WASHINGTON PUBLIC POWER SUPPLY SYSTEM

P.O. Box 968 • 3000 George Washington Way • Richland, Washington 99352-0968 • (509) 372-5000

September 6, 1996
GO2-96-176

Docket No. 50-397

Mr. K. E. Brockman, Acting Director
Division of Reactor Safety
U.S. NRC, Region IV
611 Ryan Plaza Drive, Suite 400
Arlington, TX 76011-8064

Dear Mr. Brockman:

Subject: **WNP-2 OPERATING LICENSE NPF-21**
PROPOSED PILOT INITIAL LICENSE EXAMINATION

The proposed pilot initial license examination to be administered by the Nuclear Regulatory Commission on October 7, 1996, has been completed. The examination is being sent via overnight delivery to Mr. Howard Bundy at Region IV on September 6, 1996, for evaluation and approval.

Per Examiner Standards-201, the proposed examination is being sent to Mr. Bundy in a double envelope marked "FOR OFFICIAL USE ONLY" and "TO BE OPENED BY ADDRESSEE ONLY." WNP-2 requests that these materials be withheld from public disclosure until after the examination has been completed.

Should you have any questions or desire additional information please contact W. D. Shaeffer, Superintendent, Operations Training at (509) 377-8266.

Respectfully,

John P. Albers

J. P. Albers (Mail Drop 1027)
Nuclear Training Manager

cc: T. O. McKernon, NRC/RIV
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D. L. Williams, BPA/399

Examination Level: SRO(I) (Circle one)

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	
A.1	Shift Manning	294001A1.03 (3.7)	Admin. requirements to read and initial the Night Order Book.
		294001A1.03 (3.7)	Responsibilities of the "Reactivity Manager".
	Main Generator Excitation Curve Usage	294001A1.08 (3.6)	Simulator JPM.
A.2	Troubleshooting Plan/Authorization	294001A1.03 (3.7)	High Risk troubleshooting activities.
		294001A1.03 (3.7)	Authorization of troubleshooting activities.
A.3	Radiation Control	294001K1.03 (3.8)	High Radiation Key Locations.
		294001A1.16 (4.7)	Life Saving/Protect the Public Dose limits.
A.4	Emergency Plan	294001A1.16 (4.7)	Classify the Event in Simulator scenario #3.
		294001A1.16 (4.7)	Determine reportability requirements of Simulator scenario #1.

Examiner: ____________________ Chief Examiner: ____________________

JPM Checklist per ES-301

1. 10 SRO(I)/RO applicants JPMs w/ 7 Control room and 3 in-plant.
3. At least 7 different safety functions for SRO(I)/RO's.
10. 1 Control room JPM must be an ESF.
7. At least 1 JPM related to shutdown or low power condition.
9. At least 1 "in plant" JPM requires EOP or Abnormal actions.
11. "Diversify" the prescripted questions among the Ks, As, and Gs.
13. At least 2 NEW or significantly altered JPMs for SRO(I)/RO's.
15. Administrative topics should be evaluated in JPMs whenever possible, rather than prescripted questions.

2. 5 SRO(U) JPMs w/ 2 or 3 Control room and 2 or 3 in-plant.
4. At least 5 different safety functions for SRO(U) applicants.
6. For each system selected, select 1 existing OR develop 1 new JPM.
8. 1 or 2 JPMs require "alternate paths".
10. At least 1 "in plant" JPM requires escort into rad. controlled area.
12. Less than 30% overlap from last NRC Exam.
14. At least 1 NEW or significantly altered JPM for SRO(U).

QUESTION 1: TOPIC/SUBJECT: A.1 Shift Manning (Open reference) *NEW - 9/1/96*

QUESTION: A review of the Night Order Book shows that it has been read and initialed by the Shift Manager and Control Room Supervisor. What other individuals, if any, are required to read and initial the Night Order Book?

ANSWER: The Shift Support Supervisor.

KA: 294001A1.03 (3.7)
Reference: PPM 1.3.1 Rev.26 Page 41 of 86

QUESTION 2: TOPIC/SUBJECT: A.1 Shift Manning (Open reference) *Significantly Altered 8/4/96*

QUESTION: During a reactor startup, who by title assumes the responsibility of Reactivity Manager?

Describe the responsibilities included in assuming this position.

ANSWER: The Control Room Supervisor.

Responsibilities include ensuring a conservative approach to all operations involving core reactivity changes.

KA: 294001A1.03 (3.7)
Reference: PPM 1.3.1 Rev.26 Page 18 of 86

QUESTION 3: TOPIC/SUBJECT: A.2 Troubleshooting Plan/Authorization (Open reference) *Significantly Altered - 8/4/96*

QUESTION: The plant is operating at ≈ 40% power. An I&C Technician requests permission to troubleshoot DEH computer inputs. Because the activity has been determined to have a significant chance of producing a Main Turbine trip, a written troubleshooting plan has been developed.

What authorization is required for the written troubleshooting plan?

ANSWER: The Shift Manager is responsible for obtaining concurrence from the Operations Manager to approve the activity.

K/A: 294001A1.03 (3.7)
Reference: PPM 1.3.42 Sect. 5.5 Rev.13 Page 5 of 11

QUESTION 4: TOPIC/SUBJECT: A.2 Troubleshooting Plan/Authorization (Open reference)

QUESTION: What individual, by title, is responsible for authorizing ALL troubleshooting activities?

ANSWER: The CRS/Shift Manager.

K/A: 294001A1.03 (3.7)
Reference: PPM 1.3.42 Sect. 5.6, Rev.13 Page 5 of 11

QUESTION 5: TOPIC/SUBJECT: A.2 (Open reference) *NEW - 9/1/96*

QUESTION: During an emergency condition, the Shift Manager has authorized release of keys for vital and protected areas.

Where would you go (location) to get these keys?

ANSWER: Central Alarm Station (CAS) and/or Secondary Alarm Station (SAS).

K/A: 294001A1.03 (3.8)
Reference: PPM 1.7.1, Rev. 15, Section 2.3.3, page 6 of 13

QUESTION 6: TOPIC/SUBJECT: A.2 (Open reference) *NEW - 9/1/96*

QUESTION: An operator, 27 years of age, has received a total lifetime exposure of 10 rem total effective dose equivalent (TEDE). Due to an emergency for a life-saving situation, how much additional exposure could this individual receive without exceeding the Emergency Exposure Guides?

ANSWER: 25 rem TEDE.

K/A: 294001A1.16 (4.7)
Reference: PPM 1.11.16, Rev. 2, Section 7.3, page 10 of 14

QUESTION 7: TOPIC/SUBJECT: A.4 EMERGENCY PLAN
Follow-up Question - Simulator Scenario #3.

QUESTION: What emergency classification would be required for this event and what is its basis?

ANSWER: Site Area.
2.2.S.1

KA: 294001A1.16 (4.7)
Reference: PPM 13.1.1 Attachment 5.2, Rev. 23

QUESTION 8: TOPIC/SUBJECT: A.4 EMERGENCY PLAN
Follow-up Question - Simulator Scenario #1

QUESTION: What event, if any, occurred during this scenario that would be "reportable"?

If so, what agency(ies) are required to be notified and what , if any, time requirements apply?

(If multiple reportable events occurred, which event requires the earliest notification?)

ANSWER: Declaration of Emergency classification (Site Area Emergency)

- State & Local agencies. - 15 min.
- Nuclear Regulatory Commission - 1 hr.

KA: 294001A1.16 (4.7)
Reference: PPM 1.10.1 rev 16, pg 16

NRC Exam: October, 1996

(Open reference question)

QUESTION 1: A review of the Night Order Book shows that it has been read and initialed by the Shift Manager and Control Room Supervisor. What other individuals, if any, are required to read and initial the Night Order Book?

NRC Exam: October, 1996

(Open reference question)

QUESTION 2: During a reactor startup, who by title assumes the responsibility of Reactivity Manager?

Describe the responsibilities included in assuming this position.

(Open reference question)

QUESTION 3: The plant is operating at ≈ 40% power. An I&C Technician requests permission to troubleshoot DEH computer inputs. Because the activity has been determined to have a significant chance of producing a Main Turbine trip, a written troubleshooting plan has been developed.

What authorization is required for the written troubleshooting plan?

(Open reference question)

QUESTION 4: What individual, by title, is responsible for authorizing ALL troubleshooting activities?

(Open reference question)

QUESTION 5: During an emergency condition, the Shift Manager has authorized release of keys for vital and protected areas.

Where would you go (location) to get these keys?

(Open reference question)

QUESTION 6: An operator, 27 years of age, has received a total lifetime exposure of 10 rem total effective dose equivalent (TEDE). Due to an emergency for a life-saving situation, how much additional exposure could this individual receive without exceeding the Emergency Exposure Guides?

(Simulator Scenario #3 follow-up question)

QUESTION 7: What emergency classification would be required for this event and what is its basis?

(Simulator Scenario #1 follow-up question)

QUESTION 8: What event, if any, occurred during this scenario that would be "reportable"?

If so, what agency(ies) are required to be notified and what , if any, time requirements apply?

(If multiple reportable events occurred, which event requires the earliest notification?)

Facility: WNP2 **ADMINISTRATIVE TOPICS - OUTLINE** **ES-301-1**

Examination Level: SRO(U) (Circle one)

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	
A.1	Shift Manning	294001A1.03 (3.7)	Admin. minimum staffing requirements during Refueling.
		294001A1.03 (3.7)	Admin. Requirement for Shift Managers presence in the Control Room.
	Power/Flow Map Usage	294001A1.08 (3.6)	Simulator JPM.
A.2	Troubleshooting Plan/Authorization	294001A1.03 (3.7)	High Risk troubleshooting activities.
		294001A1.03 (3.7)	Authorization of troubleshooting activities.
A.3	Radiation Control	294001A1.16 (4.7)	Admin. exposure "Hold Points".
		294001A1.16 (4.7)	Life Saving/Protect the Public Dose limits.
A.4	Emergency Plan	294001A1.16 (4.7)	Classify the Event in Simulator scenario #3.
		294001A1.16 (4.7)	Determine reportability requirements of Simulator scenario #1.

Examiner: ____________________ Chief Examiner: ________________

JPM Checklist per ES-301

1. 10 SRO(I)/RO applicants JPMs w/ 7 Control room and 3 in-plant.
3. At least 7 different safety functions for SRO(I)/RO's.
9. 1 Control room JPM must be an ESF.
7. At least 1 JPM related to shutdown or low power condition.
9. At least 1 "in plant" JPM requires EOP or Abnormal actions.
11. "Diversify" the prescripted questions among the Ks, As, and Gs.
13. At least 2 NEW or significantly altered JPMs for SRO(I)/RO's.
15. Administrative topics should be evaluated in JPMs whenever possible, rather than prescripted questions.

