 2/3 DEFEAT SWITCH is in DEFEAT.
- Recirc Pump B is operating.

Which one of the following lights, alarms or indications should be ON prior to starting recirc pump A?

a. RECIRC PUMP A SEAL CLG H2O FLOW LOW

b. RECIRC SYS A GEN LOCKOUT RELAY TRIPPED

c. TRIPPED LIGHT FOR GENERATOR A FIELD BREAKER

d. AUTO LIGHT FOR RECIRC B MG SET GENERATOR SPEED CONTROL STATION

QUESTION: 019 (1.00)

A reactor startup is in progress. The following conditions exist:

- Steam flow of 15 %
- Feedwater flow of 15 %
- Both Recirc pumps operating
- Recirc MG Set A and B Generator Speed Control Stations at 40% demand in MANUAL

What is the expected recirc speed?

a. 27%

b. 30%

c. 37%

d. 40%

QUESTION: 020 (1.00)

Which of the following buses provides power to Core Spray Pump B?

a. Bus 64B

b. Bus 64C

c. Bus 65E

d. Bus 65F

QUESTION: 021 (1.00)

On a loss of offsite and onsite power, part of the immediate action is to place the keylock switches B21BS5A and B and B21BS6A and B in the TEST position. What does this prevent?

a. Automatic initiation of LPCI when power is restored.

b. RCIC and HPCI isolation on high temperature.

c. MSIV auto isolation until power is restored.

d. Automatic load sequencing when the diesels are started.

QUESTION: 022 (1.00)

QUESTION DELETED

QUESTION: 023 (1.00)

During normal operating conditions what are the Reactor Protection System (RPS) motor generator input power supplies and output voltages?

a. 480 volt, 3-phase AC input from Div I (II) ESF Power; 480 volt, 3-phase AC output to the RPS Distribution Panel.

b. 480 volt, 3-phase AC input from Div I (II) ESF Power; 120 volt, single-phase AC output to the RPS Distribution Panel.

c. 480 volt, 3-phase AC input from the RPS Alternate Transformer A(B); 120 volt, single phase AC output to the RPS Distribution Panel.

d. 480 volt, 3-phase AC input from Div I(II) ESF Power; 130 volt, DC output to the RPS Distribution Panel.

QUESTION: 024 (1.00)

What is the IRM UPSCALE (Hi) alarm set point in Range 7, and what should be done if it actuates?

a. 35 of 40 scale; stop withdrawing control rods, scale up range switches, reset IRM UPSCALE ALARM.

b. 39 of 40 scale; Bypass IRM in accordance with 23.603 "Intermediate Range Monitoring System.

c. 108 of 125 scale; stop withdrawing control rods, scale up range switches as necessary, reset IRM UPSCALE ALARM

d. 122 of 125 scale; Bypass IRM in accordance with 23.603 "Intermediate Range Monitoring System.

QUESTION: 025 (1.00)

What effect, if any, does bypassing an IRM detector have on the Reactor Protection System?

a. No effect.

b. Loss of Upscale Trip.

c. Loss of Downscale Alarm.

d. Loss of Rod Withdrawal Block circuits.

QUESTION: 026 (1.00)

A reactor startup is in progress. Power is approximately 1% and is on range 7 of the IRMs. IRM CH A/E/C/G UPSCALE TRIP/INOP (H-11 P603 3D59) and TRIP ACTUATORS A1/A2 TRIPPED (H-11 P603 3D73) annunciators energize. Which of the following will cause this combination of alarms, and how can the NSO verify the cause?

a. A loss of Div II 48/24 VDC power to the IRM Drawers. Verify INOP (white) lights illuminated on Relay Room Panel H11-P606 Drawers.

b. A loss of DC voltage to the IRM A fission chamber. Verify INOP (white) light illuminated on Relay Room Panel H11-P606 "A" Drawer.

c. A loss of signal from IRM E. Verify DOWNSCALE (white) light illuminated on Relay Room Panel H11-P606 "E" Drawer.

d. Reactor power increased to trip point for IRM C. Verify UPSCALE alarm (amber) light illuminated on Relay Room Panel H11-P606 "C" Drawer.

QUESTION: 027 (1.00)

The plant is at full power. The APRM DOWNSCALE (H11-P603 3D103) alarm energizes. Which one of the following describes the automatic actions and the NSO's actions to respond to this alarm?

a. A half-scram; monitor affected APRM channel; verify appropriate LPRM downscale light(s) is(are) on; bypass affected LPRM; monitor for power instabilities.

b. A rod block; monitor affected APRM channel; verify appropriate APRM downscale light is on; if power is not decreasing then bypass APRM; monitor for power instabilities.

c. A rod block and a half-scram; monitor affected APRM channel; verify appropriate APRM downscale light is on; if power is not decreasing then bypass APRM; monitor for power instabilities.

d. A rod block or a half-scram; monitor affected APRM channel; verify appropriate APRM downscale light is on; if power is not decreasing then restore using recirc; bypass APRM; monitor for power instabilities and shutdown if they are indicated.

QUESTION: 028 (1.00)

If the reactor mode switch is in STARTUP, which one of the following nuclear boiler instruments is NOT required to be operable?

a. Reactor Vessel Level for low level scram.

b. Reactor Vessel Flow for flow-biased scram.

c. Reactor Vessel Pressure for high pressure scram.

d. All instruments listed above are required for start-up.

QUESTION: 029 (1.00)

A very small leak has developed in the reference leg of the Div I level instrumentation causing the water level in the reference leg to slowly decrease. How is HPCI operation affected? HPCI automatic INITIATION:

a. and high level TRIP are unaffected.

b. and high level TRIP will occur at lower actual reactor vessel levels than normal.

c. and high level TRIP will cccur at higher actual reactor vessel levels than normal.

d. is unaffected; high level TRIP will occur at a higher than normal reactor vessel level.

QUESTION: 030 (1.00)

How does activation of the automatic depressurization system (ADS) affect level instrumentation at Fermi?

a. Only the core level instrument is reliable.

b. Only the narrow-range level instrument is reliable.

c. Flashing of the reference leg makes level unreliable.

d. No effect. The instrumentation corrects for ADS effects.

QUESTION: 031 (1.00)

Which one of the following statements about the operational uses of various RPV temperature indications is FALSE?

a. Vessel surface temperature monitoring may be used for indication of vessel stresses.

b. The bottom head coolant drain on the Reactor Water Cleanup System may be used to measure coolant temperature.

c. Externally mounted thermocouples do not effectively monitor transient conditions, but are used during Technical Specification surveillances.

d. The inlet temperature of the coolant in the recirc loops can be used to determine RPV temperature, but is inaccurate under no-loop-flow conditions.

QUESTION: 032 (1.00)

RCIC automatically initiated during an event. Which of the following RCIC operational parameters could indicate improper RCIC system operation?

a. RPV Level 105" and lowering

b. Discharge flow of 650 gpm

c. Turbine speed of 2050 rpm

d. Discharge pressure of 1126 psig

QUESTION: 033 (1.00)

A Group 18 primary isolation has occurred. How many operations of the automatic depressurization system (ADS) are possible under these conditions?

a. 0

b. 1

c. 3

d. 5

QUESTION: 034 (1.00)

The ADS/SRV POWER SUPPLY FAILURE annunciator energizes. The NSO confirms that power supplies 2PA2-5 and 2PA2-6 have failed. How does this failure affect ADS and why?

a. ADS is operable but limited to 3 openings.

b. ADS is unaffected; the system is fail-safe.

c. ADS is inoperable; no power to open the solenoid valves.

d. ADS is operable but limited to one discharge; no power to reset the logic.

QUESTION: 035 (1.00)

An operator has been directed to shift sample points on the PRIMARY CONTAINMENT MONITORING SYSTEM (PCMS) manually. Which one of the following describes what will occur if the Div I Drywell Supply Valves are closed while the Div I Suppression Pool Line Isolation Valve is closed?

a. Auto-trip of the running PCMS subsystems

b. Damage to the in-service Radiation Monitor System

c. Auto-opening of the Div I Suppression Pool Line Isolation Valve

d. Damage to the in-service Hydrogen and Oxygen Monitor System

QUESTION: 036 (1.00)

A reactor startup is in progress. The following conditions exist:

- Reactor Pressure 80 psig
- Pressure Regulator 87 psig
- RCIC in Standby
- RPV Level is 193"
- Turbine stop valve and control valves are closed

The NSO should:

a. reject water from vessel per 23.707.

b. raise the turbine flow setpoint to 5%.

c. depress the pressure regulator raise pushbutton to raise the setpoint by at least three pounds.

d. decrease Reactor Pressure Regulator setpoint until Main Turbine Bypass Valves are 2 to 5 % open.

QUESTION: 037 (1.00)

Reactor Power is 59%; the South RFP is in-service. The NSO is directed to put the North RFP in service. The North RFP Feedwater Flow Controller has been increased until the North RFP begins feeding. Current conditions are:

- South RFP flow controller is in AUTO
- South RFP flow controller bias set to zero
- North RFP flow controller is in MANUAL
- North RFP flow controller bias set to zero

What will happen if the North RFP flow controller bias is changed to -20?

a. North and South RFP speed and flow will decrease.

b. North and South RFP speed and flow will remain constant.

c. North RFP speed and flow will decrease, South will increase.

d. South RFP speed and flow will increase, North will decrease.

QUESTION: 038 (1.00)

A plant startup is in progress. Reactor power is approximately 25%. The South RFP is feeding the vessel. The NSO is directed to transfer feedwater level control from single-element to three-element control. How is this done? Place/Verify Feedwater Reactor Level Control in:

a. AUTO. QUICKLY place Level Control Mode selector switch to 3 ELEM. Null Feedwater Reactor Level Control M/A station.

b. MANUAL. SLOWLY place Level Control Mode selector switch to 3 ELEM. Null Feedwater Reactor Level Control M/A station. Place control in AUTO.

c. MANUAL. QUICKLY place Level Control Mode selector switch to 3 ELEM. Null Feedwater Reactor Level Control M/A station. Place control in AUTO.

d. MANUAL. QUICKLY place Level Control Mode selector switch is in 1 ELEM. Null feedwater Reactor Level Control M/A station. Place Feedwater Reactor Level Control station in AUTO.

QUESTION: 039 (1.00)

EDG #11 is paralleled to the in-plant electrical system and is loaded to 1000kW. Heavy snow and high winds cause a loss of offsite power. Which of the following describes the Emergency Diesel Generator Systems's response?

a. EDG continues with current load(s) on its bus.

b. The diesel output breaker opens; EDG continues to run; output breaker must be closed manually.

c. The diesel output breaker opens; EDG trips off; EDG must be started manually then will load normally.

d. The diesel output breaker opens; EDG continues to run; output breaker closes after loads are removed then EDG loads are sequenced back on.

QUESTION: 040 (1.00)

A loss of power has occurred requiring the emergency diesel generators to start and supply their respective 1E busses. During the start sequence, annunciator 9D50, DIV I EDG 12 GENERATOR TROUBLE, energized. The NSO should:

a. immediately reset the engine trip and attempt to restart EDG 12.

b. send an operator to the EDG 12 local panel to determine the cause of the fault.

c. take manual control of the EDG voltage regulator and raise voltage to the normal band.

d. take manual control of the EDG speed (frequency) control and raise EDG frequency to 60 Hz.

QUESTION: 041 (1.00)

The reactor is at 100% power. No equipment is out-of-service. The "CORE PLATE TO SP HDR B DIFF PRESS HIGH" alarm is received. What does this indicate?

a. Failure of the Control Room indication for Core Spray flow.

b. Breakage on the Core Spray line inside the reactor vessel.

c. Failure of the Core Spray System differential pressure Control Room indication.

d. Leakage past the Core Spray Isolation Valves into the Core Spray System low pressure piping.

QUESTION: 042 (1.00)

Which of the following is correct in regards to an uncoupled control rod?

a. If the rod cannot be recoupled, it may be fully withdrawn and electrically disarmed.

b. If the rod cannot be recoupled, it may be left in the as found position as long as the rod is electrically disarmed.

c. When the control rod goes into the overtravel position, the position indication will indicate 49 on the "4 Rod Display".

d. If permitted by the RWM, insert the rod one notch at a time until nuclear instrumentation indicates the rod is being inserted.