2. 5 SRO(U) JPMs w/ 2 or 3 Control room and 2 or 3 in-plant.
4. At least 5 different safety functions for SRO(U) applicants.
6. For each system selected, select 1 existing OR develop 1 new JPM.
8. 1 or 2 JPMs require "alternate paths".
10. At least 1 "in plant" JPM requires escort into rad. controlled area.
12. Less than 30% overlap from last NRC Exam.
14. At least 1 NEW or significantly altered JPM for SRO(U).

QUESTION 1: TOPIC/SUBJECT: A.1 Shift Manning (Open reference) *NEW - 9/1/96*

QUESTION: The plant is in OPERATIONAL CONDITION 5, refueling operations are in progress. What is the *Administrative* minimum staffing requirement for CRO's in this condition?

ANSWER: Two (2).

KA: 294001A1.03 (3.7)
Reference: PPM 1.3.1 Rev.26 Page 37 of 86

QUESTION 2: TOPIC/SUBJECT: A.1 Shift Manning (Open reference) *Significantly Altered 8/4/96*

QUESTION: The Plant is operating at 100% power, steady state, when a localized problem in the Plant requires the Shift Manager's presence.

Concerning the Control Room Command Function of the Shift Managers' job, what restriction, if any, is there on the Shift Manager leaving the Control Room?

ANSWER: None, the CRS is normally designated/delegated as having the Control Room Command Function.

KA: 294001A1.03 (3.7)
Reference: PPM 1.3.1 Rev.26 Page 38 of 86

QUESTION 3: TOPIC/SUBJECT: A.2 Troubleshooting Plan/Authorization (Open reference) *Significantly Altered - 8/4/96*

QUESTION: Who is responsible for approving "High Risk" troubleshooting activities?

ANSWER: CRS/Shift Manager after obtaining concurrence from the Operations Manager.

K/A: 294001A1.03 (3.7)
Reference: PPM 1.3.42 Sect. 5.5 Rev.13 Page 5 of 11

QUESTION 4: TOPIC/SUBJECT: A.2 Troubleshooting Plan/Authorization (Open reference)

QUESTION: The Plant is operating at 100% power, steady state. An I&C Tech. has made a request to troubleshoot DEH computer inputs. Who is responsible to ensure that the troubleshooting activities are described in the written plan and that the activities stay within this plan?

ANSWER: The Work Supervisor.

K/A: 294001A1.03 (3.7)
Reference: PPM 1.3.42 Sect. 5.3 Rev.13 Page 5 of 11

QUESTION 5: TOPIC/SUBJECT: A.2 (Open reference) *NEW - 9/1/96*

QUESTION: What two (2) conditions must be met prior to an individual exceeding a WNP-2 administrative exposure "hold point"?

ANSWER:

1) An Increased Exposure Request shall be initiated by the worker's supervisor and completed in accordance with PPM 1.11.16.

2) Ensure at this time that the individual has either not received or has accounted for non WNP-2 occupational radiation exposure.

K/A: 294001A1.16 (4.7)
Reference: PPM 1.11.16, Rev. 2, Section 7.2.4, page 10 of 14

QUESTION 6: TOPIC/SUBJECT: A.2 (Open reference) *NEW - 9/1/96*

QUESTION: An operator, 24 years of age, has received a total lifetime exposure of 6 rem total effective dose equivalent (TEDE). Due to an emergency to protect the public health, how much additional exposure could this individual receive without exceeding the Emergency Exposure Guides?

ANSWER: 10 rem TEDE.

K/A: 294001A1.16 (4.7)
Reference: PPM 1.11.16, Rev. 2, Section 7.3, page 10 of 14

QUESTION 7: TOPIC/SUBJECT: A.4 EMERGENCY PLAN
Follow-up Question - Simulator Scenario #3.

QUESTION: What emergency classification would be required for this event and what is its basis?

ANSWER: Site Area.
2.2.S.1

KA: 294001A1.16 (4.7)
Reference: PPM 13.1.1 Attachment 5.2, Rev. 23

QUESTION 8: TOPIC/SUBJECT: A.4 EMERGENCY PLAN
Follow-up Question - Simulator Scenario #1

QUESTION: What event, if any, occurred during this scenario that would be "reportable"?

If so, what agency(ies) are required to be notified and what , if any, time requirements apply?

(If multiple reportable events occurred, which event requires the earliest notification?)

ANSWER: Declaration of Emergency classification (Site Area Emergency)

- State & Local agencies. - 15 min.
- Nuclear Regulatory Commission - 1 hr.

KA: 294001A1.16 (4.7)
Reference: PPM 1.10.1 rev 16, pg 16

NRC Exam: October, 1996

(Open reference question)

QUESTION 1: The plant is in OPERATIONAL CONDITION 5, refueling operations are in progress. What is the ***Administrative*** minimum staffing requirement for CRO's in this condition?

(Open reference question)

QUESTION 2: The Plant is operating at 100% power, steady state, when a localized problem in the Plant requires the Shift Manager's presence.

Concerning the Control Room Command Function of the Shift Managers' job, what restriction, if any, is there on the Shift Manager leaving the Control Room?

(Open reference question)

QUESTION 3: Who is responsible for approving "High Risk" troubleshooting activities?

(Open reference question)

QUESTION 4: The Plant is operating at 100% power, steady state. An I&C Tech. has made a request to troubleshoot DEH computer inputs. Who is responsible to ensure that the troubleshooting activities are described in the written plan and that the activities stay within this plan?

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NRC Exam: October, 1996

(Simulator Scenario #3 follow-up question)

QUESTION 7: What emergency classification would be required for this event and what is its basis?

(Simulator Scenario #1 follow-up question)

QUESTION 8: What event, if any, occurred during this scenario that would be "reportable"?

If so, what agency(ies) are required to be notified and what , if any, time requirements apply?

(If multiple reportable events occurred, which event requires the earliest notification?)

Examination Level: RO (Circle one)

Administrative Topic/Subject Description		Describe method of evaluation: 1. ONE Administrative JPM, OR 2. TWO Administrative Questions	
A.1	C.R. Indications	294001A1.13 (4.5)	Responsibility during Control Board walkdowns.
	Fire Bigade Composition	294001K1.16 (3.5)	Requirements for Fire Brigade members.
	Main Generator Excitation Curve Usage	294001A1.08 (3.6)	Simulator JPM.
A.2	Clearance Order Verification	294001K1.02 (3.9)	Admin. requirements of Independent Verification.
		294001K1.02 (3.9)	Requirements for Second Verification.
A.3	Radiation Control	294001K1.03 (3.8)	High Radiation Key Locations.
		294001A1.16 (4.7)	Life Saving/Protect the Public Dose limits.
A.4	Emergency Plan	294001A1.16 (2.9)	Who may assume the duties of the Emergency Director.
		294001A1.16 (2.9)	Responsibility of the Emergency Director.

Examiner: ______________________ Chief Examiner: ____________________

JPM Checklist per ES-301

1. 10 SRO(I)/RO applicants JPMs w/ 7 Control room and 3 in-plant.
3. At least 7 different safety functions for SRO(I)/RO's
11. 1 Control room JPM must be an ESF.
7. At least 1 JPM related to shutdown or low power condition.
9. At least 1 "in plant" JPM requires EOP or Abnormal actions.
11. "Diversify" the prescripted questions among the Ks, As, and Gs.
13. At least 2 NEW or significantly altered JPMs for SRO(I)/RO's.
15. Administrative topics should be evaluated in JPMs whenever possible, rather than prescripted questions.
2. 5 SRO(U) JPMs w/ 2 or 3 Control room and 2 or 3 in-plant.
4. At least 5 different safety functions for SRO(U) applicants.
6. For each system selected, select 1 existing OR develop 1 new JPM.
8. 1 or 2 JPMs require "alternate paths".
10. At least 1 "in plant" JPM requires escort into rad. controlled area.
12. Less than 30% overlap from last NRC Exam.
14. At least 1 NEW or significantly altered JPM for SRO(U).

QUESTION 1: TOPIC/SUBJECT: A.1 Shift Manning (Open reference) *NEW - 9/1/96*

QUESTION: During shift turnover and control panel walkdown, the Lead CRO informs you that I&C is in the middle of performing an RPS surveillance that has been producing half-scrams. I&C has been put on hold until shift turnover has been complete.

What are your responsibilities during this turnover given the above situation?

ANSWER: Review and understand the implications of the surveillance prior to assuming the shift.

KA: 294001A1.13 (4.5)
Reference: PPM 1.3.1 Rev.26, Section 4.20, Page 57 of 86

QUESTION 2: TOPIC/SUBJECT: A.1 Shift Manning (Open reference) *Significantly Altered 8/4/96*

QUESTION: Per the administrative limits, what requirements exist for Fire Brigade Team individuals?

ANSWER: In addition to the Fire Brigade Leader, at least one (1) of these individuals will be an EO and two (2) of these individuals must be First Aid qualified.

KA: 294001K1.16 (3.5)
Reference: PPM 1.3.1, Section 4.13, Rev.26 Page 37 of 86

QUESTION 3: TOPIC/SUBJECT: A.2 Troubleshooting Plan/Authorization (Open reference) *Significantly Altered - 8/4/96*

QUESTION: Briefly explain the administrative requirements for completion of the "independently verified by" blocks in any PPM.

ANSWER: This verification must be completed by a second qualified operator who does not accompany the first operator . He must independently identify the correct component and verify the position of the component as left by operator one.

K/A: 294001KA1.02 (3.9)
Reference: PPM 1.3.8

QUESTION 4: TOPIC/SUBJECT: A.2 Troubleshooting Plan/Authorization (Open reference)

QUESTION: List three (3) of the alternate methods of performing a second verification, as applied to independent verification.

ANSWER:
- Use of remote position indicators.
- Use of process parameters (flow, pressure, current, voltage, etc.)
- Observation of the valve stem to aid in the determination of valve position.
- Authorized scribe marks on valve stems.
- Functional mechanical position indicators.

K/A: 294001K1.02 (3.9)
Reference: PPM 1.3.12 Sect. 4.11.4, Rev.26 Page 34 of 86

QUESTION 5: TOPIC/SUBJECT: A.2 (Open reference) *NEW - 9/1/96*

QUESTION: During an emergency condition, the Shift Manager has authorized release of keys for vital and protected areas.

Where would you go (location) to get these keys?

ANSWER: Central Alarm Station (CAS) and/or Secondary Alarm Station (SAS).

K/A: 294001A1.03 (3.8)
Reference: PPM 1.7.1, Rev. 15, Section 2.3.3, page 6 of 13

QUESTION 6: TOPIC/SUBJECT: A.2 (Open reference) *NEW - 9/1/96*

QUESTION: An operator, 27 years of age, has received a total lifetime exposure of 10 rem total effective dose equivalent (TEDE). Due to an emergency for a life-saving situation, how much additional exposure could this individual receive without exceeding the Emergency Exposure Guides?

ANSWER: 25 rem TEDE.

K/A: 294001A1.16 (4.7)
Reference: PPM 1.11.16, Rev. 2, Section 7.3, page 10 of 14

QUESTION 7: TOPIC/SUBJECT: A.4 EMERGENCY PLAN

QUESTION: When would the Control Room Supervisor (CRS) assume the duties of the Emergency Director (ED)?

ANSWER: When the Shift Manager (SM) is not in the control room or is incapable of performing the duties of the Emergency Director.

KA: 294001A1.16 (2.9)
Reference: PPM 13.1.1

QUESTION 8: TOPIC/SUBJECT: A.4 EMERGENCY PLAN

QUESTION: Who initially assumes the responsibility of the Emergency Director?

ANSWER: The Shift Manager

KA: 294001A1.16 (2.9)
Reference: PPM 13.1.1

(Open reference question)

QUESTION 1: During shift turnover and control panel walkdown, the Lead CRO informs you that I&C is in the middle of performing an RPS surveillance that has been producing half-scrams. I&C has been put on hold until shift turnover has been complete.

What are your responsibilities during this turnover given the above situation?

(Open reference question)

QUESTION 2: Per the administrative limits, what requirements exist for Fire Brigade Team individuals?

(Open reference question)

QUESTION 3: Briefly explain the administrative requirements for completion of the "independently verified by" blocks in any PPM.

(Open reference question)

QUESTION 4: List three (3) of the alternate methods of performing a second verification, as applied to independent verification.

(Open reference question)

QUESTION 5: During an emergency condition, the Shift Manager has authorized release of keys for vital and protected areas.

Where would you go (location) to get these keys?

(Open reference question)

QUESTION 6: An operator, 27 years of age, has received a total lifetime exposure of 10 rem total effective dose equivalent (TEDE). Due to an emergency for a life-saving situation, how much additional exposure could this individual receive without exceeding the Emergency Exposure Guides?

(Open reference question)

QUESTION 7: When would the Control Room Supervisor (CRS) assume the duties of the Emergency Director (ED)?

(Open reference question)

QUESTION 8: Who initially assumes the responsibility of the Emergency Director?

Simulator Facility: WNP-2 Scenario No. 1 File # Drill_961HLC.pgp

Examiners: ____________________ Candidates: ____________________

____________________ ____________________

____________________ ____________________

Initial Conditions: Initialize IC 14, Plant operating at ≈ 100% power.

Turnover: The Plant has been operating at ≈ 100% power for three months. No major evolutions are planned for this shift and no major equipment is out of service at this time. The Plant is currently in full compliance with all Technical Specifications and Regulatory requirements.

Event No.	Malf. No.	Type *	Description
1	CLF - RLY NSF25	I	Blown Fuse in RC-1, 27AX relay. Simulated by de-energizing relay NSF 25.
2	NIS5E	I	APRM "E" fails low.
3	RRS3B	M	Small steam leak in the Drywell.
4	RRS9B	M	Steam Leak triggered from Mode Switch out of "Run". (This elevates the steam leak to accelerate entry into PPM 5.2.1 and challenge PSP.)
5	N/A	N	Initiate Wet Well/Drywell Sprays as required.
6	N/A	C/M	MSIV Isolation on high temperature in the Steam Tunnel.

* Normal (N), Reactivity manipulation (R), Instrument malfunction (I), Component malfunction (C), Major transient (M)

Review Complete: ____________________

Event No. 1

Brief Event Description: Blown Fuse in RC-1, 27AX relay.

Time	Position	Candidates Actions/Behavior
	CRO3	Receives, acknowledges and announces "RC-1 Loss of Power". (Annunciator Panel P800-C1, 6-2)
	CRS	Directs CRO3 to pull ARP, check RC-1 cabinet relays and report back what is found.
	CRO3	Pull ARP, check RC-1 cabinet and finds Relay 27AX de-energized. Reports findings to the CRS.
	CRS	Verifies no Tech. Spec. LCO conditions with this problem.
	CRO3	Uses Electrical Drawing to verify operability of RC-1.
	CRO1	Continues to monitor Plant conditions.

Event No. 2

Brief Event Description: APRM "E" fails low.

Time	Position	Candidates Actions/Behavior
	CRO1	Receives, acknowledges and announces "APRM DOWNSCALE". (Annunciator Panel P603.A8, 4-6)
	CRO1	Determine which channel is alarming by noting which power range channel has failed downscale, or by checking the alarm lights at H13-P608 or H13-P603.
	CRS	Refer to Tech. Specs. 3.3.1 and 3.3.6 and consider bypassing the affected channel.
	CRS	Direct APRM "E" be bypassed.
	CRO1	Bypass APRM "E".
	CRO3	Continues to monitor Plant conditions.

Event No. 3

Brief Event Description: Small steam leak in the Drywell.

Time	Position	Candidates Actions/Behavior
	CRO3	Possible recognition of Drywell pressure increase.
	CRO1	Receives, acknowledges and announces "DRYWELL PRESS. HI/LOW ALERT". (Annunciator Panel P603.A7, 5-3)
	CRO3	Determine if Drywell pressure is high or low on CMS-PR-1 (H13-P601) and CMS-PR-2 (H13-P601). *(Assuming Drywell pressure increase was not caught until the Alarm was received)*
	CRS	Direct CRO1 to pull ARP. Refers to Tech. Spec. 3.6.1.6 when time permits. *(Rate of Drywell pressure increase will be critical)*
	CRO1/ CRO3	Continue to monitor Plant conditions.

Event No. 4

Brief Event Description: Steam leak in the Drywell gets larger when the Mode Switch is placed in the "Run" position.

Time	Position	Candidates Actions/Behavior
	CRO3	Reports Drywell pressure increasing level and rate and monitors GDS. *(PSP will be challenged by this scenario)*
	CRS	Enters PPM 5.1.1 and PPM 5.2.1 concurrently.
	CRO1	Continues to monitor Plant conditions.

Event No. 5

Brief Event Description: Initiate Wet Well/Drywell Sprays when required.

Time	Position	Candidates Actions/Behavior
	CRS	Using PPM 5.2.1, briefs Crew on requirements and restrictions for the use of Drywell and Wetwell Sprays.
	CRO3	Initiate Drywell and/or Wetwell Sprays as directed.
	CRO1	Continues to monitor Plant conditions.

Event No. 6

Brief Event Description: MSIV Isolation caused by high temperature in the Steam Tunnel.

Time	Position	Candidates Actions/Behavior
	CRO3	Receives, acknowledges and announces "LEAK DET. MSL TUNNEL ΔT HIGH". (Annunciator Panel P601.A3, 3-8). *(NOTE: This is the high alarm setpoint, which is set 15°F LT the HI-HI (Isolation) setpoint).*
	CRS	Directs CRO3 to follow instructions in ARP. Directs CRO3 and CRO1 to inform him if or as soon as the MSIV's close.
	CRO3	Receives, acknowledges and announces "LEAK DET. MSL TUNNEL HIGH-HIGH" (Annunciator Panel P601.A3, 1-7) and "LEAK DET. MSL TUNNEL HIGH-HIGH" (Annunciator Panel P601.A2, 3-1).
	CRO3	Verifies MSIV's close, establish RPV/P control using the SRV's.
	CRO1	Establish RPV/L control with the Condensate Booster Pumps and/or RCIC.
	CRS	Direct and/or verify RPV/P and RPV/L control being maintained.
	ALL	Continue to monitor Plant conditions.

IMPORTANT SCENARIO NOTES:

1.

Simulator Facility: WNP-2 Scenario No. 2 File # Drill_962HLC.pgp

Examiners: ____________________ Candidates: ____________________

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Initial Conditions: Initialize IC 118, Plant operating at ≈ 65% power.

Turnover: The Plant is operating at ≈ 65% power. BPA has requested WNP-2 to reduce power to 35% for the next 36 hours for load following reasons. RCIC has been out of service for 12 hours for repair of a small steam leak and is not expected to be return to service this shift. I&C has requested removal of RFP "B" from service as soon as possible for governor testing. This shift will continue the downpower per PPM 3.2.1 step 4.1.13, rod step 76-5.

Event No.	Malf. No.	Type *	Description
1	N/A	N/R	Continue Plant Shutdown per PPM 3.2.1 step 4.1.3, Rod step 76-5 per BPA request.
2	N/A	N	Remove the "B" RFP from service per PPM 2.2.4 Sect. 5.10.
3	PMP CSS4	C	LPCS-P-2 Shaft shears.
4	MAL ''R1	C	RHR Loop "A" suction line break, unisolable.
5	MOV ι 6	I	Due to failed Torque switches HPCS-V-23 fails to open when required and cannot be opened from the Control Room switch.
6	MAL CRD7A MAL CRD7B	M	Manual scram with Hydraulic ATWS active.

* Normal (N), Reactivity manipulation (R), Instrument malfunction (I), Component malfunction (C), Major transient (M)

Review Complete: ____________________

Event No. 1

Brief Event Description: Continue Plant Shutdown per PPM 3.2.1 step 4.1.3, Rod step 76-5 per BPA request.

Time	Position	Candidates Actions/Behavior
	CRS	Directs CRO1 to verify Control Rod pull step and current Plant condition and then continue with the Shutdown per PPM 3.2.1 step 4.1.13, rod step 76-5.
	CRO1	Verifies Plant Status as directed, then continues with the Shutdown per PPM 3.2.1 step 4.1.13, rod step 76-5.
	ALL	Continue to monitor Plant conditions.

Event No. 2

Brief Event Description: Remove the "B" RFP from service per PPM 2.2.4 Section 5.10.

Time	Position	Candidates Actions/Behavior
	CRS	Directs RFP "B" to be removed per PPM 2.2.4 Section 5.10 and directs check of Plant conditions prior to removal.
	CRO3	Verifies Plant conditions and Procedural requirements, then removes RFP "B" per PPM 2.2.4 Section 5.10.
	ALL	Continue to monitor Plant conditions and perform Plant Shutdown.

Event No. 3

Brief Event Description: LPCS-P-2 Shaft shears.

Time	Position	Candidates Actions/Behavior
	CRO3	Receives, acknowledges and announces "LPCS PUMP DISCH. PRESS. HIGH/LOW". (Annunciator Panel P601.A3, 5-3)
	CRS	Direct CRO1 to pull ARP. Refers to Tech. Specs. 3.4.3.2, 3.5.1, and 3.6.3.
	CRO3	Inhibits LPCS-P-1 by holding its control switch in "STOP" until the control power fuses are removed, then checks the status of LPCS-P-2.
	CRO3	Direct start of RHR-A-1 in full flow test to maintain availability.
	ALL	Continue to monitor Plant conditions.

Event No. 4

Brief Event Description: RHR Loop "A" suction line break, unisolable.