QUESTION: 043 (1.00)

The reactor is at 10% power and the NSO has been instructed to raise power to 50%. During the power ascension the rod worth minimizer indicates a withdraw error with no corresponding annunciator alarm (Assume the rod worth minimizer is functioning properly). Which of the following should be illuminated in the power level section of the upper display window?

a. LPSP

b. LPAP

c. ERROR

d. TRANSITION

QUESTION: 044 (1.00)

Given total core flow is 85% and Reactor Recirculation pump A is at 75% speed. What is the maximum allowable speed range for Reactor Recirculation pump B?

a. 60% to 90%

b. 65% to 85%

c. 70% to 80%

d. 72% to 78%

QUESTION: 045 (1.00)

The plant is shutdown with RHR Loop A in the Shutdown Cooling (SDC) Mode maintaining reactor water temperature at 190°F. RHR Loop B is in Standby. A fault has occurred in system service transformer 64. After the emergency diesel generators repower the affected busses, what is the status of shutdown cooling? Loop A:

a. is in SDC.

b. cannot be used for SDC.

c. is idle, Loop B is operating in SDC.

d. can be used, but must be restarted in SDC.

QUESTION: 046 (1.00)

The NSO was performing rod pulls using the current pull sheet to raise power to conform with the requirements of the power to flow map when alarm ARP 3D110 (RBM UPSCALE/INOP) is received. The NSO verified the alarm was the RBM UPSCALE alarm. The NSO should:

a. bypass the channel and continue with the rod pulls. Notify the Station Nuclear Engineer after all rod pulls are complete.

b. notify the Station Nuclear Engineer, verify core thermal limits are satisfactory, bypass the channel, then continue with the rod pulls.

c. notify the Station Nuclear Engineer, verify core thermal limits are satisfactory then re-null the channel by deselecting the rod and either select a different rod or re-selecting the original rod.

d. notify the Station Nuclear Engineer, verify core thermal limits and rod positions are satisfactory, then re-null the channel by deselecting the rod and either select a different rod or re-select the original rod.

QUESTION: 047 (1.00)

EOPs 29.100.01 and 29.100.02 have been entered and the following conditions exist:

Drywell Pressure	- 4.5 psig and increasing
Drywell Temperature	- 265°F and increasing
RPV Water Level	- +190" and steady
Torus Temperature	- 97°F and increasing
RPV Pressure	- 520 psig and decreasing

The NASS directs you to maximize torus cooling on the "A" RHR loop. What is the RHR flow required to maximize torus cooling using "A" RHR loop ? Loop flow of 11,000 gpm through:

a. the RHR heat exchanger bypass valve.

b. both the RHR heat exchanger and the heat exchanger bypass valve.

c. the RHR heat exchanger with the heat exchanger bypass valve shut.

d. the RHR heat exchanger throttling flow with the heat exchanger bypass valve.

QUESTION: 048 (1.00)

The following plant conditions exist:

LOCA
Reactor pressure 120 psig
Reactor vessel level less than 0 inches
Drywell pressure greater than 9 psig
LPCI initiation signal present

The RHR interlocks for Drywell Spray have been satisfied. Which of the following actions will result in spraying the drywell?

a. Manually open both inboard and outboard drywell spray valves.

b. Allow both inboard and outboard drywell spray valves to automatically open.

c. Manually open the inboard drywell spray valve. The outboard valve will automatically open after pressure has equalized.

d. Allow the inboard drywell spray valve to open, then manually open the outboard valve after pressure has equalized.

QUESTION: 049 (1.00)

The plant is at 80 percent power and has been operating at that power for the last week. Annunciator 5D16, LOOSE PARTS MONITOR ABNORMAL is received concurrent with a decrease in Reactor Core Differential Pressure. Failure of which one of the following could be the cause?

a. A jet pump.

b. A recirculation pump seal.

c. A control rod drifting in.

d. A recirculation system scoop tube.

QUESTION: 050 (1.00)

A plant emergency condition exists. Drywell pressure is 2.5 psig. Which of the following sets of conditions will allow initiation of the Drywell and Torus Sprays?

a. - Containment Spray Mode Select Switch - OFF
   - Containment Spray 2/3 Core Height Override Switch Position: MANUAL OVERRIDE
   - Reactor Level: LESS THAN 0

b. - Containment Spray Mode Select Switch - MANUAL
   - Containment Spray 2/3 Core Height Override Switch Position: OFF
   - Reactor Level: > LEVEL 1

c. - Containment Spray Mode Select Switch - OFF
   - Containment Spray 2/3 Core Height Override Switch Position: MANUAL OVERRIDE
   - Reactor Level: > LEVEL 1

d. - Containment Spray Mode Select Switch - MANUAL
   - Containment Spray 2/3 Core Height Override Switch Position: OFF
   - Reactor Level: LESS THAN -43"

QUESTION: 051 (1.00)

The plant is operating at 80 percent power. Alarm 5D77 FEEDWATER HEATER 5S LEVEL HIGH/LOW energizes on high level. Assuming no operator action is taken to correct the abnormal condition, what will happen to turbine generator output when the heater level reaches the high level isolation set point? The generator:

a. will trip on high heater level.

b. output will decrease because the plant will be less efficient.

c. output will increase because more steam is going through the turbine.

d. output will remain constant because heater 6S and the reactor will compensate for the loss of heater 5S.

QUESTION: 052 (1.00)

The plant is operating at 12% power. Turbine low pressure exhaust temperature is at 275°F and increasing. Attempts to increase exhaust hood sprays are not correcting this condition. What will happen to reactor pressure as turbine low pressure exhaust temperature continues to increase? Reactor pressure will:

a. remain constant.

b. increase due to turbine trip.

c. decrease as the pressure control system automatically increases steam flow to the turbine.

d. increase as the pressure control system automatically decreases steam flow to the turbine.

QUESTION: 053 (1.00)

The plant was starting up after a forced outage. All systems necessary to support 100% power were operating. Power is at 90% and increasing. One of the operating feed pumps tripped. The Recirc A & B Flow Limiter 2/3 Defeat Switch was in NORMAL. The recirc runback was in progress at 78% reactor power when the heater drain system isolated. RPV level is slowly decreasing. Which of the following is the action that should be taken by the NSO? The NSO should:

a. place the mode switch to SHUTDOWN.

b. throttle the SBFW pumps to 600 gpm.

c. initiate HPCI for water level control.

d. insert the CRAM array to reduce power.

QUESTION: 054 (1.00)

QUESTION DELETED

QUESTION: 055 (1.00)

The position indications for the following valves are found deenergized:

- RCIC Steam to Turbine Valve (F045)
- RCIC Turbine Control Valve (F059)
- RCIC Steam Inlet Bypass Valve (F095)

What could have caused this? Loss of:

a. 260 V DC MCC 2PA-1

b. 260 V DC MCC 2PB-1

c. Battery Charger 2A-1

d. Battery Charger 2B-1

QUESTION: 056 (1.00)

The plant is operating at 85 percent power. The NSO notices that condenser vacuum is decreasing. SJAE inlet steam pressure is at 160 psig and is on a decreasing trend of 10 psi per minute. If the NSO takes no corrective actions, which one of the following would be the next expected alarm?

a. Alarm for OFF GAS CNDS RECEIVER TANK LEVEL LOW.

b. Alarm for OFF GAS 2 MIN DRNS COLL TK LEVEL LOW

c. Alarm for OFF GAS HOLD UP PIPE DRN COLL TK LEVEL LOW

d. Alarm for E PREHEATER STEAM PRESSURE LOW

QUESTION: 057 (1.00)

QUESTION DELETED

QUESTION: 058 (1.00)

You are on shift in the control room when a fire alarm on panel H11-P816 involving the halon system is received. Alarm bells and a 45 second pre-discharge horn actuates in the local zone. Which of the following additional automatic actions should occur?

a. No additional automatic actions occur.

b. HVAC interlocks activate and isolate the CCHVAC.

c. HVAC interlocks activate and place the CCHVAC in purge.

d. HVAC interlocks activate and place the CCHVAC in recirculation.

QUESTION: 059 (1.00)

NPP23.428, Secondary Containment Airlocks and Penetrations, has a precaution that says, "When it is necessary to operate airlocks during power failures, personnel should exercise caution to ensure both airlock doors are not opened at the same time." Which one of the following is the basis for this precaution?

a. Damage to the pneumatic locking mechanism may result if door operation is attempted.

b. Attempting simultaneous operations of airlocks may damage door seals as the doors are being cycled.

c. The door interlocks are not in effect. Caution should be exercised to ensure Technical Specification requirements are met.

d. The security function provided for the airlocks doors will be inoperable with a potential for damage to security locks when the doors are cycled.

QUESTION: 060 (1.00)

QUESTION DELETED

QUESTION: 061 (1.00)

You are an extra operator in the relay room assisting with TIP traces. The TIP detector is near the top of the core traversing down in low speed when the NSO announces that drywell pressure is quickly increasing and containment isolation is imminent. What should you do to the TIP system under these conditions?

a. Monitor the automatic withdraw of the TIP.

b. Manually withdraw the TIP with low speed off.

c. Manually activate the shear valve fire switch.

d. Monitor the automatic activation of the shear valve.

QUESTION: 062 (1.00)

Which one of the following is a correct method of verifying fuel assembly orientation for fuel in the reactor?

a. All fuel handles point toward reactor center.

b. All serial numbers readable when facing north.

c. All channel fasteners face away from control rod.

d. All bosses on bail handles point toward cell center.

QUESTION: 063 (1.00)

Which best describes operation of the Main Steam Isolation Valve Leakage Control System (MSIVLCS).

a. The system is made of two subsystems, Div I and Div II. It uses nitrogen to pressurize the main steam lines between the MSIVs to prevent post-LOCA leakage. It is started manually.

b. The system is made of three subsystems, Div I, Div II, and Div III. Each division uses non-interruptible control air to pressurize Main Steam Lines downstream from its associated MSIV to prevent post-LOCA leakage. It is started automatically on LOCA conditions.

c. The system is made of two subsystems, Div I and Div II. It uses control air to pressurize the two areas between the MISVs to prevent post-LOCA leakage. It is started manually.

d. The system is made of two subsystems, Div I and Div II. It uses Instrument Air to pressurize the two areas between the MSIVs to prevent post-LOCA leakage. It is started automatically on LOCA conditions.

QUESTION: 064 (1.00)

Reactor plant conditions are:

- RPV water level 102"
- Drywell Pressure 1.2 psig
- Reactor scram all rods in

Which one of the following lists some of the actuations or isolations that should have occurred as a result of the given plant conditions? (Note the answers do not list every actuation or isolation.)

a. Group 1 isolation; Group 2 isolation, RWCU isolation

b. SGTS started; Group 1 isolation; RCIC started; RWCU started; reactor building ventilation supply and exhaust dampers closed.

c. Reactor building ventilation supply and exhaust fans tripped; control room ventilation on recirc mode; HPCI started; Group 13 isolation.

d. SGTS started; Group 2 isolation; reactor building ventilation supply and exhaust fans trip; control room ventilation in recirc mode; LPCI started.

QUESTION: 065 (1.00)

The reactor is at 28% power. All ECCS systems are available. The following annunciators energize:

- MAIN TURBINE TRIP
- TURBINE CONT VALVE FAST CLOSURE CHANNEL TRIP
- TURBINE STOP VALVE CLOSURE CHANNEL TRIP
- GENERATOR PROTECTIVE RELAYING OPERATED
- 345kV BKR POS CF OPEN
- 345kV BKR POS CM OPEN
- GENERATOR FIELD BREAKER OPEN

Which one of the following will occur as a result of the given conditions?

a. Turbine bypass valves open, reactor power stays constant.

b. SRVs open to control reactor pressure, power remains constant.

c. Rod block and a half-scram. Reactor power remains constant.

d. A reactor SCRAM occurs, reactor power decreases at a -80 second period.