Time	Position	Candidates Actions/Behavior
	CRO3	Receives, acknowledges and announces "REACTOR BLDG. FLOOR SUMP R2 HI-HI". (Annunciator Panel P602.A13, 1-1)
	CRS	Enters PPM 5.3.1 and directs CRO3 to pull the ARP and PPM 4.12.4.10, Reactor Bldg. Area Flooding.
	CRS	Enter PPM 5.2.1 due to lowering wetwell level. Direct action to raise wetwell level per PPM 5.5.27
	CRO1	Continues to monitor Plant conditions.

Event No. 5

Brief Event Description: LPCS-V-5 fails to open.

Time	Position	Candidates Actions/Behavior
	CRO3	Recognize and report failure of HPCS-V-23 to open.
	CRS	Directs OPS-2 to manually valve HPCS-V-23 locally.
	ALL	Continue to monitor Plant conditions.

Event No. 6

Brief Event Description: Manual scram with Hydraulic ATWS active.

Time	Position	Candidates Actions/Behavior
	CRS	Using PPM 5.2.1, briefs Crew on requirements to maintain HCLL. When it is determined that wetwell level cannot be maintained above HCLL, enter PPM 5.1.1 and direct a manual scram.
	CRO1	Initiates manual Scram as directed, recognizes and reports failure of the scram to complete Rod insertion.
	CRS	Exits PPM 5.1.1 and enters PPM 5.1.2. When conditions are met for emergency depressurization directs CRO to open seven SRV's.
	CRO3	Opens seven ADS SRV's.
	ALL	Continues to control plant with PPM 5.1.2 and 5.2.1.

IMPORTANT SCENARIO NOTES:

1. Scenario is completed when RPV level is stabilized after E/D and control rods are being inserted as directed by PPM 5.5.10 and PPM 5.5.11.

Simulator Facility: WNP-2 Scenario No. 3 File # Drill_963HLC.pgp

Examiners: ____________________ Candidates: ____________________

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Initial Conditions: Initialize IC 115, Plant operating at ≈ 24% power.

Turnover: The Plant is continuing a Start-up at ≈ 24% power. PPM 3.1.2 is completed through section 4.8, control rod sequence "A2", page 34, RWM group/step 34-5, control rod 18-51. Maintenance is currently repairing SLC-P-1B, which is out of service, and is not expected to be returned to service this shift.

Event No.	Malf. No.	Type *	Description
1	N/A	N/R	Continue Plant Startup per PPM 3.1.2 section 4.9, control rod sequence "A2", page 34, RWM group/step 34-5, control rod 18-51.
2	XMT RRS106	I	RFW-LI-606A, RPV/L narrow range monitor, fails low.
3	ANN EPS35 BKR EPS47	C	Reactor recirculation pump "A" trips.
4	PLP CRD1 PMP CAS2 PMP CAS3 MAL CAS2C	C	Loss of Control Air header pressure.
5	MAL RMC4A MAL RMC4B SWI RRS6C SWI RRS17C SWI RRS27C SWI RRS36C	M	Control rods drift in and MSIV's drift closed. Reactor scram and entry into PPM 5.1.1.
6	RLY RPS25 THROUGH RLY RPS32	M	Electric ATWS, entry into PPM 5.1.2.
7	SNV CRD1115 THROUGH SNV CRD1122	I	ARI fail to initiate rod insertion.
8	AOV CFW29 AOV CFW28	C/I	RFW-V-10A & 10B fail closed.

* Normal (N), Reactivity manipulation (R), Instrument malfunction (I), Component malfunction (C), Major transient (M)

Review Complete: ______________________________

Event No. 1

Brief Event Description: Continue Plant Startup per PPM 3.1.2 section 4.9, control rod sequence "A2", page 34, RWM group/step 34-5, control rod 18-51.

Time	Position	Candidates Actions/Behavior
	CRS	Directs CRO1 to verify control rod, pull step, and current Plant condition and then continue with the startup per PPM 3.1.2 section 4.9, control rod step 34-5
	CRO1	Verifies Plant Status as directed, then continues with the startup per PPM 3.1.2, section 4.9, control rod step 34-5.
	ALL	Continue to monitor Plant conditions.

Event No. 2

Brief Event Description: RFW-LI-606A, RPV/L narrow range monitor, fails low.

Time	Position	Candidates Actions/Behavior
	CRO1	Receives and acknowledges annunciator P603-A8 3-7, "RPV LEVEL HIGH/LOW ALERT. Confirms alarm by observing RPV level normal except RFW-LI-606A reading low. Reports findings to CRS.
	CRS	Acknowledges reports and directs CRO1 to continue monitoring RPV level closely. Refers to Tech. Specs.
	CRO3	Verifies level with, and monitors P601 level instruments for changes.
	ALL	Continue to monitor Plant conditions and performance of plant startup.

Event No. 3

Brief Event Description: Reactor recirculation pump "A" trips.

Time	Position	Candidates Actions/Behavior
	CRO3	Acknowledges annunciators and verifies Recirc pump "A" has tripped, report all information to the CRS.
	CRS	Directs CRO3 to follow instructions in ARP. Refers to and has CRO3 perform PPM 2.2.1, section 5.4, Single Loop Operation. Check for compliance with Tech. Spec. flow requirements for Single Loop Operations.
	CRO3	Performs all applicable portions of PPM 2.2.1, section 5.4.
	CRO1	Verifies single loop flow LT 41,725 gpm per Tech. Spec. requirements and ensures limits of the Power to Flow Map.
	ALL	Continue to monitor Plant conditions.

Event No. 4

Brief Event Description: Loss of Control Air header pressure.

Time	Position	Candidates Actions/Behavior
	CRO3	Acknowledges annunciators and verifies CAS pressure going down, report all information to the CRS. Dispatch operators to investigate and isolate if possible. Monitor for system affects due to the loss of CAS pressure.
	CRS	Directs CRO3 to follow instructions in ARP. Briefs crew on potential control rod drifts and MSIV closure should CAS pressure continue down. Inform crew if and when actions should be taken at his direction.
	ALL	Continues to monitor Plant conditions.

Event No. 5

Brief Event Description: Control rods drift in and MSIV's drift closed. Reactor scram and entry into PPM 5.1.1.

Time	Position	Candidates Actions/Behavior
	CRS	Direct reactor scram, after second rod drift with full IN indication and/or impending MSIV closure.
	CRO1	Scrams and refers to PPM 3.3.1
	CRS	Enters PPM 5.1.1 as required. Directs CRO3 to take the MSIV switches to closed as required.
	CRO3	If/when the MSIV's have isolated, place control switches for MSIV's in the closed position.
	ALL	Continues to monitor Plant conditions.

Event No. 6

Brief Event Description: Electric ATWS, entry into PPM 5.1.2.

Time	Position	Candidates Actions/Behavior
	CRO1	Recognize and report Electric ATWS.
	CRS	Exits PPM 5.1.1 and enters PPM 5.1.2
	ALL	Continue to monitor Plant conditions.

Event No. 7

Brief Event Description: ARI fail to initiate rod insertion.

Time	Position	Candidates Actions/Behavior
	CRO1	Report failure of ARI to insert control rods.
	CRS	Continue to direct from PPM 5.1.2.
	ALL	Continue to monitor Plant conditions.

Event No. 8

Brief Event Description: RFW-V-10A & 10B fail closed.

Time	Position	Candidates Actions/Behavior
	CRO3	Report RFW-V-10A/B failed closed, attempt to control level with RFW-LIC-620.
	CRS	Direct CRO3 to attempt to regain level control.
	ALL	Continue to monitor Plant conditions.

IMPORTANT SCENARIO NOTES:

1.

Simulator Facility: WNP-2 Scenario No. 4 File # Drill_964HLC.pgp

Examiners: ____________________ Candidates: ____________________

____________________ ____________________

____________________ ____________________

Initial Conditions: Initialize IC 119, Plant Startup at ≈ 4% power.

Turnover: The Plant is continuing a Startup at ≈ 4% power. APRM "C" is out of service, bypassed, and I&C is working to repair. RCIC Quarterly Operability Test, PPM 7.4.7.3.3B, is due to be performed this shift.

Event No.	Malf. No.	Type *	Description
1	N/A	R	Continue Plant Startup per PPM 3.1.2.
2	N/A	N	RCIC Quarterly Operability Test, PPM 7.4.7.3.3B
3	MAL RCI4	C/M	RCIC steam leak upstream of RCIC-V-45.
4	MOV RCI16	C	RCIC steam line isolation, RCIC-V-8 fails to isolate due to being mechanically bound.
5	LOA EPS214	I	Blown fuse on RCIC steam line isolation, RCIC-V-63.
6	MAL RRS4A	M	Small break LOCA, Reactor Recirc. "A" suction line.
7	MOV CSS7	I	HPCS injection valve, HPCS-V-4 fails to auto open.

* Normal (N), Reactivity manipulation (R), Instrument malfunction (I), Component malfunction (C), Major transient (M)

Review Complete: ______________________________

Event No. 1

Brief Event Description: Continue Plant Startup per PPM 3.1.2.

Time	Position	Candidates Actions/Behavior
	CRS	Directs CRO1 to verify control rod, pull step, and current plant conditions and then continue with the startup per PPM 3.1.2.
	CRO1	Verifies plant status as directed, then continues with the startup per PPM 3.1.2.
	ALL	Continue to monitor Plant conditions.

Event No. 2

Brief Event Description: RCIC full flow surveillance, PPM

Time	Position	Candidates Actions/Behavior
	CRS	Review RCIC Quarterly Operability Test, PPM 7.4.7.3.3B.
	CRO3	Review RCIC Quarterly Operability Test, PPM 7.4.7.3.3B.
	ALL	Continue to monitor Plant conditions and perform Plant Shutdown.

Event No. 3

Brief Event Description: RCIC steam leak upstream of RCIC-V-45.

Time	Position	Candidates Actions/Behavior
	CRO3	Receives and acknowledges annunciator "LEAK DET RCIC EQUIP AREA TEMP HI-HI" P601.
	CRS	Directs CRO3 to follow instructions in ARP. Check for compliance with Technical Specifications.
	CRO3	Pull ARP P601-A4 1-8 and verify isolation.
	ALL	Continue to monitor Plant conditions.

Event No. 4

Brief Event Description: RCIC steam line isolation, RCIC-V-8 fails to isolate due to being mechanically bound.

Time	Position	Candidates Actions/Behavior
	CRO3	Recognize RCIC-V-8 has failed to close during verification of RCIC isolation on annunciator "LEAK DET RCIC EQUIP AREA TEMP HI-HI". Report failure to isolate to CRS.
	CRS	Direct CRO3 to isolate RCIC steam line using RCIC-V-63 and RCIC-V-76.
	CRO3	Attempts to close RCIC-V-63 and valve position is lost. Investigation reveals a blown motor fuse and the isolation valve is still open. Reports unisolable steam leak to CRS.
	CRS	Acknowledges, enters PPM 5.3.1 when high area temperatures are received.
	CRO1	Continues to monitor Plant conditions.

NOTE: ***RCIC-V-63 will be closed when either directed to manually close the valve or replace the motor fuses.***

Event No. 5

Brief Event Description: Blown fuse on RCIC steam line isolation, RCIC-V-63.

Time	Position	Candidates Actions/Behavior
	ALL	See actions/behaviors for event #4 above.
	ALL	Continues to monitor Plant conditions.

Event No. 6

Brief Event Description: Small break LOCA, Reactor Recirc. "A" suction line.

Time	Position	Candidates Actions/Behavior
	CRO3	Recognize drywell pressure going up and RPV level going down from alarms and indications. Report parameters and trends to CRS. If time permits between required actions, investigate and isolate leak source if possible.
	CRO1	Recognize drywell pressure going up and RPV level going down from alarms and indications. Report parameters and trends to CRS.
	CRS	Enter PPM 5.1.1, direct/perform appropriate measures.
	ALL	Continue to monitor Plant conditions.

Event No. 7

Brief Event Description: HPCS injection valve, HPCS-V-4 fails to auto open.

Time	Position	Candidates Actions/Behavior
	CRO3	As RPV level reaches Level 2, while verifying automatic actions, observe HPCS-V-4 does not automatically open as required by this situation. Report situation to CRS as attempting to open manually.
	CRO3	Reports attempt to open HPCS-V-4 manually was successful. Ensures flow is appropriate and that RPV level is trending up.
	CRS	Responds to CRO3 initial report and follows-up by directing him to attempt to manually open HPCS-V-4. Verifies HPCS injecting with HPCS-V-4 opened manually and continues with measures directed by PPM 5.1.1 and PPM 5.2.1.
	ALL	Continue to monitor Plant conditions.

IMPORTANT SCENARIO NOTES:

1.

Simulator Facility: WNP-2 Scenario No. 5 File # Drill_965HLC.pgp

Examiners: ____________________ Candidates: ____________________

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Initial Conditions: Initialize IC 117. Plant at ≈ 96%, EOC coast-down.

Turnover: The plant is operating at ≈ 96% power in a EOC coast-down. Suppression pool temperature is ≈ 81°F.

Work in progress includes;

1) RPS & Isolation Reactor Vessel Low Level surveillance. Level 3 & Level 8 CFT. PPM 7.4.3.1.1.50, currently at step 7.1.13.
2) Maintenance is repairing CRD-P-1A, it is expected to be returned to service early in this shift.
3) Fire Protection Jockey Pump, FP-P-11, is out of service. Maintenance is investigating.

Event No.	Malf. No.	Type *	Description
1	N/A	N	PPM 7.4.3.1.1.50 - step 7.1.13 CFT in progress.
2	N/A	N	Start CRD-P-1A and secure CRD-P-1B.
3	MAL EPS6D	C/I	Loss of annunciators on P601, P602, and P603 due to a ground on S1-2.
4	SWI CSS47B	I/R	Inadvertent initiation of HPCS due to a relay failure.
5	MAL RRS4B	M	Reactor recirculation suction line break.
6	PMP CSS3	C	LPCS-P-1 shaft break.

* Normal (N), Reactivity manipulation (R), Instrument malfunction (I), Component malfunction (C), Major transient (M)

Review Complete: ____________________

Event No. 1

Brief Event Description: PPM 7.4.3.1.1.50 - step 7.1.13 CFT in progress.

Time	Position	Candidates Actions/Behavior
	CRS	Review PPM 7.4.3.1.1.50 - step 7.1.13 CFT in progress.
	CRO1	Review PPM 7.4.3.1.1.50 - step 7.1.13 CFT in progress.
	ALL	Continue to monitor Plant conditions and perform Plant Shutdown.

Event No. 2

Brief Event Description: Start CRD-P-1A and secure CRD-P-1B.

Time	Position	Candidates Actions/Behavior
	CRS	Direct shifting CRD pumps per PPM 2.1.1, section 5.6.
	CRO1	Shift CRD pumps per PPM 2.1.1, section 5.6.
	ALL	Continue to monitor Plant conditions and perform Plant Shutdown.

Event No. 3

Brief Event Description: Loss of annunciators on P601, P602, and P603 due to a ground on S1-2.

Time	Position	Candidates Actions/Behavior
	CRO1	Receives and acknowledges annunciator "ANNUNCIATOR 125 VDC LOSS". Report situation to CRS and monitor RPV level, RPV pressure and all scram parameters.
	CRS	Acknowledge and direct CRO's to pull ARP, PPM 4.7.8.3, Loss of Control Room Annunciation, and PPM 4.7.8.1, 125 VDC Distribution System Failure. Review actions with CRO's, perform those that are appropriate. Classify the event per PPM 13.1.1.
	CRO3	Start continuous walkdown of H13-P601, H13-P602, and H13-P603.
	ALL	Continue to monitor Plant conditions.

Event No. 4

Brief Event Description: Inadvertent initiation of HPCS due to a relay failure.

Time	Position	Candidates Actions/Behavior
	CRO3	Acknowledge and report HPCS has started and is injecting. Verify validity of initiation, if not valid secure HPCS.
	CRO1	Monitor all indications of Reactor power due to inadvertent injection of HPCS. Report ANY indication of increase in Reactor power due to the injection from HPCS.
	CRS	Acknowledge and direct CRO's to pull ARP, appropriate PPM's. Review actions with CRO's, to ensure appropriate actions have been taken.
	ALL	Continues to monitor Plant conditions.

Event No. 5

Brief Event Description: Reactor recirculation suction line break.

Time	Position	Candidates Actions/Behavior
	CRO3	Recognize drywell pressure going up and RPV level going down from indications. Report parameters and trends to CRS. If time permits between required actions, investigate and isolate leak source if possible.
	CRO1	Recognize drywell pressure going up and RPV level going down from indications. Report parameters and trends to CRS.
	CRS	Enter PPM 5.1.1 and PPM 5.2.1. Direct/perform appropriate measures.
	ALL	Continues to monitor Plant conditions.

Event No. 6

Brief Event Description: LPCS-P-1 shaft break.

Time	Position	Candidates Actions/Behavior
	CRO3	As Low Pressure injection system start to inject, verify proper flows, pressures, and pump motor amps. When LPCS-P-1 reaches a discharge flow rate of 4,000 gpm it will experience a shaft break. Recognize and report the situation to the CRS.
	CRS	Acknowledges report and directs securing LPCS-P-1.
	ALL	Continue to monitor Plant conditions.

IMPORTANT SCENARIO NOTES:

1.

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: ALIGN LPCI C TO STANDBY STATUS

LESSON LENGTH: 8 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000159	Rev. No.	6
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Larry Monroe DATE: 4/20/95

REVISED BY: Randy Guthrie DATE: 8/20/96

TECHNICAL REVIEW BY ____________ DATE ______

INSTRUCTIONAL REVIEW BY ____________ DATE ______

APPROVED BY ____________ DATE ______
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
Any

Malfunctions/Remote Triggers:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
Rotate the RHR B & C Manual Initiation Pushbutton to the ARMED position.

Task Standard:
Control Room manipulations are performed to align RHR "C" loop to standby readiness for normal power operation.

RESULTS OF JPM:

Examinee (Please Print): ______________________________

Evaluator (Please Print): ______________________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
N/A	8 Minutes / NA	

Comments: ______________________________

Evaluator's Signature: ______________________ Date: ______________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
Note: JPM steps occur at H13-P601 unless otherwise noted	1	Ensures RHR manual initiation pushbutton is disarmed	Rotates RHR B/C initiation psuhbutton arming collar to the DISARMED position	S / U*
	Comments:			
	2	Ensures LPCI testable check valve actuator is neutral	Ensures RHR-V-41C actuator is in the neutral position (green light on)	S / U
	Comments:			
	3	Ensures suppression pool cooling test return valve closed	Verifies RHR-V-21 indicates closed (green light on)	S / U
			Verifies control switch in AUTO	S / U
	Comments:			
	4	Ensures injection valve closed	Verifies RHR-V-42C indicates closed (green light on)	S / U
			Verifies amber override light off	S / U
			Verifies control switch in AUTO	S / U
	Comments:			

ALIGN LPCI C TO STANDBY STATUS

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	5	Ensures suppression pool suction valve open	Verifies RHR-V-4C indicates open (red light on)	S / U
			Verifies control switch in OPEN with key removed	S / U
	Comments:			
	6	Ensures minimum flow valve is closed	Verifies RHR-FCV-64C indicates closed (green light on)	S / U
			Verifies control switch in AUTO	S / U
	Comments:			
	7	Ensures no initiation signal present	Ensures initiating logic seal-in amber indicating light is off	S / U
	Comments:			
	8	Ensures pump set for automatic start	Ensures RHR-P-2C control switch is in AUTO	S / U
			Ensures manual override seal-in amber indicating light is off	S / U
	Comments:			
	9	Verifies override alignment of keylock switches	At H13-P618 ensures RHR-RMS-S44B keylock test switch is in NORMAL with key removed	S / U
	Comments:			

* Items are Critical Steps

Event Control	Step	Element	Standard	Sat/Unsat
	10	Verifies override alignment of key lock switches	At H13-P618 ensures RHR-RMS-S70 keylock test switch is in NORMAL with key removed	S / U
	Comments:			
	11	Verifies override alignment of keylock switches	At H13-P618 ensures RHR-RMS S101C and RHR-RMS-S103C are in NORMAL with keys removed	S / U
	Comments:			
	12	Verifies system filled and vented	Ensures RHR-P-3 running Ensures H13-P601.A2-6.5, RHR C PUMP DISCH PRESS HIGH/LOW alarm is clear	S / U S / U
	Comments:			
	13	Verifies pump not locked out	Ensures LOCKOUT CIRCUIT AVAILABLE white light is on	S / U
	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	14	Checks status of BISI	Ensures RHR C BISI alarms are clear	S / U
Termination Cue: The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: A Minimum Startup Checklist is being implemented to support a reactor startup.

The RHR system has been filled and vented following system maintenance.

Cue:

The CRS has directed you to align LPCI Loop C to standby status using PPM 2.4.2 Section 5.6.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0199-N-RHR	**Validation Time:**	8 Minutes
Prerequisiste Training:	82-RSY-1304-L3	**Time Critical:**	No
PPM Reference:	2.4.2 Rev 25	**Location:**	Simulator
NUREG 1123 Ref:	203000A4.02 (4.1/4.1)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/20/96

STUDENT JPM INFORMATION CARD

Initial Conditions: A Minimum Startup Checklist is being implemented to support a reactor startup.

The RHR system has been filled and vented following system maintenance.

Cue:

The CRS has directed you to align LPCI Loop C to standby status using PPM 2.4.2 Section 5.6.

ALIGN LPCI C TO STANDBY STATUS

203000A4.02 **RHR/LPCI: Injection Mode (Plant Specific)**
Ability to manually operate and/or monitor in the control room system valves.
(4.1/4.1)

Question:
What are the indications of ECCS suction strainer plugging?