QUESTION: 066 (1.00)

The plant is operating at 100% power. An I&C technician performing a surveillance inadvertently initiates a Group 1 isolation. The following alarms are received: (not a complete list of all alarms received)

- MAIN TURBINE TRIP
- TURBINE CONT VALVE FAST CLOSURE CHANNEL TRIP
- TURBINE STOP VALVE CLOSURE CHANNEL TRIP

A reactor scram occurs with positive indication all control rods are fully inserted. Under these conditions, which of the following is the method of removing decay heat the NSO will use immediately following the scram?

a. RCIC, turbine bypass valves

b. Main Feedwater System, manual control of SRVs

c. Main Feedwater System, turbine bypass valves

d. LOW LOW set function of SRVs, standby feedwater system

QUESTION: 067 (1.00)

The plant was operating at 100% power when a spurious scram occurred. The NSO was unable to take action to control RPV water level for two minutes. The reactor water level control system and reactor protection system responded as designed. Which one of the following describes the plant conditions at the end of the two minutes? RPV level is controlling at:

a. 172"; RFP discharge valves closed with sealed-in close signals; SULCV controlling RPV level in accordance with its thumbwheel set.

b. 172"; RFPT speed limited to 2900 rpm; SULCV in AUTO.

c. 196"; RFP discharge valves closed with sealed-in close signals; SULCV in AUTO.

d. 196"; RFPT speed limited to 2900 rpm; RFP feeding through the SULCV; SULCV controlled by thumbwheel set.

QUESTION: 068 (1.00)

The plant is operating at 80% reactor power. All equipment required to support 100% power operations is available. The standby pressure regulator is out of service. The in service pressure regulator begins to slowly shut the turbine control valves. Which one of the following will occur without operator action to correct the pressure regulator?

a. Reactor power will begin increasing causing pressure to increase. MWe will decrease, the reactor will scram on high pressure or high power.

b. Reactor power will stay the same. Recirc flow control will automatically control reactor power and reactor pressure at the pressure regulator setpoint.

c. Reactor power will begin decreasing. This will cause pressure to also decrease. The two will interact to slowly shut down the reactor and the turbine cycle.

d. Reactor power and pressure may decrease or increase depending on operating history, pressure regulator setpoint and the doppler coefficient of reactivity.

QUESTION: 069 (1.00)

The plant was operating at 100% reactor power, 100% rod line when an SRV failed open. The NSO depressed the OPEN pushbutton, followed by depressing the CLOSE pushbutton. The SRV remained open. Which one of the following is the next action the operator should take? The NSO should:

a. insert the CRAM array as rapidly as possible.

b. reduce core flow below 45% of rated core flow.

c. place the mode switch to SHUTDOWN in two minutes.

d. increase MWe output from the generator to reduce reactor pressure.

QUESTION: 070 (1.00)

A severe LOCA occurred eight minutes ago. The reactor depressurized and LPCI has been injecting for six minutes. Drywell pressure is currently 13 psig and rising. The NSS has directed the NSO to use the Drywell Spray Mode of RHR A. Which one of the following describes how the NSO should control the flow rate of the drywell spray? Control the flow rate with the Drywell Spray:

a. Inboard Isolation Valve, read flow rate from Drywell Spray Loop A Flow Meter.

b. Outboard Isolation Valve, read flow rate from Residual Heat Removal Loop A Flow Recorder.

c. Inboard Isolation Valve, read flow rate from Residual Heat Removal Loop A Flow Recorder.

d. Outboard Isolation Valve, read flow rate from Drywell Spray Loop A Flow Meter.

QUESTION: 071 (1.00)

EOP 29.000.02, Primary Containment Control, directs the crew to trip all drywell cooling fans if Drywell Pressure reaches 20 psig and Torus water average temperature is above 120°F. What is the concern?

a. The Drywell fans might short circuit and ignite.

b. The Drywell Cooling Fans thermal overload trips might fail.

c. The paint on the fans might flake-off and plug the Torus suction strainers.

d. The insulation on the Drywell Cooling Fan motors might melt and cause hot-shorts.

QUESTION: 072 (1.00)

At what RPV level does alternate rod insertion activate?

a. 31.8"

b. 110.8"

c. 192.7"

d. ARI is not actuated by level.

QUESTION: 073 (1.00)

The following conditions exist:

- high drywell pressure rapidly increasing
- rapid RPV level decrease

Which reactor water level indication provides the most accurate readings under these conditions?

a. Core Level Indicator

b. Flood Up Level Indicator

c. Wide Range Level Indicator

d. Narrow Range Level Indicator

QUESTION: 074 (1.00)

Heavy thunderstorms just caused a load-reject from 100% power. The reactor conditions are:

- APRM Power stable at 20 %
- No indications of control rod position
- Recirc pumps tripped
- All MSIVs are open
- Reactor Level being maintained by feedwater
- Reactor Pressure being maintained automatically through bypass valves
- Mode switch in SHUTDOWN

The NSO should:

a. Initiate ADS.

b. Initiate ARI.

c. Terminate and prevent all injection into the RPV

d. Open C11-F034, Drive control rods, bypassing RWM interlocks if necessary.

QUESTION: 075 (1.00)

Which one of the following systems is available for Alternate Boron Injection?

a. Core Spray

b. Standby Feedwater System

c. Condensate/Feedwater System

d. Reactor Core Isolation Cooling

QUESTION: 076 (1.00)

The plant is at 30% power, starting up after refueling. The CONDENSER PRESSURE HIGH alarm energizes. Approximately five seconds later, a main turbine trip occurs. If the loss of condenser vacuum continues at this rate, what will be the next two automatic responses?

a. Simultaneous MSIV Closure and Reactor Feed Pump Turbine Trip at 14.7 psia.

b. Main Turbine Bypass Valve Closure at 6.8 psia followed by MSIV Closure at 6.85 psia.

c. Reactor Feed Pump Turbine Trip at 6.7 pisa followed by MSIV Closure at 14.7 psia.

d. Main Turbine Bypass Valve Closure at 6.7 psia followed by Reactor Feed Pump Turbine Trip at 6.85 psia.

QUESTION: 077 (1.00)

The plant was at 100% power. A loss of off-site power occurred with EDG #11 paralleled to its bus, running at full load. How will the plant electrical system respond? EDG #11 output breaker:

a. will open; load shed will occur; the output breaker must be manually closed by an operator.

b. will open; load shed will occur; the output breaker will automatically close after load shed.

c. remains shut; load shed will occur; other breakers supplying the diesel bus open.

d. remains shut; load shed will NOT occur; other breakers supplying the diesel bus open.

QUESTION: 078 (1.00)

The plant was operating at 100% power when the following annunciators energized at 0713:

9D17, DIV I ESS 130V BATTERY 2PA TROUBLE
1D57, ADS/SRV POWER SUPPLY FAILURE
1D6, DIV I CSS LOGIC POWER FAILURE
1D8, RHR LOGIC A 125V DC BUS POWER FAILURE
1D56, RCIC LOGIC BUS POWER FAILURE

The NSO sent auxiliary operators to determine and correct the cause of the annunciators. At 0726 the auxiliary operators sent to investigate reported back that they had determined the cause of the alarm and would have it fixed in approximately 3 minutes. The NSO should:

a. wait three minutes and allow the operators to complete the repairs.

b. run recirc to minimum and place the mode switch to SHUTDOWN.

c. isolate the RCIC turbine to prevent inadvertent initiation when power is restored.

d. reduce reactor core flow to 50-55%. Insert the CRAM array and prepare to scram the reactor if SRVs open.

QUESTION: 079 (1.00)

Upon a loss of UPS, which one of the following indications is still available?

a. RPV Pressure

b. Full Core Display

c. Neutron Monitoring

d. Narrow Range RPV Level

QUESTION: 080 (1.00)

The reactor conditions are:

- 80 % flow
- 70 % power
- a rod shuffle is in progress

The NSO is withdrawing a rod when he receives the APRM UPSCALE (3D102) alarm and APRM E alarm light. What was the minimum local power spike which caused this alarm?

a. 100.9 %

b. 102.0 %

c. 106.0 %

d. 108.0 %

QUESTION: 081 (1.00)

The plant is operating at 100% power when an explosion and fire in the front panel forces the operating crew to abandon the control room. The NSO could NOT get to the panel to scram the reactor before leaving. How can the NSO determine and control reactor power under these conditions? Power can be read:

a. on the Div I Remote Shutdown Panel. The reactor can be scrammed from the same panel.

b. on the Dedicated Shutdown Panel; the reactor can be scrammed by tripping APRMs in the relay room.

c. in the relay room. The reactor may be scrammed from either the Relay Room or from the RPS power distribution panel.

d. by energizing the Div II Remote Shutdown Panel; the reactor can be scrammed by opening feeder breakers to RPS Trip Channels in the relay room.

QUESTION: 082 (1.00)

The plant has been operating at 100% for several days. Annunciator 3D62, GEN SERV H20 EFFLUENT RADN MONITOR UPSCALE, energizes. The control room operators should:

a. announce the condition over the Hi-Com, have chemistry verify the annunciator.

b. begin a controlled shutdown The plant must be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.

c. prepare to scram the reactor in preparation for the auto isolation of service water if the alarm is not cleared within 30 minutes.

d. immediately start SGTS, begin dose assessments in accordance with the Offsite Dose Calculation Manual, Section 3.11, Radioactive Effluents

QUESTION: 083 (1.00)

A major plant accident has occurred. A major radioactive release is in progress. The NSS has declared a General Emergency and wants to evacuate to the two-mile radius. Who makes the final decision to evacuate the general public?

a. The NRC.

b. State and Local Authorities.

c. Detroit Edison corporate headquarters.

d. Federal Emergency Management Agency (FEMA)

QUESTION: 084 (1.00)

The reactor is at 100% power and 100% recirc flow. Reactor Building Closed Cooling Water (RBCCW) is lost. The Reactor Recirculation:

a. pumps will trip upon detection of the loss of RBCCW.

b. pumps are unaffected as long as CRD seal purge is available.

c. pumps will be damaged unless tripped by the crew within 90 seconds.

d. MG set lube oil system switches to EECW to support continued operation.

QUESTION: 085 (1.00)

A loss of power caused the emergency diesels to start and the load sequencer to activate. Which one of the following Division I isolation valves will receive an open actuation signal?

a. RBCCW Supply to EECW (P44-F603A)

b. ESF Battery Room Space Cooler (P44-F613)

c. EECW Div. I Make-up Tank Outlet (P44-F602A)

d. RBCCW to Reactor Building Equipment Sump Heat Exchanger (P44-F605A)

QUESTION: 086 (1.00)

During a slow loss of air pressure with failure of the Standby Station Air Compressor, at what pressure do the intertie valves between the Station Air System and the Control Air System close?

a. 95 psig

b. 85 psig

c. 80 psig

d. 75 psig

QUESTION: 087 (1.00)

A Reactor Water Cleanup isolation has occurred due to a spurious differential high flow trip. The cause has been determined and corrected. Which one of the following actions will result in reset of the RWCU system?

a. Depressing both Main Steam Line Isolation RESET pushbuttons.

b. Depressing the Close pushbuttons for Inboard and Outboard RWCU Isolation valves.

c. Clearing the RWCU to reactor differential pressure interlock and starting one Cleanup Recirc Pump.

d. Depressing the Group 10, Reactor Water Cleanup System Inboard and Group 11, Reactor Water Cleanup System Outboard RESET pushbuttons.

QUESTION: 088 (1.00)

The reactor is at full power. RCIC testing is being performed when the NSO notes suppression pool temperature is 102°F. What actions should the NSO to take?

a. Scram the reactor, place the mode switch in SHUTDOWN; depressurize to below 200 psig within 12 hours.

b. Continue RCIC testing and monitor suppression pool temperature. If pool temperature exceeds 105°F, terminate RCIC testing.

c. Begin a normal reactor shutdown. Be in Hot Shutdown within 12 hours; restore average temperature to below 95°F within 24 hours.

d. Stop all testing which adds heat to the suppression chamber; restore average temperature to below 95°F within 24 hours.

QUESTION: 089 (1.00)

The reactor was at full power. A spurious power surge has caused one reactor recirculation pump to trip and the recirc flow control system to initiate a runback. Current conditions are:

- Power: 55 %
- Operating recirc loop flow: 21000 gpm

The NSO should:

a. place the mode switch in SHUTDOWN.

c. take action to recover the tripped pump.

b. insert control rods to below the 77% line using CRAM array or as directed by Station Nuclear Engineer.

d. insert control rods to below the 96% line using CRAM array or as directed by Station Nuclear Engineer.