Answer:
Flowrate, pump discharge pressure and pump motor amps erratic or decreasing. Also frequent adjustment of test return valve at steady state conditions.

Reference:
PPM 4.4.7.1 - ECCS Suction Strainer Plugging

Comments:

Question:
Placing keylock test switch RHR-RMS-S101C to BYPASS disables the reactor pressure injection valve open permissive. What is the function of the permissive?

Answer:
Overpressure protection for piping upstream of the injection valve. This piping is not rated for pressure above 500 psig.

Reference:
RHR System Text

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: PLACE RSCS INTO SERVICE

LESSON LENGTH: 9 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000195	Rev. No.	5
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Sean Dallago DATE: 9/7/92

REVISED BY: Randy Guthrie DATE: 8/21/96

TECHNICAL REVIEW BY ____________ DATE ______

INSTRUCTIONAL REVIEW BY ____________ DATE ______

APPROVED BY ____________ DATE ______
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
N/A

Malfunctions:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
Before JPM is intiated, determine which is the current rod sequence (A or B).

Task Standard:
Manipluations have been completed to place the RSCS system in service per PPM.

RESULTS OF JPM:

Examinee (Please Print): ______________________________

Evaluator (Please Print): ______________________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	9 Minutes / NA	

Comments: ______________________________

Evaluator's Signature: ____________________ **Date:** ____________________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
	1	Ensure CL1 board toggle switch is up	Ensures toggle switch on CL1 board in the RSCS card file at H13-P659 is in the UP position	S / U
Cue: Toggle switch is in the UP position	Comments:			
	2	Ensure substitute display is blank	Ensures substitute position window on RSCS control panel at H13-P603 is blank	S / U
Cue: Substitute position window is blank	Comments:			
	3	Determine if any rods are bypassed	Depresses red display control pushbutton to illuminate the bypass light Verifies no rods bypassed (no red lights lit)	S / U* S / U
Cue: Display pushbutton is depressed with bypass light lit and no bypassed control rods are indicated	Comments:			
	4	Select desired rod withdrawal sequence	Depresses Sequence Select pushbutton (as necessary) until rod sequence specified by pull sheet is illuminated	S / U*
Cue: Sequence _____ (determined by the current sequence) is selected	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	5	Verify RSCS correctly displays all rods in the selected group	Depresses Amber Display Control pushbutton to illuminate ALL RODS light	S / U*
			Verifies all lighted amber LEDS correspond to rods in the selected rod group (uses pull sheet or PPM 7.4.1.4.2.1 Attachment 9.1)	S / U
Cue: The amber pushbutton is depressed with ALL RODS lit and selected rod group displayed	Comments:			
	6	Verify current rod pattern	Depress Red Display Control pushbutton to illuminate the Rods F.I. light	S / U*
			Verifies all rods are consistent with current rod pattern	S / U
Cue: The red pushbutton is depressed with Rods F. I. lit and current rod pattern displayed	Comments:			
	7	Select first rod on the current operator's rod sequence sheet	On the Reactor Manual Control Panel, selects the first rod on the sequence sheet which corresponds to the current sequence	S / U*
			Ensures proper selection	S / U
Cue: Selected rod is selected	Comments:			
	8	Depresses display control button	Depresses Amber Diplay Control pushbutton to illuminate Free Rods light	S / U*
Cue: Amber light is illuminated for the selected rod	Comments:			

* Items are Critical Steps

Event Control	Step	Element	Standard	Sat/Unsat
	9	Depresses direction button	Depresses Direction pushbutton to illuminate the W/draw light	S / U*
Cue: W/draw light is lit	Comments:			
	10	Ensures free rods are indicated correctly	Ensures all rods that can be withdraw according to the Operator's rod sequence sheet belong to the same group as the selected rod (uses pull sheet or PPM Attachment 9.1 to identify group) have amber lights lit	S / U
Cue: Amber lights indicating free rods and the pull sheet are in agreement	Comments:			
	11	Ensures rod blocks are consistent	Ensures RSCS Insert and Withdraw blocks are consistent with the current rod pattern	S / U
Cue: No rods blocks are indicated **Termination Cue:** The termination point of this JPM has been reached	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: The plant is shutdown, all rods are inserted. All Surveillance requirements have been met and all prerequisites are satisfied.

Cue:

The CRS has directed you to place the Rod Sequence Control System In service per PPM 2.1.5.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0151-N-RSCS	**Validation Time:**	9 Minutes
Prerequisiste Training:	82-RSY-0706-L1	**Time Critical:**	No
PPM Reference:	2.1.5 Rev 9	**Location:**	Control Room
NUREG 1123 Ref:	201004A402 (3.5/3.2)	**Performance Method:**	Simulate
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/21/96

STUDENT JPM INFORMATION CARD

Initial Conditions: The plant is shutdown, all rods are inserted. All Surveillance requirements have been met and all prerequisites are satisfied.

Cue:

The CRS has directed you to place the Rod Sequence Control System In service per PPM 2.1.5.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

PLACE RSCS INTO SERVICE

201004A4.02 Rod Sequence Control System (Plant Specific)
Ability to manually operate and/or monitor in the control room RSCS console switches and indicators: BWR-4,5
(3.5/3.2)

Question:
At what reactor power level does RSCS generate rod blocks and what signal is used to determine reactor power?

Answer:
20% reactor power as determined by main turbine 1st stage pressure

Reference:
RSCS Systems Text

Comments:

Question:
How can the operation of main turbine bypass valves affect RSCS operation?

Answer:
With bypass valves open, turbine 1st stage pressure may be lowered, in turn causing indicated reactor power to be lower than actual reactor power. RSCS may generate rod blocks prior to reactor power dropping to 20%.

Reference:
RSCS Systems Text

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: INITIATE RCIC FOR RPV INJECTION ARM AND DEPRESS

LESSON LENGTH: 3 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000302	Rev. No.	3
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Donald Hughes DATE: 6/29/96

REVISED BY: Randy Guthrie DATE: 8/22/96

TECHNICAL REVIEW BY ______ DATE ______

INSTRUCTIONAL REVIEW BY ______ DATE ______

APPROVED BY ______ DATE ______
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:

Any IC where the initiation of RCIC will NOT cause a reactor scram from a turbine trip.

Malfunctions:

CNH RC12 5,50,0,0,D RCIC Controller Failure

Overrides (Optional):

N/A

Special Setup Instructions:

N/A

Task Standard:

RCIC is initiated and injecting at rated flow (600 gpm) per PPM 2.4.6.

RESULTS OF JPM:

Examinee (Please Print): ______________________

Evaluator (Please Print): ______________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	3 Minutes / NA	

Comments: ______________________

Evaluator's Signature: ______________________ **Date:** ______________________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
Note: All steps occur at H13-P601 unless otherwise noted **Note:** PPM 2.4.6 Section 5.2 Step 1 is N/A since this is NOT a test	1	Initiate RCIC	Rotates RCIC-RMS-S36 to ARM and depresses the initiation pushbutton	S / U*
	Comments:			
	2	Verify proper system alignment	Ensures: RCIC-V-46 opens (red light on) (Lube Oil Cooler Supply) RCIC-P-2 starts (red light on) (Condenser Vacuum Pump) RCIC-V-45 opens (red light on) (Steam Supply To RCIC) RCIC-V-13 opens (red light on) (RPV Injection)	 S / U S / U S / U S / U
	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	3	Verify auxiliary alignment	When RCIC-V-45 opens, ensures:	
			RCIC-V25 closes (green light on) (Warmup Drain)	S / U
			RCIC-V-26 closes (green light on) (Warmup Drain)	S / U
			RCIC-V-4 closes (green light on) (Discharge To EDR)	S / U
			RCIC-V-5 closes (green light on) (Discharge To EDR)	S / U
			SW-P-1B starts (20 second time delay)	S / U
Note: The failure of RCIC-FIC-600 may be identified before valve alignment and corrective actions taken	Comments:			
	4	Verify room cooling established	At H13-P625, ensure SW-V-34 is open	S / U
	Comments:			
	5	Recognizes RCIC-FIC-600 failure	Reports to CRS that RCIC-FIC-600 is not controlling properly in AUTO	S / U*
Cue: As CRS acknowledge controller failure and direct the operator to take actions as necessary to deliver 600 gpm to the RPV	Comments:			
	6	Adjusts RCIC system flow	Places RCIC-FIC-600 in MANUAL and increases system flow to 600 gpm	S / U*
	Comments:			

* Items are Critical Steps

Event Control	Step	Element	Standard	Sat/Unsat
	7	Verify minimum flow operation	Ensures RCIC-V-19 closes when flow is GT 150 gpm	S / U
	Comments:			
	8	Maintain system flow	Adjust RCIC-FIC-600 as necessary to maintain 600 gpm to the RPV	S / U
Termination Cue: The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: Plant conditions exist that require RCIC initiation to maintain RPV level.

The RCIC start is NOT part of a planned test.

The main turbine may trip as a result of this evolution and that has been determined to be acceptable by the Shift Manager.

Cue:

The CRS has directed you to initiate the RCIC system for RPV injection by utilizing the ARM/DEPRESS mode of operation per PPM 2.4.6.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0268-N-RCIC RO-0658-N-RCIC	**Validation Time:**	3 Minutes
Prerequisiste Training:	N/A	**Time Critical:**	No
PPM Reference:	2.4.6 Rev 22	**Location:**	Simulator
NUREG 1123 Ref:	217000A2.10 (3.1/3.1) 217000A2.11 (3.1/3.2)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/22/96

STUDENT JPM INFORMATION CARD

Initial Conditions: Plant conditions exist that require RCIC initiation to maintain RPV level.

The RCIC start is NOT part of a planned test.

The main turbine may trip as a result of this evolution and that has been determined to be acceptable by the Shift Manager.

Cue:

The CRS has directed you to initiate the RCIC system for RPV injection by utilizing the ARM/DEPRESS mode of operation per PPM 2.4.6.

INITIATE RCIC FOR RPV INJECTION ARM AND DEPRESS

217000A2.10 **Reactor Core Isolation Cooling System (RCIC)**
Ability to (a) predict the impacts of *turbine control system failures* on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations.
(3.1/3.1)

217000A2.11 **Reactor Core Isolation Cooling System (RCIC)**
Ability to (a) predict the impacts of *inadequate system flow* on the REACTOR CORE ISOLATION COOLING SYSTEM (RCIC); and (b) based on those predictions, use procedures to correct, control, or mitigate the consequences of those abnormal conditions or operations.
(3.1/3.2)

Question:
When RCIC was initiated a turbine trip occurred. What conditions must be met for this trip to occur?

Answer:
RCIC-V-45 and RCIC-V-13 both open.

Reference:
PPM 2.4.6 & RCIC Systems Text

Comments:

Question:
RCIC has been operating in the test mode for an extended period of time when it is noted that the containment oxygen level is increasing. Why is this happening?