QUESTION: 090 (1.00)

Extensive testing of the RCIC system has been done during the past several days. The TORUS WATER LEVEL TROUBLE alarm is energized and level is now +2 inches. The NSO should:

a. place the mode switch to SHUTDOWN, emergency depressurize.

b. maintain torus water level above the SRV Tail Pipe Level Limit.

c. maintain RPV pressure and torus water temperature above the HEAT CAPACITY TEMPERATURE LIMIT.

d. use the Torus Water Management System and reduce torus water level below +2".

QUESTION: 091 (1.00)

A refueling accident has occurred. It has been determined that the Refueling Floor dose rate is about 5000 mrem/hr. Per 10 CFR 20, what is the maximum time an adult with no previous exposure could be in this field?

a. 15 minutes

b. 45 minutes

c. 60 minutes

d. 5 hours

QUESTION: 092 (1.00)

The reactor is in COLD SHUTDOWN in preparation for refueling.

- Mode Switch is in SHUTDOWN
- Reactor Temperature is 165°F
- RHR Pump A is in service as Shutdown Cooling
- RHR Loop A flow is 10000 gpm
- Reactor is at Atmospheric Pressure

The NSO notes that E11-F015A, LPCI Loop A Inboard Isolation Valve, is going shut. Maintenance is working on E11-F015B. The NSO should immediately:

a. shut down RHR pump A.

b. place the other RHR loop in service.

c. open E11-F007A, RHR Pump Recirc Valve.

d. close E11-F009, Shutdown Cooling Inboard Suction Valve.

QUESTION: 093 (1.00)

The reactor is in COLD SHUTDOWN in preparation for refueling.

- Mode Switch is in SHUTDOWN
- Reactor Temperature is 169°F
- RHR Loop B is in service as Shutdown Cooling
- RHR Loop B flow is 10000 gpm
- Reactor is at Atmospheric Pressure
- Preparation for removing the Vessel head are under way

All Div II AC power fails. The diesels start but the output breakers will not close in on the Div II bus. Reactor Coolant Temperature is increasing at about 1°F every 3 minutes. What should be done to assure adequate core cooling?

a. Start RHR Pump C

b. Place loop A RHR in service

c. Bleed steam to main condenser or torus

d. Maximize RWCU system flow to regenerative heat exchanger

QUESTION: 094 (1.00)

The plant is shutdown with refueling operations in progress. Annunciator 16D1, RB REFUELING AREA FIFTH FLOOR HIGH RADN energizes. The NSO should:

a. announce the event over the Hi-Comm and sound the plant area alarm.

b. contact the supervisor on the refuel floor directing fuel movement and have him stop all fuel movement.

c. trip the reactor building ventilation system, shut the RB Div I and II supply and exhaust isolation valves and realign CCHVAC to the Emergency Recirc Mode.

d. contact the refuel bridge operators on the Bridge Hi-Comm and have them immediately evacuate all personnel from the refuel floor.

QUESTION: 095 (1.00)

The primary system is discharging into the reactor building and "Secondary Containment and Rad Release Control" has been entered due to a high area ambient temperature. The procedure directs the operator to scram the reactor before any area in the secondary containment reaches Maximum Safe Operating Temperature. Which one of the following is the reason for the manual scram?

a. To eliminate the need for emergency depressurization.

b. To limit radiation release to the secondary containment.

c. To reduce the energy that the primary system is discharging.

d. To return area temperature below limits to allow personnel access.

QUESTION: 096 (1.00)

EOP 2S.000.01, step RC/L-2 directs the crew to restore and maintain RPV water level. What is the maximum level the NSS should direct the operators to maintain?

a. 50"

b. 150"

c. 173"

d. 214"

QUESTION: 097 (1.00)

Why is the Turbine Generator tripped following a scram? To minimize:

a. Prevents MSIV closure due to low main steam line pressure.

b. Prevents cycling of the Turbine Control Valves due to low steam flow conditions.

c. Prevents overheating the turbine blades due to generator motoring on reverse power.

d. tripping of the Reactor Feed Pump Turbines due to inadequate steam availability.

QUESTION: 098 (1.00)

Channel 2 of the Torus Water Temperature Instrumentation failed. The following torus water temperature data are collected:

Channel	Temperature (°F)
1	103
2	INOP
3	105
4	102
5	102
6	97
7	99
8	95

What is the average Suppression Pool temperature?

a. 100.4°F

b. 101.0°F

c. 105.0°F

d. 106.6°F

QUESTION: 099 (1.00)

When Primary Containment Flooding is required per 29.000.01 RC/L-5, you are directed to vent the RPV irrespective of the off-site radioactivity release rate when primary containment level reaches an elevation of 573 feet. Why was this level chosen?

a. This level is 2/3 of core height.

b. This level is equal to the top of active fuel.

c. This elevation is the bottom of the lowest recirculation system piping.

d. This level of water in the drywell is the structural load limit of the containment walls.

QUESTION: 100 (1.00)

Which of the following is NOT a method of RPV level control?

a. RWCU Blowdown to the Torus.

b. RWCU Blowdown to the Radwaste System.

c. Gravity Drain RWCU to Main Condenser.

d. Gravity Drain Main Steam Line Drains to the Main Condenser.

(********** END OF EXAMINATION **********)

MULTIPLE CHOICE

001 a
002 a
003 b
004 b
005 b
006 a
007 c
008 d
009 b
010 c
011 c
012 d
013 a
014 a & b
015 a
016 a
017 a
018 c
019 b
020 c
021 b
022 deleted
023 b
024 a & c
025 b
026 b
027 b
028 b
029 b
030 c
031 a
032 c
033 d
034 c
035 b & c
036 c
037 b
038 c
039 d
040 b
041 b
042 d
043 d
044 c
045 d

046	d	069	c
047	c	070	b
048	a	071	c
049	a	072	b
050	b	073	a
051	c	074	b
052	a & b	075	b
053	d	076	b
054	deleted	077	b
055	a	078	b
056	d	079	a & c
057	deleted	080	c
058	c	081	c
059	c	082	a
060	deleted	083	b
061	a	084	b
062	d	085	c
063	c	086	d
064	c	087	a
065	a	088	b
066	d	089	a
067	b	090	d
068	a	091	c

092 a

093 b

094 a

095 c

096 d

097 c

098 b

099 c

100 a

(********** END OF EXAMINATION **********)

U. S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC EXAMINATION
SENIOR OPERATOR LICENSE
REGION 3

CANDIDATE'S NAME: MASTER

FACILITY: Fermi 2

REACTOR TYPE: BWR-GE4

DATE ADMINISTERED: 93/12/13

INSTRUCTIONS TO CANDIDATE:

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. Points for each question are indicated in parentheses after the question. The passing grade requires a final grade of at least 80%. Examination papers will be picked up four (4) hours after the examination starts.

TEST VALUE	CANDIDATE'S SCORE	%	
97.0 ~~100.00~~			TOTALS
	FINAL GRADE	%	

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

Candidate's Signature

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

MULTIPLE CHOICE											
001	a	b	c	d	___	023	a	b	c	d	___
002	a	b	c	d	___	024	a	b	c	d	___
003	a	b	c	d	___	025	a	b	c	d	___
004	a	b	c	d	___	026	a	b	c	d	___
005	a	b	c	d	___	027	a	b	c	d	___
006	a	b	c	d	___	028	a	b	c	d	___
007	a	b	c	d	___	029	a	b	c	d	___
008	a	b	c	d	___	030	a	b	c	d	___
009	a	b	c	d	___	031	a	b	c	d	___
010	a	b	c	d	___	032	a	b	c	d	___
011	a	b	c	d	___	033	a	b	c	d	___
012	a	b	c	d	___	034	a	b	c	d	___
013	a	b	c	d	___	035	a	b	c	d	___
014	a	b	c	d	___	036	a	b	c	d	___
015	a	b	c	d	___	037	a	b	c	d	___
016	a	b	c	d	___	038	a	b	c	d	___
017	a	b	c	d	___	039	a	b	c	d	___
018	a	b	c	d	___	040	a	b	c	d	___
019	a	b	c	d	___	041	a	b	c	d	___
020	a	b	c	d	___	042	a	b	c	d	___
021	a	b	c	d	___	043	a	b	c	d	___
022	a	b	c	d	___	044	a	b	c	d	___
						045	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

046	a	b	c	d	___	069	a	b	c	d	___
047	a	b	c	d	___	070	a	b	c	d	___
048	a	b	c	d	___	071	a	b	c	d	___
049	a	b	c	d	___	072	a	b	c	d	___
050	a	b	c	d	___	073	a	b	c	d	___
051	a	b	c	d	___	074	a	b	c	d	___
052	a	b	c	d	___	075	a	b	c	d	___
053	a	b	c	d	___	076	a	b	c	d	___
054	a	b	c	d	___	077	a	b	c	d	___
055	a	b	c	d	___	078	a	b	c	d	___
056	a	b	c	d	___	079	a	b	c	d	___
057	a	b	c	d	___	080	a	b	c	d	___
058	a	b	c	d	___	081	a	b	c	d	___
059	a	b	c	d	___	082	a	b	c	d	___
060	a	b	c	d	___	083	a	b	c	d	___
061	a	b	c	d	___	084	a	b	c	d	___
062	a	b	c	d	___	085	a	b	c	d	___
063	a	b	c	d	___	086	a	b	c	d	___
064	a	b	c	d	___	087	a	b	c	d	___
065	a	b	c	d	___	088	a	b	c	d	___
066	a	b	c	d	___	089	a	b	c	d	___
067	a	b	c	d	___	090	a	b	c	d	___
068	a	b	c	d	___	091	a	b	c	d	___

A N S W E R S H E E T

Multiple Choice (Circle or X your choice)

If you change your answer, write your selection in the blank.

092 a b c d ___

093 a b c d ___

094 a b c d ___

095 a b c d ___

096 a b c d ___

097 a b c d ___

098 a b c d ___

099 a b c d ___

100 a b c d ___

(********** END OF EXAMINATION **********)

NRC RULES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on the examination will result in a denial of your application and could result in more severe penalties.

2. After you complete the examination, sign the statement on the cover sheet indicating that the work is your own and you have not received or given assistance in completing the examination.

3. To pass the examination, you must achieve a grade of 80 percent or greater.

4. The point value for each question is indicated in parentheses after the question number.

5. There is a time limit of 4 hours for completing the examination.

6. Use only black ink or dark pencil to ensure legible copies.

7. Print your name in the blank provided on the examination cover sheet and the answer sheet.

8. Mark your answers on the answer sheet provided and do not leave any question blank.

9. If the intent of a question is unclear, ask questions of the examiner only.

10. Restroom trips are permitted, but only one applicant at a time will be allowed to leave. Avoid all contact with anyone outside the examination room to eliminate even the appearance or possibility of cheating.

11. When you complete the examination, assemble a package including the examination questions, examination aids, and answer sheets and give it to the examiner or proctor. Remember to sign the statement on the examination cover sheet.

12. After you have turned in your examination, leave the examination area as defined by the examiner.

QUESTION: 001 (1.00)

Which one of the following conditions allows a temporary change to be made to a procedure?

a. An approved procedure contains an incorrect source reference.

b. The intent of an approved procedure is not clear and needs clarification.

c. The "Acceptance Criteria" for the results of an approved procedure needs to be updated.

d. One or more components in an approved procedure is identified incorrectly.

QUESTION: 002 (1.00)

During steady-state operations at 100% power, annunciator 3D109 "CONTROL ROD DRIFT" alarms. The Full Core Display indicates rod drift for a rod which was fully withdrawn (when the rod is selected, 4-Rod display shows rod motion). The NSO should immediately:

a. fully insert the drifting rod.

b. verify that a CRD pump is in operation.

c. restore the rod to its withdrawn position and verify that it stays.

d. alert a second licensed operator of the need to bypass the RWM.

QUESTION: 003 (1.00)

What is the MAXIMUM number of hours that an RO or an SRO can work in ANY 7 day period without requesting special permission?

a. 56

b. 60

c. 72

d. 80

QUESTION: 004 (1.00)

Which one of the following is the preferred communication system to inform the control room of a dropped fuel bundle if you are in the fuel bridge operator's cab?

a. The Radio System.

b. The Hi-Com System.

c. The Telephone System.

d. The Refuel Floor System (Bridge HiCom).

QUESTION: 005 (1.00)

Condensate Polishing Demin has been isolated for preventive maintenance. During the course of work, the GMJs find that F041A (Precoat Return Drain Valve) needs to be operated. Permission is granted and a Log Book Entry is made. What are the requirements for the GMJs to leave this normally-closed valve open?

a. F041A needs to be added to the existing ALS

b. This valve cannot be left in the open position.

c. An additional Control Room Log Entry is required to document the valve position.

d. There are no special requirements. A valve lineup will be performed prior to returning the system to service.

QUESTION: 006 (1.00)

What does the RHR HVAC System do upon initiation of the EDG 11 CO2 system?

a. Fans trip and the dampers close in Division 1.

b. Fans trip and the dampers close in the EDG 11 room.

c. EDG 11 fan dampers align to the Recirculation Mode.

d. All fans trip and all dampers close to the RHR complex.

QUESTION: 007 (1.00)

What happens when the operator uses the Alarm Acknowledge Function of the Process Computer alarm display? Unacknowledged alarms change from:

a. yellow to green AND no alarms are deleted.

b. yellow to green AND items no longer in an alarm state are deleted from the display.

c. red to green AND all previously acknowledged alarms are deleted from the display.

d. yellow to green AND all previously acknowledged alarms are deleted from the display.

QUESTION: 008 (1.00)

The control room has been evacuated due a fire. The reactor is shutdown and control of the shutdown system is established from the Remote Shutdown Panel(s) after 25 minutes. WHICH ONE (1) of the following is the minimum emergency classification for this event?

a. Unusual Event

b. Alert

c. Site Area Emergency

d. General Emergency

QUESTION: 009 (1.00)

WHICH ONE (1) of the following rope barriers would be used to indicate an oxygen deficient area?

a. Yellow

b. Orange

c. Yellow and Orange

d. Yellow and Magenta

QUESTION: 010 (1.00)

Which one of the following events should be recorded in the NSS Log Book?

a. A diesel fuel delivery.

b. An injury to a guard on a back shift.

c. A routine round into a high-radiation area.

d. Completion of independent verification not documented in a procedure.

QUESTION: 011 (1.00)

Which one of the following REQUIRES you to exit a high temperature area? Assume you are wearing an ice vest.

a. One-half of the ice melts.

b. You reach one-half the time limits given in the safety manual.

c. You reach the time limits given in the safety manual OR all the ice has melted.

d. You reach one-half the time limits given in the safety manual AND approximately one-half the ice is melted.

QUESTION: 012 (1.00)

The plant is operating at 100% reactor power. While performing valve verifications, an auxiliary operator finds C11-F113 (Charging Water Isolation Valve) for HCU 185 shut. How does this affect the movement of control rod 185?

a. The control rod CANNOT be moved.

b. The control rod CANNOT be inserted, but CAN be scrammed.

c. The control rod CAN be withdrawn, but CANNOT be scrammed.

d. The control rod's movement is not affected by closure of C11-F113.

QUESTION: 013 (1.00)

Following a reactor scram, which one of the following will NOT verify that all Control Rods are fully inserted?

a. One Rod Out Interlock.

b. Reactor Power Decreasing.

c. Process Computer (CRT) Control Rod Display

d. Full Core Display and Four Rod Display for Rods NOT indicating Full In.

QUESTION: 014 (1.00)

Which one of the following statements about performing valve, electrical, and instrument lineups is FALSE?

a. Fully qualified operators should be used for system lineups.

b. Valve positions should be verified by first trying to close the valve slightly.

c. Entry into contaminated areas to check valve positions is not required if previous lineup documentation showing the valve position exists.

d. Non-severe discrepancies noted when performing the lineups do not have to be brought to the attention of the NSS until the end of the shift.

QUESTION: 015 (1.00)

While conducting a plant tour, you see a radiation protection technician walk past the EECW Div. 2 Heat Exchanger carrying something in a clear plastic bag. Assuming the technician is following all applicable procedures, which one of the following describes the contents of the bag? An item:

a. from the hot-tool crib.

b. with fixed radiation contamination.

c. which is NOT radioactively contaminated.

d. removed from a radioactively contaminated area.

QUESTION: 016 (1.00)

Of the following, who must ask permission of the Control Room NSO before entering the marked (darker brown) areas in front of the control room.

a. NRC Resident Inspectors

b. Plant Manager

c. Superintendent, Operations

d. Security Shift Supervisor

QUESTION: 017 (1.00)

While verifying an electrical lineup, you observe a maintenance technician preparing to reach into a potentially energized 480 VAC MCC. He is wearing safety glasses, low voltage rubber gloves and a shirt with long sleeves. You should:

a. let the technician continue with the electrical work, no safety problem exists.

b. stop the technician and tell him a face shield is required to work in the MCC.

c. stop the technician and tell him high voltage rubber gloves are required to work in the MCC.

d. stop the technician and tell him to roll up his sleeves or get a shirt with short sleeves to work in the MCC.

QUESTION: 018 (1.00)

A turbine trip from high power has occurred. The following plant conditions exist:

The reactor mode switch is in SHUTDOWN.
Both CRD pumps are inoperable.
All MSIVs are shut.
Reactor power is 12%,
Recirc pumps have been tripped.
ARI has been initiated.
Annunciator 3D6 "SCRAM VALVE PILOT AIR HDR PRESS HIGH/LOW" illuminated.

The NSO should:

a. Rescram by:
   - resetting the scram,
   - defeating RPS logic trips if necessary,
   - draining the scram discharge volume,
   - initiating a manual scram.

b. Vent the scram air header by:
   - closing the Scram Air Header Pressure Gauge Isolation Valve (F088),
   - opening the Scram Air Header Supply Valve (F095).

c. Rapidly insert rods by:
   - Closing the HCU accumulator charging water header valve (F034),
   - rapidly inserting control rods manually by using EMERGENCY IN (23.623),
   - bypassing RWM if necessary.

d. Vent the scram air header by:
   - closing the Backup Scram Header Isolation Valve (F095),
   - closing the Scram Air Header Pressure Source Valve to PI-R013 and PSE-N012 (F088),
   - Disconnecting the piping to the Scram Air Header Pressure Gauge (R013),
   - re-opening F095.

QUESTION: 019 (1.00)

The NSO is moving a control rod from 46 to 48. Which of the following responses on the Full Core Display would NOT require entry to a Technical Specification?

a. Readout increments to 48, red FULL-OUT light comes on.

b. Readout increments to 49, red FULL-OUT light comes on, readout decrements to 48.

c. Readout increments to 48, red FULL-OUT light comes on, red FULL-OUT light turns off after rod settles at 48.

d. Readout increments to 48, red FULL-OUT light comes on, overtravel annunciator turns on, overtravel annunciator turns off as rod settles to 48.

QUESTION: 020 (1.00)

The following conditions exist:

- Mode switch in STARTUP/HOT STANDBY
- RECIRC A & B FLOW LIMITER 2/3 DEFEAT SWITCH is in DEFEAT.
- Recirc Pump B is operating.

Which one of the following lights, alarms or indications should be ON prior to starting recirc pump A?

a. RECIRC PUMP A SEAL CLG H2O FLOW LOW

b. RECIRC SYS A GEN LOCKOUT RELAY TRIPPED

c. TRIPPED LIGHT FOR GENERATOR A FIELD BREAKER

d. AUTO LIGHT FOR RECIRC B MG SET GENERATOR SPEED CONTROL STATION

QUESTION: 021 (1.00)

A reactor startup is in progress. The following conditions exist:

- Steam flow of 15 %
- Feedwater flow of 15 %
- Both Recirc pumps operating
- Recirc MG Set A and B Generator Speed Control Stations at 40% demand in MANUAL

What is the expected recirc speed?

a. 27%

b. 30%

c. 37%

d. 40%

QUESTION: 022 (1.00)

Which of the following buses provides power to Core Spray Pump B?

a. Bus 64B

b. Bus 64C

c. Bus 65E

d. Bus 65F

QUESTION: 023 (1.00)

A reactor scram has occurred. All control rods are not fully inserted. The crew has been executing the EOPs and has started injecting boron. When can the crew enter ~~20.000.01~~ 20.ec.21 based on reactivity?

a. After 30 minutes of continuous boron injection.

b. When the SLC tank level is less than 16 inches.

c. When 3200 pounds of borax OR 3200 pounds of boric acid are injected.

d. When it's determined that the reactor is sub-critical at the current conditions.

QUESTION: 024 (1.00)

QUESTION DELETED

QUESTION: 025 (1.00)

During normal operating conditions what are the Reactor Protection System (RPS) motor generator input power supplies and output voltages?

a. 480 volt, 3-phase AC input from Div I (II) ESF Power; 480 volt, 3-phase AC output to the RPS Distribution Panel.

b. 480 volt, 3-phase AC input from Div I (II) ESF Power; 120 volt, single-phase AC output to the RPS Distribution Panel.

c. 480 volt, 3-phase AC input from the RPS Alternate Transformer A(B); 120 volt, single phase AC output to the RPS Distribution Panel.

d. 480 volt, 3-phase AC input from Div I(II) ESF Power; 130 volt, DC output to the RPS Distribution Panel.

QUESTION: 026 (1.00)

What effect, if any, does bypassing an IRM detector have on the Reactor Protection System?

a. No effect.

b. Loss of Upscale Trip.

c. Loss of Downscale Alarm.

d. Loss of Rod Withdrawal Block circuits.

QUESTION: 027 (1.00)

A reactor startup is in progress. Power is approximately 1% and is on range 7 of the IRMs. IRM CH A/E/C/G UPSCALE TRIP/INOP (H-11 P603 3D59) and TRIP ACTUATORS A1/A2 TRIPPED (H-11 P603 3D73) annunciators energize. Which of the following will cause this combination of alarms, and how can the NSO verify the cause?

a. A loss of Div II 48/24 VDC power to the IRM Drawers. Verify INOP (white) lights illuminated on Relay Room Panel H11-P606 Drawers.

b. A loss of DC voltage to the IRM A fission chamber. Verify INOP (white) light illuminated on Relay Room Panel H11-P606 "A" Drawer.

c. A loss of signal from IRM E. Verify DOWNSCALE (white) light illuminated on Relay Room Panel H11-P606 "E" Drawer.

d. Reactor power increased to trip point for IRM C. Verify UPSCALE alarm (amber) light illuminated on Relay Room Panel H11-P606 "C" Drawer.

QUESTION: 028 (1.00)

The plant is at full power. The APRM DOWNSCALE (H11-P603 3D103) alarm energizes. Which one of the following describes the automatic actions and the NSO's actions to respond to this alarm?

a. A half-scram; monitor affected APRM channel; verify appropriate LPRM downscale light(s) is(are) on; bypass affected LPRM; monitor for power instabilities.

b. A rod block; monitor affected APRM channel; verify appropriate APRM downscale light is on; if power is not decreasing then bypass APRM; monitor for power instabilities.

c. A rod block and a half-scram; monitor affected APRM channel; verify appropriate APRM downscale light is on; if power is not decreasing then bypass APRM; monitor for power instabilities.

d. A rod block or a half-scram; monitor affected APRM channel; verify appropriate APRM downscale light is on; if power is not decreasing then restore using recirc; bypass APRM; monitor for power instabilities and shutdown if they are indicated.

QUESTION: 029 (1.00)

If the reactor mode switch is in STARTUP, which one of the following nuclear boiler instruments is NOT required to be operable?

a. Reactor Vessel Level for low level scram.

b. Reactor Vessel Flow for flow-biased scram.

c. Reactor Vessel Pressure for high pressure scram.

d. All instruments listed above are required for start-up.

QUESTION: 030 (1.00)

A very small leak has developed in the reference leg of the Div I level instrumentation causing the water level in the reference leg to slowly decrease. How is HPCI operation affected? HPCI automatic INITIATION:

a. and high level TRIP are unaffected.

b. and high level TRIP will occur at lower actual reactor vessel levels than normal.

c. and high level TRIP will occur at higher actual reactor vessel levels than normal.

d. is unaffected; high level TRIP will occur at a higher than normal reactor vessel level.