Answer:
Air in-leakage from the RCIC turbine gland seal system.

Reference:
PPM 2.4.6 & RCIC Systems Text

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: OVERRIDE ECCS VALVE LOGIC TO THROTTLE RPV INJECTION

LESSON LENGTH: 3 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000223	Rev. No.	4
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Sean Dallago DATE: 5/7/92

REVISED BY: Randy Guthrie DATE: 8/22/96

TECHNICAL REVIEW BY ______________ DATE ______

INSTRUCTIONAL REVIEW BY ______________ DATE ______

APPROVED BY ______________ DATE ______
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
Any

Malfunctions:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
N/A

Task Standard:
EOP implemented to override ECCS valve logic to allow throttling RPV injection.

RESULTS OF JPM:

Examinee (Please Print): ____________________

Evaluator (Please Print): ____________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	3 Minutes / NA	

Comments: ____________________

Evaluator's Signature: ____________________ **Date:** ____________________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
Note: JPM steps may be performed in any order.	1	Override HPCS-V-4 automatic logic	At H13-P625, places HPCS-RMS-S25 in the OVERRIDE position	S / U*
	Comments:			
	2	Override LPCS-V-5 automatic logic	At H13-P629, places LPCS-RMS-S21 in the OVERRIDE position	S / U*
	Comments:			
	3	Override RHR-V-42A automatic logic	At H13-P629, places RHR-RMS-S105 in the OVERRIDE position	S / U*
	Comments:			
	4	Override RHR-V-42B automatic logic	At H13-P618, places RHR-RMS-S106 in the OVERRIDE position	S / U*
	Comments:			

OVERRIDE ECCS VALVE LOGIC TO THROTTLE RPV INJECTION

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	5	Override RHR-V-42C automatic logic	At H13-P618, places RHR-RMS-S107 in the OVERRIDE position	S / U*
Termination Cue: The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

OVERRIDE ECCS VALVE LOGIC TO THROTTLE RPV INJECTION

JPM INFORMATION CARD

Initial Conditions: An ATWS condition exists, PPM 5.1.2 has been entered.

Cue:

The CRS has directed you to override ECCS valve logic per PPM 5.5.1 to allow throttling flow.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0669-E-ECCS	**Validation Time:**	3 Minutes
Prerequisiste Training:	82-RMD-0901-LP	**Time Critical:**	No
PPM Reference:	5.5.1 Rev 5	**Location:**	Simulator
NUREG 1123 Ref:	295015GA.06 (4.1/3.9)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/22/96

STUDENT JPM INFORMATION CARD

Initial Conditions: An ATWS condition exists, PPM 5.1.2 has been entered.

Cue:

The CRS has directed you to override ECCS valve logic per PPM 5.5.1 to allow throttling flow.

OVERRIDE ECCS VALVE LOGIC TO THROTTLE RPV INJECTION

295015GA.06 Incomplete Scram
Ability to locate and operate components, including local controls.
(4.1/3.9)

Question:
What is the response of ECCS injection valves to RPV pressure dropping below the open permissive with its associated keylock switch in OVERRIDE?

Answer:
No response, valve remains as is.

Reference:
RHR System Text

Comments:

Question:
What condition requires these valves to be throttlable?

Answer:
PPM 5.1.4, RPV Flooding, PPM 5.1.6, RPV Flooding ATWS

Reference:
PPM 5.0.10

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: REACTOR FEED PUMP QUICK RESTART

LESSON LENGTH: 16 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000131	Rev. No.	2
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Ken Elliott DATE: 10/03/95

REVISED BY: Randy Guthrie DATE: 8/20/96

TECHNICAL REVIEW BY ______ DATE ______

INSTRUCTIONAL REVIEW BY ______ DATE ______

APPROVED BY ______ DATE ______
Training Manager

Matrix Update	Vision # 966	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
13

Malfunctions:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
Verify RPV level is stable, then trip RFP "A"
Perform actions per PPM 4.840.A1 1-1

Task Standard:
RFP "A" is started and is feeding the reactor vessel.

RESULTS OF JPM:

Examinee (Please Print): ______________________

Evaluator (Please Print): ______________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	16 Minutes / NA	

Comments: ______________________

Evaluator's Signature: ______________________ Date: ______________________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
	1	Ensure HIGH LEVEL SEAL INs are reset	Ensures at least two HIGH LEVEL SEAL INs are reset	S / U*
	Comments:			
	2	Ensure Min Flow Controller in auto	Ensures RFW-FIC-2A is in auto (A)	S / U
	Comments:			
	3	Check turbine "A" speed controller set properly	Checks RFW-SC-601A is in MDVP at 0%	S / U
	Comments:			
	4	Ensure MS-V-105A and BS-V-17A are open	Ensures MS-V-105A and BS-V-17A are open	S / U
	Comments:			

REACTOR FEED PUMP QUICK RESTART

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
Note: If the HP and LP valves start to reset and trip, examinee should consider starting a second turbine LO pump	5	Reset the feedwater turbine	Places Turbine Emergency Trip/Reset switch (P840) to the Reset position	S / U*
			Ensures Turbine LP and HP Stop valves fully open and the white TRIP CIRCUIT AVAIL light is lit, then release the Trip/Reset switch	S / U
	Comments:			
	6	Roll RFP "A" turbine and slowly increase speed to 800 rpm	Depresses increase arrow as necessary to increase and hold turbine speed at ≈ 800 rpm.	S / U*
	Comments:			
	7	Ensure turbine turning gear automatically disengages	If engaged, verifies the turning gear disengages. (Green light lit)	S / U
	Comments:			
	8	Transfer controller to MDEM	Transfers RFW-SC-601A to MDEM by depressing the MDEM pushbutton	S / U*
	Comments:			
	9	Increases RFP "A" speed to ≈ 1800 rpm	Depresses increase arrow on RFW-SC-601A until turbine rpm reaches ≈ 1800 rpm	S / U*
	Comments:			

REACTOR FEED PUMP QUICK RESTART

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	10	Ensure turbine turning gear is off	Ensures turbine turning gear control switch is in the OFF position. (green light on)	S / U
	Comments:			
	11	Attain desired discharge feed rate	Adjusts RFP "A" turbine speed controller RFW-SC-601A until desired feed rate is established.	S / U*
Termination Cue: The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: RFP "A" was manually tripped 5 minutes ago. The RFP is fully operational.

Cue:

You have been directed by the CRS to perform a quick restart of the "A" RFP and return it to service per PPM 2.2.4.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0371-N-RFW SRX-0366-N-RFW	**Validation Time:**	16 Minutes
Prerequisiste Training:	82-BST-3000-LP	**Time Critical:**	No
PPM Reference:	2.2.4 Rev.22	**Location:**	Simulator
NUREG 1123 Ref:	259001A4.02 (3.9/3.7)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/20/96

REACTOR FEED PUMP QUICK RESTART

STUDENT JPM INFORMATION CARD

Initial Conditions: RFP "A" was manually tripped 5 minutes ago. The RFP is fully operational.

Cue:

You have been directed by the CRS to perform a quick restart of the "A" RFP and return it to service per PPM 2.2.4.

REACTOR FEED PUMP QUICK START

259001A4.02 Reactor Feedwater System
Ability to manually operate and/or monitor in the control room manually start/control a RFP/TDRFP. (3.9/3.7)

Question:
With RFW-SC-601A in MDVP, how is this signal processed to change TDRFP speed?

Answer:
Controller output is processed directly through the Signal Processing Enclosure (SPE) in the Control Room to the Turbine Termination Enclosure (TTE) in the individual feedpump room where the on-line LPEHC controller repositions the governor valve.

Reference:
LR000060, Feedwater Level Control System (Digital Feedwater Modification)

Comments:

Question:
The plant has increased power from 40% to 45%. TDRFP governor valve position indication has lowered. How is this possible?

Answer:
Extraction steam supply to the TDRFP has increased causing speed to increase. The Speed Changer responds by closing the governor valve to control TDRFP speed.

Reference:
RFW Systems Text

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: SYNCHRONIZ THE MAIN GENERATOR WITH THE GRID

LESSON LENGTH: 9 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000172	Rev. No.	7
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Larry Monroe DATE: 10/13/94

REVISED BY: Randy Guthrie DATE: 8/20/96

TECHNICAL REVIEW BY ____________ DATE ______

INSTRUCTIONAL REVIEW BY ____________ DATE ______

APPROVED BY ____________ DATE ______
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
8

Malfunctions/Remote Triggers:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
Perform steps 1 - 10 of PPM 2.5.7 Section 5.4.

Verify South bus (PCB 4885) is selected for synchronization.

Task Standard:
Control Room manipulations are performed to synchronize and load the main generator on the grid at the proper voltage, frequency, and phase in the AUTO mode per plant procedures..

RESULTS OF JPM:

Examinee (Please Print): ____________________

Evaluator (Please Print): ____________________

Overall Evaluation	(Circle One) SAT / UNSAT	**Exam Code**

Simulator IC Used	**Validation/Critical Time**	**JPM Completion Time**
N/A	9 Minutes / NA	

Comments: ____________________

Evaluator's Signature: ____________________ **Date:** ____________________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
Note: JPM steps occur at H13-P800 and H13-P802 unless otherwise noted	1	Place generator voltage regulation in automatic	Places voltage regulator control switch to the ON (RESET) position	S / U
Cue: Dittmer dispatch has been notified of intention to synchronize the main generator. They have verified MOD positions and aligned to the South bus.	Comments:			
	2	Adjust turbine speed	Adjusts turbine speed to 1802 - 1804 rpm using DEH as follows:	
			Depresses REF	S / U*
			Enters speed setpoint of 1802 - 1804 rpm on numerical keyboard	S / U*
			Depresses ENTER	S / U*
			Depresses ACCEL RPM/MIN	S / U*
			Enters desired acceleration rate (approximately 25 RPM/MIN)	S / U*
			Depresses GO	S / U*
	Comments:			
	3	Aligns ASHE breaker #1 (PCB 4885) for auto synch	Places ASHE breaker #1 (PCB 4885) synch slector switch in AUTO and observes synchroscope and voltmeter	S / U*
	Comments:			

SYNCHRONIZE THE MAIN GENERATOR WITH THE GRID

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	4	Ensure synchroscope is rotating slowly in the fast direction	Adjusts turbine speed as necessary to ensure synchroscope rotating slowly in the fast direction	S / U
	Comments:			
	5	Adjust generator synch voltage	Operates main generator exciter voltage adjuster as necessary until synch voltage (500 KV incoming) is equal to bus voltage (500 KV running) ± 15KV	S / U*
	Comments:			
	6	Select Load Rate	Depresses LOAD RATE MW/MIN	S / U*
			Enters load rate of 200 MWe/Min on keypad	S / U*
			Depresses ENTER pushbutton	S / U*
Note: Closing PCB 4885 will cause REFERENCE and REFERENCE DEMAND windows to show calculated MW not actual MW	Comments:			
	7	Close generator breaker	Places PCB 4885 control switch in CLOSE when synchroscope pointer passes the 11 o'clock position	S / U*
			Checks PCB 4885 closed (red light on)	S / U
	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	8	Set generator load	Depresses the REFERENCE button	S / U*
			Enters load setpoint of 300 Mwe on keypad	S / U*
			Depresses ENTER button	S / U*
			Depresses GO button	S / U*
			Depresses HOLD button when both of the following conditions exist: Positive Mwe shown on vertical board digital display H13-P820.B1-4.5, TG MOTORING alarm clears	S / U*
	Comments:			
	9	Turn off synchroscope	Places SYNC SELECTOR switch for breaker 4885 in OFF	S / U
	Comments:			
	10	Place the voltage stabilizer in service	Places the Voltage Stabilizer control switch in the ON position	S / U
Termination Cue: The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -______ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: All prerequisites for synchronizing and initially loading the generator have been met.