QUESTION: 031 (1.00)

How does activation of the automatic depressurization system (ADS) affect level instrumentation at Fermi?

a. Only the core level instrument is reliable.

b. Only the narrow-range level instrument is reliable.

c. Flashing of the reference leg makes level unreliable.

d. No effect. The instrumentation corrects for ADS effects.

QUESTION: 032 (1.00)

Which one of the following statements about the operational uses of various RPV temperature indications is FALSE?

a. Vessel surface temperature monitoring may be used for indication of vessel stresses.

b. The bottom head coolant drain on the Reactor Water Cleanup System may be used to measure coolant temperature.

c. Externally mounted thermocouples do not effectively monitor transient conditions, but are used during Technical Specification surveillances.

d. The inlet temperature of the coolant in the recirc loops can be used to determine RPV temperature, but is inaccurate under no-loop-flow conditions.

QUESTION: 033 (1.00)

RCIC automatically initiated during an event. Which of the following RCIC operational parameters could indicate improper RCIC system operation?

a. RPV Level 105" and lowering

b. Discharge flow of 650 gpm

c. Turbine speed of 2050 rpm

d. Discharge pressure of 1126 psig

QUESTION: 034 (1.00)

A Group 18 primary isolation has occurred. How many operations of the automatic depressurization system (ADS) are possible under these conditions?

a. 0

b. 1

c. 3

d. 5

QUESTION: 035 (1.00)

The ADS/SRV POWER SUPPLY FAILURE annunciator energizes. The NSO confirms that power supplies 2PA2-5 and 2PA2-6 have failed. How does this failure affect ADS and why?

a. ADS is operable but limited to 3 openings.

b. ADS is unaffected; the system is fail-safe.

c. ADS is inoperable; no power to open the solenoid valves.

d. ADS is operable but limited to one discharge; no power to reset the logic.

QUESTION: 036 (1.00)

An operator has been directed to shift sample points on the PRIMARY CONTAINMENT MONITORING SYSTEM (PCMS) manually. Which one of the following describes what will occur if the Div I Drywell Supply Valves are closed while the Div I Suppression Pool Line Isolation Valve is closed?

a. Auto-trip of the running PCMS subsystems

b. Damage to the in-service Radiation Monitor System

c. Auto-opening of the Div I Suppression Pool Line Isolation Valve

d. Damage to the in-service Hydrogen and Oxygen Monitor System

QUESTION: 037 (1.00)

A reactor startup is in progress. The following conditions exist:

- Reactor Pressure 80 psig
- Pressure Regulator 87 psig
- RCIC in Standby
- RPV Level is 193"
- Turbine stop valve and control valves are closed

The NSO should:

a. reject water from vessel per 23.707.

b. raise the turbine flow setpoint to 5%.

c. depress the pressure regulator raise pushbutton to raise the setpoint by at least three pounds.

d. decrease Reactor Pressure Regulator setpoint until Main Turbine Bypass Valves are 2 to 5 % open.

QUESTION: 038 (1.00)

Reactor Power is 59%; the South RFP is in-service. The NSO is directed to put the North RFP in service. The North RFP Feedwater Flow Controller has been increased until the North RFP begins feeding. Current conditions are:

- South RFP flow controller is in AUTO
- South RFP flow controller bias set to zero
- North RFP flow controller is in MANUAL
- North RFP flow controller bias set to zero

What will happen if the North RFP flow controller bias is changed to -20?

a. North and South RFP speed and flow will decrease.

b. North and South RFP speed and flow will remain constant.

c. North RFP speed and flow will decrease, South will increase.

d. South RFP speed and flow will increase, North will decrease.

QUESTION: 039 (1.00)

The Reactor Feedwater and Condensate Systems procedure cautions that operation of the Level Control Mode selector switch from Single Element to Three Element Control must be done in a certain manner. How must it be done, and what does doing it this way prevent?

a. Slowly to prevent Recirc run-back.

b. Quickly to prevent Recirc run-back.

c. Slowly to prevent sudden changes in feedwater flow.

d. Slowly to prevent level increase and subsequent isolations.

QUESTION: 040 (1.00)

EDG #11 is paralleled to the in-plant electrical system and is loaded to 1000kW. Heavy snow and high winds cause a loss of offsite power. Which of the following describes the Emergency Diesel Generator Systems's response?

a. EDG continues with current load(s) on its bus.

b. The diesel output breaker opens; EDG continues to run; output breaker must be closed manually.

c. The diesel output breaker opens; EDG trips off; EDG must be started manually then will load normally.

d. The diesel output breaker opens; EDG continues to run; output breaker closes after loads are removed then EDG loads are sequenced back on.

QUESTION: 041 (1.00)

A loss of power has occurred requiring the emergency diesel generators to start and supply their respective 1E busses. During the start sequence, annunciator 9D50, DIV I EDG 12 GENERATOR TROUBLE, energized. The NSO should:

a. immediately reset the engine trip and attempt to restart EDG 12.

b. send an operator to the EDG 12 local panel to determine the cause of the fault.

c. take manual control of the EDG voltage regulator and raise voltage to the normal band.

d. take manual control of the EDG speed (frequency) control and raise EDG frequency to 60 Hz.

QUESTION: 042 (1.00)

The reactor is in STARTUP. A storm-induced grid-instability caused all four diesels to receive start signals. EDGs 11 and 12 did NOT start. Until the cause of the EDG failures to start is determined, what must be done?

a. Proceed to COLD SHUTDOWN within 12 hours unless EDG 11 OR 12 is repaired.

b. Proceed to COLD SHUTDOWN within 12 hours unless EDG 11 AND 12 is repaired.

c. Demonstrate that EDGs 12 and 14 are OPERABLE within 72 hours and that one offsite transmission network circuit is OPERABLE within one hour.

d. Demonstrate that EDGs 13 and 14 and two circuits to the offsite transmission network are OPERABLE within one hour and that required systems dependent on the working diesels for power are OPERABLE within two hours.

QUESTION: 043 (1.00)

Which of the following is correct in regards to an uncoupled control rod?

a. If the rod cannot be recoupled, it may be fully withdrawn and electrically disarmed.

b. If the rod cannot be recoupled, it may be left in the as found position as long as the rod is electrically disarmed.

c. When the control rod goes into the overtravel position, the position indication will indicate 49 on the "4 Rod Display".

d. If permitted by the RWM, insert the rod one notch at a time until nuclear instrumentation indicates the rod is being inserted.

QUESTION: 044 (1.00)

The reactor is at 10% power and the NSO has been instructed to raise power to 50%. During the power ascension the rod worth minimizer indicates a withdraw error with no corresponding annunciator alarm (Assume the rod worth minimizer is functioning properly). Which of the following should be illuminated in the power level section of the upper display window?

a. LPSP

b. LPAP

c. ERROR

d. TRANSITION

QUESTION: 045 (1.00)

Given total core flow is 85% and Reactor Recirculation pump A is at 75% speed. What is the maximum allowable speed range for Reactor Recirculation pump B?

a. 60% to 90%

b. 65% to 85%

c. 70% to 80%

d. 72% to 78%

QUESTION: 046 (1.00)

EOPs 29.100.01 and 29.100.02 have been entered and the following conditions exist:

Drywell Pressure - 4.5 psig and increasing
Drywell Temperature - 265°F and increasing
RPV Water Level - +190" and steady
Torus Temperature - 97°F and increasing
RPV Pressure - 520 psig and decreasing
The NASS directs you to maximize torus cooling on the "A" RHR loop.

What is the RHR flow required to maximize torus cooling using "A" RHR loop ? Loop flow of 11,000 gpm through:

a. the RHR heat exchanger bypass valve.

b. both the RHR heat exchanger and the heat excharger bypass valve.

c. the RHR heat exchanger with the heat exchanger bypass valve shut.

d. the RHR heat exchanger throttling flow with the heat exchanger bypass valve.

QUESTION: 047 (1.00)

The following plant conditions exist:

LOCA
Reactor pressure 120 psig
Reactor vessel level less than 0 inches
Drywell pressure greater than 9 psig
LPCI initiation signal present

The RHR interlocks for Drywell Spray have been satisfied. Which of the following actions will result in spraying the drywell?

a. Manually open both inboard and outboard drywell spray valves.

b. Allow both inboard and outboard drywell spray valves to automatically open.

c. Manually open the inboard drywell spray valve. The outboard valve will automatically open after pressure has equalized.

d. Allow the inboard drywell spray valve to open, then manually open the outboard valve after pressure has equalized.

QUESTION: 048 (1.00)

A plant emergency condition exists. Drywell pressure is 2.5 psig. Which of the following sets of conditions will allow initiation of the Drywell and Torus Sprays?

a. - Containment Spray Mode Select Switch - OFF
   - Containment Spray 2/3 Core Height Override Switch Position: MANUAL OVERRIDE
   - Reactor Level: LESS THAN 0

b. - Containment Spray Mode Select Switch - MANUAL
   - Containment Spray 2/3 Core Height Override Switch Position: OFF
   - Reactor Level: > LEVEL 1

c. - Containment Spray Mode Select Switch - OFF
   - Containment Spray 2/3 Core Height Override Switch Position: MANUAL OVERRIDE
   - Reactor Level: > LEVEL 1

d. - Containment Spray Mode Select Switch - MANUAL
   - Containment Spray 2/3 Core Height Override Switch Position: OFF
   - Reactor Level: LESS THAN -43"

QUESTION: 049 (1.00)

The plant is operating at 12% power. Turbine low pressure exhaust temperature is at 275°F and increasing. Attempts to increase exhaust hood sprays are not correcting this condition. What will happen to reactor pressure as turbine low pressure exhaust temperature continues to increase? Reactor pressure will:

a. remain constant.

b. increase due to turbine trip.

c. decrease as the pressure control system automatically increases steam flow to the turbine.

d. increase as the pressure control system automatically decreases steam flow to the turbine.

QUESTION: 050 (1.00)

The plant was starting up after a forced outage. All systems necessary to support 100% power were operating. Power is at 90% and increasing. One of the operating feed pumps tripped. The Recirc A & B Flow Limiter 2/3 Defeat Switch was in NORMAL. The recirc runback was in progress at 78% reactor power when the heater drain system isolated. RPV level is slowly decreasing. Which of the following is the action that should be taken by the NSO? The NSO should:

a. place the mode switch to SHUTDOWN.

b. throttle the SBFW pumps to 600 gpm.

c. initiate HPCI for water level control.

d. insert the CRAM array to reduce power.

QUESTION: 051 (1.00)

QUESTION DELETED

QUESTION: 052 (1.00)

The position indications for the following valves are found deenergized:

- RCIC Steam to Turbine Valve (F045)
- RCIC Turbine Control Valve (F059)
- RCIC Steam Inlet Bypass Valve (F095)

What could have caused this? Loss of:

a. 260 V DC MCC 2PA-1

b. 260 V DC MCC 2PB-1

c. Battery Charger 2A-1

d. Battery Charger 2B-1

QUESTION: 053 (1.00)

You are on shift in the control room when a fire alarm on panel H11-P816 involving the halon system is received. Alarm bells and a 45 second pre-discharge horn actuates in the local zone. Which of the following additional automatic actions should occur?

a. No additional automatic actions occur.

b. HVAC interlocks activate and isolate the CCHVAC.

c. HVAC interlocks activate and place the CCHVAC in purge.

d. HVAC interlocks activate and place the CCHVAC in recirculation.

QUESTION: 054 (1.00)

QUESTION DELETED

QUESTION: 055 (1.00)

You are an extra operator in the relay room assisting with TIP traces. The TIP detector is near the top of the core traversing down in low speed when the NSO announces that drywell pressure is quickly increasing and containment isolation is imminent. What should you do to the TIP system under these conditions?

a. Monitor the automatic withdraw of the TIP.

b. Manually withdraw the TIP with low speed off.

c. Manually activate the shear valve fire switch.

d. Monitor the automatic activation of the shear valve.

QUESTION: 056 (1.00)

Which one of the following is a correct method of verifying fuel assembly orientation for fuel in the reactor?

a. All fuel handles point toward reactor center.

b. All serial numbers readable when facing north.

c. All channel fasteners face away from control rod.

d. All bosses on bail handles point toward cell center.

QUESTION: 057 (1.00)

Reactor plant conditions are:

- RPV water level 102"
- Drywell Pressure 1.2 psig
- Reactor scram - all rods in

Which one of the following lists some of the actuations or isolations that should have occurred as a result of the given plant conditions? (Note the answers do not list every actuation or isolation.)

a. Group 1 isolation; Group 2 isolation, RWCU isolation

b. SGTS started; Group 1 isolation; RCIC started; RWCU started; reactor building ventilation supply and exhaust dampers closed.

c. Reactor building ventilation supply and exhaust fans tripped; control room ventilation on recirc mode; HPCI started; Group 13 isolation.

d. SGTS started; Group 2 isolation; reactor building ventilation supply and exhaust fans trip; control room ventilation in recirc mode; LPCI started.

QUESTION: 058 (1.00)

The reactor is at 28% power. All ECCS systems are available. The following annunciators energize:

- MAIN TURBINE TRIP
- TURBINE CONT VALVE FAST CLOSURE CHANNEL TRIP
- TURBINE STOP VALVE CLOSURE CHANNEL TRIP
- GENERATOR PROTECTIVE RELAYING OPERATED
- 345kV BKR POS CF OPEN
- 345kV BKR POS CM OPEN
- GENERATOR FIELD BREAKER OPEN

Which one of the following will occur as a result of the given conditions?

a. Turbine bypass valves open, reactor power stays constant.

b. SRVs open to control reactor pressure, power remains constant.

c. Rod block and a half-scram. Reactor power remains constant.

d. A reactor SCRAM occurs, reactor power decreases at a -80 second period.

QUESTION: 059 (1.00)

The plant is operating at 100% power. An I&C technician performing a surveillance inadvertently initiates a Group 1 isolation. The following alarms are received: (not a complete list of all alarms received)

- MAIN TURBINE TRIP
- TURBINE CONT VALVE FAST CLOSURE CHANNEL TRIP
- TURBINE STOP VALVE CLOSURE CHANNEL TRIP

A reactor scram occurs with positive indication all control rods are fully inserted. Under these conditions, which of the following is the method of removing decay heat the NSO will use immediately following the scram?

a. RCIC, turbine bypass valves

b. Main Feedwater System, manual control of SRVs

c. Main Feedwater System, turbine bypass valves

d. LOW LOW set function of SRVs, standby feedwater system

QUESTION: 060 (1.00)

The plant was operating at 100% power when a spurious scram occurred. The NSO was unable to take action to control RPV water level for two minutes. The reactor water level control system and reactor protection system responded as designed. Which one of the following describes the plant conditions at the end of the two minutes? RPV level is controlling at:

a. 172"; RFP discharge valves closed with sealed-in close signals; SULCV controlling RPV level in accordance with its thumbwheel set.

b. 172"; RFPT speed limited to 2900 rpm; SULCV in AUTO.

c. 196"; RFP discharge valves closed with sealed-in close signals; SULCV in AUTO.

d. 196"; RFPT speed limited to 2900 rpm; RFP feeding through the SULCV; SULCV controlled by thumbwheel set.

QUESTION: 061 (1.00)

The plant is operating at 100% power. A failure of the pressure regulator system allowed power to increase quickly before a scram took place. During the event, two SRVs opened. What was the approximate maximum pressure during the event?

a. 1125 psig

b. 1135 psig

c. 1145 psig

d. 1155 psig

QUESTION: 062 (1.00)

A severe LOCA occurred eight minutes ago. The reactor depressurized and LPCI has been injecting for six minutes. Drywell pressure is currently 13 psig and rising. The NSS has directed the NSO to use the Drywell Spray Mode of RHR A. Which one of the following describes how the NSO should control the flow rate of the drywell spray? Control the flow rate with the Drywell Spray:

a. Inboard Isolation Valve, read flow rate from Drywell Spray Loop A Flow Meter.

b. Outboard Isolation Valve, read flow rate from Residual Heat Removal Loop A Flow Recorder.

c. Inboard Isolation Valve, read flow rate from Residual Heat Removal Loop A Flow Recorder.

d. Outboard Isolation Valve, read flow rate from Drywell Spray Loop A Flow Meter.

QUESTION: 063 (1.00)

The NSS has entered EOP Reactor Power Control (RC/Q). Current conditions are:

- Mode switch in SHUTDOWN
- Reactor Power about 5%
- Turbine Generator is on-line
- MSIVs are OPEN
- Recirc Speed is at minimum

Which one of the following actions should be taken next?

a. Boron Injection

b. Manual Scram

c. Recirc flow Runback

d. Recirc Pump Trip

QUESTION: 064 (1.00)

EOP 29.000.02, Primary Containment Control, directs the crew to trip all drywell cooling fans if Drywell Pressure reaches 20 psig and Torus water average temperature is above 120°F. What is the concern?

a. The Drywell fans might short circuit and ignite.

b. The Drywell Cooling Fans thermal overload trips might fail.

c. The paint on the fans might flake-off and plug the Torus suction strainers.

d. The insulation on the Drywell Cooling Fan motors might melt and cause hot-shorts.

QUESTION: 065 (1.00)

At what RPV level does alternate rod insertion activate?

a. 31.8"

b. 110.8"

c. 192.7"

d. ARI is not actuated by level.

QUESTION: 066 (1.00)

The following conditions exist:

- high drywell pressure rapidly increasing
- rapid RPV level decrease

Which reactor water level indication provides the most accurate readings under these conditions?

a. Core Level Indicator

b. Flood Up Level Indicator

c. Wide Range Level Indicator

d. Narrow Range Level Indicator

QUESTION: 067 (1.00)

Heavy thunderstorms just caused a load-reject from 100% power. The reactor conditions are:

- APRM Power stable at 20 %
- No indications of control rod position
- Recirc pumps tripped
- All MSIVs are open
- Reactor Level being maintained by feedwater
- Reactor Pressure being maintained automatically through bypass valves
- Mode switch in SHUTDOWN

What should the NSO do?

a. Initiate ADS.

b. Initiate ARI.

c. Terminate and prevent all injection into the RPV

d. Open C11-F034, Drive control rods, bypassing RWM interlocks if necessary.

QUESTION: 068 (1.00)

Which one of the following systems is available for Alternate Boron Injection?

a. Core Spray

b. Standby Feedwater System

c. Condensate/Feedwater System

d. Reactor Core Isolation Cooling

QUESTION: 069 (1.00)

The plant is in Operational Condition 1. Maintenance will be performed on F602A, RHR Reservoir Cross Tie Valve. The valve will be shut and its motor operator power supply will be disconnected for the next 9 hours. Select the Technical Specifications action that is required.

a. No ACTION is required.

b. Both RHR reservoirs must be declared inoperable and the plant must be in HOT SHUTDOWN within 12 hours and in COLD SHUTDOWN within the next 24 hours.

c. Within 8 hours open and de-energize both cross-connect valves in at least one cross-connect line and verify that these valves remain open and de-energized at least once per 7 days.

d. The RHR Division 1 reservoir must be declared inoperable along with the associated RHRSW subsystem, EESW subsystem, and diesel generator Cooling water subsystems. ACTION must be taken as required for those systems also.

QUESTION: 070 (1.00)

The plant was at 100% power. A loss of off-site power occurred with EDG #11 paralleled to its bus, running at full load. How will the plant electrical system respond? EDG #11 output breaker:

a. will open; load shed will occur; the output breaker must be manually closed by an operator.

b. will open; load shed will occur; the output breaker will automatically close after load shed.

c. remains shut; load shed will occur; other breakers supplying the diesel bus open.

d. remains shut; load shed will NOT occur; other breakers supplying the diesel bus open.

QUESTION: 071 (1.00)

The plant was operating at 100% power when the following annunciators energized at 0713:

9D17, DIV I ESS 130V BATTERY 2PA TROUBLE
1D57, ADS/SRV POWER SUPPLY FAILURE
1D6, DIV I CSS LOGIC POWER FAILURE
1D8, RHR LOGIC A 125V DC BUS POWER FAILURE
1D56, RCIC LOGIC BUS POWER FAILURE

The NSO sent auxiliary operators to determine and correct the cause of the annunciators. At 0726 the auxiliary operators sent to investigate reported back that they had determined the cause of the alarm and would have it fixed in approximately 3 minutes. The NSO should:

a. wait three minutes and allow the operators to complete the repairs.

b. run recirc to minimum and place the mode switch to SHUTDOWN.

c. isolate the RCIC turbine to prevent inadvertent initiation when power is restored.

d. reduce reactor core flow to 50-55%. Insert the CRAM array and prepare to scram the reactor if SRVs open.

QUESTION: 072 (1.00)

The reactor conditions are:

- 80 % flow
- 70 % power
- a rod shuffle is in progress

The NSO is withdrawing a rod when he receives the APRM UPSCALE (3D102) alarm and APRM E alarm light. What was the minimum local power spike which caused this alarm?

a. 100.9 %

b. 102.0 %

c. 106.0 %

d. 108.0 %

QUESTION: 073 (1.00)

The plant is operating at 100% power when an explosion and fire in the front panel forces the operating crew to abandon the control room. The NSO could NOT get to the panel to scram the reactor before leaving. How can the NSO determine and control reactor power under these conditions? Power can be read:

a. on the Div I Remote Shutdown Panel. The reactor can be scrammed from the same panel.

b. on the Dedicated Shutdown Panel; the reactor can be scrammed by tripping APRMs in the relay room.

c. in the relay room. The reactor may be scrammed from either the Relay Room or from the RPS power distribution panel.

d. by energizing the Div II Remote Shutdown Panel; the reactor can be scrammed by opening feeder breakers to RPS Trip Channels in the relay room.

QUESTION: 074 (1.00)

The plant has been operating at 100% for several days. Annunciator 3D62, GEN SERV H20 EFFLUENT RADN MONITOR UPSCALE, energizes. The control room operators should:

a. announce the condition over the Hi-Com, have chemistry verify the annunciator.

b. begin a controlled shutdown. The plant must be in HOT SHUTDOWN within 12 hours and COLD SHUTDOWN within the following 24 hours.

c. prepare to scram the reactor in preparation for the auto isolation of service water if the alarm is not cleared within 30 minutes.

d. immediately start SGTS, begin dose assessments in accordance with the Offsite Dose Calculation Manual, Section 3.11, Radioactive Effluents

QUESTION: 075 (1.00)

The reactor scrammed from high power at 11:45 am. The crew is trying to mitigate the consequences of an apparent LOCA. SGTS Div I is running, Div II is out-of-service. Other ECCS and isolation systems are have initiated as expected. Reactor water level is being maintained by the ECCS systems.

The NSO reports the following update at 11:55 am:

- EFFLUENT PROCESS RADIATION MONITOR TROUBLE
- SGTS Div I HIGH ALARM verified
- CHRRMS are reading 750 R/hr
- Rad Protection reports 1200 mrem/hr at main access gate guard shack
- weather: no wind; no clouds; - 5°F;

What are the appropriate actions for these updated conditions.

a. Declare general emergency; recommend sheltering to the two-mile radius.

b. Declare site area emergency; recommend access control to the two-mile radius.

c. Use the RADOSE computer to calculate one-mile dose rates. If these exceed 1 rem/hr, then declare general emergency and recommend shelter to the one-mile radius.

d. Use the RADOSE computer to calculate the one-half mile dose rates. If these exceed 1 rem/hr, then declare general emergency and shelter to the one-half mile radius.

QUESTION: 076 (1.00)

A major plant accident has occurred. A major radioactive release is in progress. The NSS has declared a General Emergency and wants to evacuate to the two-mile radius. Who makes the final decision to evacuate the general public?

a. The NRC.

b. State and Local Authorities.

c. Detroit Edison corporate headquarters.

d. Federal Emergency Management Agency (FEMA)

QUESTION: 077 (1.00)

The reactor is at 100% power and 100% recirc flow. Reactor Building Closed Cooling Water (RBCCW) is lost. The Reactor Recirculation:

a. pumps will trip upon detection of the loss of RBCCW.

b. pumps are unaffected as long as CRD seal purge is available.

c. pumps will be damaged unless tripped by the crew within 90 seconds.

d. MG set lube oil system switches to EECW to support continued operation.

QUESTION: 078 (1.00)

A loss of power caused the emergency diesels to start and the load sequencer to activate. Which one of the following Division I isolation valves will receive an open actuation signal?

a. RBCCW Supply to EECW (P44-F603A)

b. ESF Battery Room Space Cooler (P44-F613)

c. EECW Div. I Make-up Tank Outlet (P44-F602A)

d. RBCCW to Reactor Building Equipment Sump Heat Exchanger (P44-F605A)

QUESTION: 079 (1.00)

During a slow loss of air pressure with failure of the Standby Station Air Compressor, at what pressure do the intertie valves between the Station Air System and the Control Air System close?

a. 95 psig

b. 85 psig

c. 80 psig

d. 75 psig

QUESTION: 080 (1.00)

A Reactor Water Cleanup isolation has occurred due to a spurious differential high flow trip. The cause has been determined and corrected. Which one of the following actions will result in reset of the RWCU system?

a. Depressing both Main Steam Line Isolation RESET pushbuttons.

b. Depressing the Close pushbuttons for Inboard and Outboard RWCU Isolation valves.

c. Clearing the RWCU to reactor differential pressure interlock and starting one Cleanup Recirc Pump.

d. Depressing the Group 10, Reactor Water Cleanup System Inboard and Group 11, Reactor Water Cleanup System Outboard RESET pushbuttons.

QUESTION: 081 (1.00)

The reactor is at full power. Extensive RCIC testing is currently being performed. The NSO has just relieved the off-going NSO and notes suppression pool temperature is 122°F. What actions should you (NSS) direct the NSO to take?

a. Scram the reactor, place the mode switch in SHUTDOWN; depressurize to below 200 psig within 12 hours.

b. Scram the reactor; maximize suppression pool cooling to restore temperature to below 95°F within 24 hours.

c. Begin a normal reactor shutdown. Be in Hot Shutdown within 12 hours; restore average temperature to below 95°F within 24 hours.

d. Stop all testing which adds heat to the suppression chamber; restore average temperature to below 105°F within 24 hours.

QUESTION: 082 (1.00)

The reactor was at full power. A spurious power surge has caused one reactor recirculation pump to trip and the recirc flow control system to initiate a runback. Current conditions are:

- Power: 55 %
- Operating recirc loop flow: 21000 gpm

The NSO should:

a. place the mode switch in SHUTDOWN.

c. take action to recover the tripped pump.

b. insert control rods to below the 77% line using CRAM array or as directed by Station Nuclear Engineer.

d. insert control rods to below the 96% line using CRAM array or as directed by Station Nuclear Engineer.

QUESTION: 083 (1.00)

Extensive testing of the RCIC system has been done during the past several days. The TORUS WATER LEVEL TROUBLE alarm is energized and level is now +2 inches. The NSO should:

a. place the mode switch to SHUTDOWN, emergency depressurize.

b. maintain torus water level above the SRV Tail Pipe Level Limit.

c. maintain RPV pressure and torus water temperature above the HEAT CAPACITY TEMPERATURE LIMIT.

d. use the Torus Water Management System and reduce torus water level below +2".

QUESTION: 084 (1.00)

EOP 29.000.03, "Secondary Containment and Rad Release Control", lists several Area Radiation Monitor (ARM) channels and states that 5 Rem/hr is Maximum Safe Operating radiation level for each. Most of the ARMs, however, have a maximum detector scale of 100 or 1000 mrem/hr. Which one of the following describes how radiation levels in excess of 5 Rem/hr can be verified?

a. CT-2B printouts are required.

b. ERIS/SPDS displays are required.

c. Portable radiation monitors are required.

d. Receipt of Control Room Alarms are required.

QUESTION: 085 (1.00)

The reactor is in COLD SHUTDOWN in preparation for refueling.

- Mode Switch is in SHUTDOWN
- Reactor Temperature is 165°F
- RHR Pump A is in service as Shutdown Cooling
- RHR Loop A flow is 10000 gpm
- Reactor is at Atmospheric Pressure

The NSO notes that E11-F015A, LPCI Loop A Inboard Isolation Valve, is going shut. Maintenance is working on E11-F015B. The NSO should immediately:

a. shut down RHR pump A.

b. place the other RHR loop in service.

c. open E11-F007A, RHR Pump Recirc Valve.

d. close E11-F009, Shutdown Cooling Inboard Suction Valve.

QUESTION: 086 (1.00)

The reactor is in COLD SHUTDOWN in preparation for refueling.

- Mode Switch is in SHUTDOWN
- Reactor Temperature is 169°F
- RHR Loop B is in service as Shutdown Cooling
- RHR Loop B flow is 10000 gpm
- Reactor is at Atmospheric Pressure
- Preparation for removing the Vessel head are under way

All Div II AC power fails. The diesels start but the output breakers will not close in on the Div II bus. Reactor Coolant Temperature is increasing at about 1°F every 3 minutes. What should be done to assure adequate core cooling?

a. Start RHR Pump C

b. Place loop A RHR in service

c. Bleed steam to main condenser or torus

d. Maximize RWCU system flow to regenerative heat exchanger

QUESTION: 087 (1.00)

The plant is shutdown with refueling operations in progress. Annunciator 16D1, RB REFUELING AREA FIFTH FLOOR HIGH RADN energizes. The NSO should:

a. announce the event over the Hi-Comm and sound the plant area alarm.

b. contact the supervisor on the refuel floor directing fuel movement and have him stop all fuel movement.

c. trip the reactor building ventilation system, shut the RB Div I and II supply and exhaust isolation valves and realign CCHVAC to the Emergency Recirc Mode.

d. contact the refuel bridge operators on the Bridge Hi-Comm and have them immediately evacuate all personnel from the refuel floor.

QUESTION: 088 (1.00)

The primary system is discharging into the reactor building and "Secondary Containment and Rad Release Control" has been entered due to a high area ambient temperature. The procedure directs the operator to scram the reactor before any area in the secondary containment reaches Maximum Safe Operating Temperature. Which one of the following is the reason for the manual scram?

a. To eliminate the need for emergency depressurization.

b. To limit radiation release to the secondary containment.

c. To reduce the energy that the primary system is discharging.

d. To return area temperature below limits to allow personnel access.

QUESTION: 089 (1.00)

During the execution of 29.000.01, Level/Power Control (C2), the operators are directed to lower RPV water level irrespective of any consequent reactor power or RPV water level oscillations. Why are the operators directed to lower water level? Lowering water level:

a. enhances steam cooling, aiding in the maintenance of a coolable core geometry.

b. minimizes the peak drywell pressure if a vessel emergency depressurization is required.

c. reduces the volume of water available in the core which minimizes hydrogen production.

d. minimizes thermalization of neutrons resulting in a decreased power level.

QUESTION: 090 (1.00)

Panel 2PA2-5 of the 260/130VDC system has been lost. SELECT the component(s) that would be effected by this loss.

a. RPS trip cabinet DIV I.

b. RPS trip cabinet DIV II.

c. RHR Pumps A and C; ADS permissive.

d. Recirc speed control, ADS initiation logic.

QUESTION: 091 (1.00)

EOP 29.000.01, step RC/L-2 states that the crew must restore and maintain RPV water level between 173 and 214 inches. Why are these limits chosen? The limits:

a. ensure that thermal shock to the vessel flange and core uncovery will not occur.

b. ensure water flow through the SRVs and loss of suction to the RHR pumps will not occur.

c. preserve the availability of the steam driven equipment and permits the low level scram to be reset.

d. ensure dome cladding integrity is maintained and alternate injection systems are not required.

QUESTION: 092 (1.00)

Why is the Turbine Generator tripped following a scram? To minimize:

a. Prevents MSIV closure due to low main steam line pressure.

b. Prevents cycling of the Turbine Control Valves due to low steam flow conditions.

c. Prevents overheating the turbine blades due to generator motoring on reverse power.

d. tripping of the Reactor Feed Pump Turbines due to inadequate steam availability.

QUESTION: 093 (1.00)

Which one of the following is an immediate operator action following a reactor scram?

a. Verify that post Scram Feedwater Logic is sealed in.

b. Verify Recirc Pumps have run back to minimum speed.

c. Verify that the Main Turbine has tripped.

d. Verify that reactor power is decreasing

QUESTION: 094 (1.00)

Which of the following reactor scram signals is designed to prevent a reactivity addition?

a. High Neutron Flux.

b. Low Reactor Vessel Water Level.

c. High Primary Containment Pressure.

d. Fast Closure of the Turbine Control Valves.

QUESTION: 095 (1.00)

SELECT the plant event that would require activating the Plant Area Alarm as an immediate operator response.

a. Reactor scram.

b. Fuel cladding failure.

c. Refueling floor high radiation.

d. Transportation Accident involving radioactive material.

QUESTION: 096 (1.00)

Prior to venting the Primary Containment to control pressure less than 1.68 psig, 29.000.02, Primary Containment Control, directs the operator to shut down one division of Standby Gas Treatment (SGTS). Which one of the following is the reason for taking this action?

a. Reduces the radioactive leak rate from the Primary Containment.

b. Ensures at least one SBGT train is operable if a LOCA condition occurs.

c. Ensures that a negative pressure is not established in the Primary Containment.

d. Prevents saturating both trains of SGTS filters with radioactive fission gases.

QUESTION: 097 (1.00)

Channel 2 of the Torus Water Temperature Instrumentation failed 24 hours ago. The NSO reported 5 minutes ago that a Safety Relief Valve (SRV) was lifting. The NSO was able to close the SRV. After closure of the SRV, the following torus water temperature data are collected:

Channel	Temperature (°F)
1	103
2	INOP
3	105
4	102
5	102
6	97
7	99
8	95

What is the average Suppression Pool temperature?

a. 100.4°F

b. 101.0°F

c. 105.0°F

d. 106.6°F

QUESTION: 098 (1.00)

A Large-Break LOCA has occurred. Currently, the crew is executing the steps of Primary Containment Flooding (29.000.01 RC/L-5). As the Containment Flooding and containment water level reaches the level of the recirc piping, what must be done to the RPV and why?

a. It should be completely isolated so it can fill.

b. It should be vented so it can fill, irrespective of the off-site release rates.

c. It should be un-isolated where possible, as long as off- site release rates are acceptable.

d. It should be vented so the water will go out through a controlled path. If the off-site release rates are too high, then venting should be stopped.

QUESTION: 099 (1.00)

Reactor power is at 22%. The High Condenser Pressure Alarm (4D108) actuates; the NSO verifies that Condenser Pressure is 2.5 psia and increasing. What automatic action will take place next if the pressure is NOT reduced?

a. Reactor Scram

b. Main Turbine Trip

c. Reactor Feed Pump Turbine Trip

d. Main Turbine Bypass Valve Closure

QUESTION: 100 (1.00)

Which of the following is NOT a method of RPV level control?

a. RWCU Blowdown to the Torus.

b. RWCU Blowdown to the Radwaste System.

c. Gravity Drain RWCU to Main Condenser.

d. Gravity Drain Main Steam Line Drains to the Main Condenser.

(********** END OF EXAMINATION **********)

A N S W E R K E Y

MULTIPLE CHOICE

001	d
002	a
003	c
004	d
005	a
006	b
007	b
008	c
009	a
010	b
011	c
012	d
013	b
014	c
015	a
016	d
017	a
018	a
019	a
020	c
021	b
022	c
023	b
024	deleted
025	b
026	b
027	b
028	b
029	b
030	b
031	c
032	a
033	c
034	d
035	c
036	a & b
037	c
038	b
039	b
040	d
041	b
042	d
043	d
044	d
045	c

A N S W E R K E Y

046	c	069	c
047	a	070	b
048	b	071	b
049	a & b	072	c
050	d	073	c
051	deleted	074	a
052	a	075	a
053	c	076	b
054	deleted	077	b
055	a	078	c
056	d	079	d
057	c	080	a
058	a	081	a
059	d	082	a
060	b	083	d
061	b	084	c
062	b	085	a
063	d	086	b
064	c	087	a
065	b	088	c
066	a	089	d
067	b	090	a
068	b	091	c

A N S W E R K E Y

092 c

093 d

094 d

095 c

096 b

097 d

098 b

099 b

100 a

(********** END OF EXAMINATION **********)