PPM 2.5.7 Section 5.4 has been completed through Step 10.

Cue:

The CRS has directed you to synchronize the generator to the grid and apply initial load.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0323-N-TG	**Validation Time:**	9 Minutes
Prerequisiste Training:	82-RSY-0502-L5	**Time Critical:**	No
PPM Reference:	2.5.7 Rev 25	**Location:**	Simulator
NUREG 1123 Ref:	262001A4.04 (3.6/3.7)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/20/96

STUDENT JPM INFORMATION CARD

Initial Conditions: All prerequisites for synchronizing and initially loading the generator have been met.

PPM 2.5.7 Section 5.4 has been completed through Step 10.

Cue:

The CRS has directed you to synchronize the generator to the grid and apply initial load.

SYNCHRONIZE THE MAIN GENERATOR WITH THE GRID

262001A4.04 AC Electrical Distribution
Ability to manually operate and/or monitor in the control room synchronizing and paralleling of different AC supplies.
(3.6/3.7)

Question:
The procedure cautions against unnecessary delays in loading the generator to prevent turbine rotor cooling and heating of the last stage blades. What is the mechanism that causes the heating of the turbine blades?

Answer:
The flow of steam provides cooling to the last stage blades, with low steam flow past these blades, they windmill in the condenser atmosphere where the friction of the blades moving causes them to heat up.

Reference:
PPM 2.5.7

Comments:

Question:
When would manual synchronization of the generator be performed and what are the potential problems?

Answer:
With the Auto Synchronization feature INOP and with Shift Manager approval. Delays in the BPA supervisory system may result in an out of phase synchronization of the generator.

Reference:
PPM 2.5.7

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: OPERATE SLC BORON SYSTEM FOR RPV INJECTION

LESSON LENGTH: 5 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000217	Rev. No.	7
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Carl Golightly DATE: 4/4/95

REVISED BY: Randy Guthrie DATE: 8/22/96

TECHNICAL REVIEW BY ______ DATE ______

INSTRUCTIONAL REVIEW BY ______ DATE ______

APPROVED BY ______ DATE ______
Training Manager

Matrix Update	Vision #	WP Update	WA

OPERATE SLC BORON SYSTEM FOR RPV INJECTION

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:

Any

Malfunctions:

MOV RWU10 5,0,D   RWCU-V-4 fails to auto isolate

Overrides (Optional):

N/A

Special Setup Instructions:

The above malfunction must be inserted before the examinee starts the JPM if desired.

SLC injection will result in a power decrease that could interfere with other JPMs being evaluated during the same session.

The examinee may not initially use a procedure for this JPM because it is an EOP action. SLC may be initiated without a procedure and then the procedure may be referenced for verification.

Task Standard:

Both SLC pumps injecting boron into the RPV and key system parameters verified.

RESULTS OF JPM:

Examinee (Please Print): ______________________________

Evaluator (Please Print): ______________________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	5 Minutes / NA	

Comments: ______________________________

Evaluator's Signature: ______________________ **Date:** ______________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
Note: If desired to prevent auto closure of RWCU-V-4, ensure malfunction is inserted at this time **Note:** All steps occur at H13-P603 unless otherwise noted	1	Activate SLC system	Removes both blanks from and reinserts both keys into SLC System Manual Control Switches Places both Manual Controls Switches in OPERATE	S / U S / U*
	Comments:			
	2	Check squib valves actuated	Checks both squib valves actuated as follows: Verifies white circuit ready lights extinguished Verifies SLC-V-4A Loss Of Continuity BISI illuminated Verifies SLC-V-4B Loss Of Continuity BISI illuminated Verifies annunciator H13-P603.A7-6.2, SLC DIV 1 OUT OF SERVICE alarming Verifies annunciator H13-P603.A8-6.8, SLC DIV 2 OUT OF SERVICE alarming	 S / U S / U S / U S / U S / U
	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	3	Ensure SLC storage tank outlet valves are open	Verifies SLC-V-1A and SLC-V-1B are open (red lights on)	S / U
	Comments:			
	4	Ensure SLC pumps start	Ensures both SLC pumps started (red lights on)	S / U
	Comments:			
	5	Check indications of SLC system flow into the reactor	Verifies SLC system pressure increases to GT reactor pressure as indicated on SLC-PI-600 Verifies SLC system flow reaches ≈86 gpm as indicated on SLC-FI-1	S / U
	Comments:			
Note: This step N/A if malfunction was not inserted	6	Recognizes failure of RWCU to isolate	Informs CRS of failure of RWCU-V-4 to isolate	S / U*
Role Play: As CRS acknowledge failure to isolate and direct attempt to manually isolate RWCU	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
Note: This step N/A if malfunction was not inserted	7	Isolates RWCU	At H13-P602, Manually isolates RWCU **Either:** Places Control switch for RWCU-V-4 to close (green light on, red light off) **Or:** Places Control switch for RWCU-V-1 to close (green light on, red light off)	S / U*
	Comments:			
Note: This step N/A if malfunction was inserted	8	Ensure RWCU auto isolates	At H13-P602, verifies RWCU-V-4 closes (green light on, red light off)	S / U
	Comments:			
	8	Monitor reactor power decreasing	Verifies APRMs indicate decreasing reactor power	S / U
Note: Power will not be lowering immediately after initiation **Cue:** After 5 minutes, reactor power has dropped by 2%	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	9	Ensure SLC storage tank level decreasing	Verifies SLC storage tank level dropping as indicated on SLC-LI-601	S / U
Note: SLC tank level will not be lowering immediately after initiation **Cue:** After 5 minutes, SLC tank level has dropped by 450 gallons **Termination Cue:** The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

OPERATE SLC BORON SYSTEM FOR RPV INJECTION

JPM INFORMATION CARD

Initial Conditions: An ATWS condition exists, PPM 5.1.2 has been entered.

Cue:

The CRS has directed you to initiate SLC injection with both SLC pumps per PPM 2.4.1, Section 5.3..

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0245-N-SLC	**Validation Time:**	5 Minutes
Prerequisiste Training:	82-RSY-0904-L1	**Time Critical:**	No
PPM Reference:	2.4.1 Rev 14	**Location:**	Simulator
NUREG 1123 Ref:	211000A4.04 (4.5/4.6)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/22/96

STUDENT JPM INFORMATION CARD

Initial Conditions: An ATWS condition exists, PPM 5.1.2 has been entered.

Cue:

The CRS has directed you to initiate SLC injection with both SLC pumps per PPM 2.4.1, Section 5.3..

OPERATE SLC BORON SYSTEM FOR RPV INJECTION

211000A4.04 **Standby Liquid Control System**
Ability to monitor and/or operate in the control room reactor power.
(4.5/4.6)

Question:
What are the requirements for initiation of Standby Liquid Control (SLC)?

Answer:
Performing PPM 5.1.2 prior to Wetwell temperature reaching 110 degrees F.

Reference:
PPM 5.0.10

Comments:

Question:
After SLC initiation, when can boron injection be stopped?

Answer:
SLC-TK-1 indicating less than 100 gallons or existing control rod pattern alone can always assure reactor shutdown

Reference:
PPM 5.1.2 Reactor Power Leg

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: STARTUP CONTROL ROOM VENTILATION

LESSON LENGTH: 6 Min   MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000209	Rev. No.	5
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Sean Dallago   DATE: 9/7/92

REVISED BY: Randy Guthrie   DATE: 8/21/96

TECHNICAL REVIEW BY: ____   DATE: ____

INSTRUCTIONAL REVIEW BY: ____   DATE: ____

APPROVED BY: ____ ____   DATE: ____
Training Manager

Matrix Update	Vision #	WP Update	WA

STARTUP CONTROL ROOM VENTILATION

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
Any

Malfunctions:
N/A

Overrides (Optional):

RWB25C 1,0,D	Control switch for WMA-FN-51A overriden to OFF
RWB26C 1,0,D	Control switch for WMA-FN-51B overridden to OFF

After failure to start is reported to the CRS:
RWB25C CLR
RWB26C CLR

Special Setup Instructions:
Stop the running control room supply fans, WMA-FN-51A and WMA-FN-51B by placing the control switches to OFF

Task Standard:
Control room ventilation started in accordance with PPM 2.10.3.

RESULTS OF JPM:

Examinee (Please Print): ______________________________

Evaluator (Please Print): ______________________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	6 Minutes / NA	

Comments: ______________________________

Evaluator's Signature: ______________________________ Date: ______________________________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
Note: All steps occur at H13-P826 unless otherwise noted	1	Set damper control switches to auto	Ensures the following controls switches are in AUTO: WMA-AD-54A2 (54B2) WMA-AD-54A1 (54B1) WMA-AD-51A1 (51B1)	 S / U S / U S / U
Note: If failure of WMA-FN-51A or WMA-FN-51B is desired, ensure overrides are inserted	Comments:			
	2	Start control room recirc fan	Places control switch for WMA-FN-51A (51B) to ON	S / U*
	Comments:			
Note: This step N/A if overrides were not inserted	3	Recognizes control room recirc fan failure	Informs CRS of failed control room fan	S / U*
Role Play: As CRS, take responsibility for investigation. **Note:** Clear overrides at this time **Cue:** As CRS, report problem has been identified and corrected, direct continuation of procedure	Comments:			

STARTUP CONTROL ROOM VENTILATION

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
Note: This step N/A if overrides were not inserted	4	Start control room recirc fan	Places control switch for WMA-FN-51A (51B) to ON	S / U*
	Comments:			
	5	Confirm outside air damper opens for the running fan	Confirms WMA-AD-51A1 (51B1) automatically opens (red light on)	S / U
	Comments:			
	6	Place standby fan control switch in auto	Places WMA-FN-51B (51A) control switch to AUTO	S / U
	Comments:			
	7	Confirms outside air damper remains closed for the standby fan	Confirms WMA-AD-51B1 (51A1) remains closed (green light on)	S / U
	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	8	Ensures equipment is operating properly	Verifies annunciator H13-P826.P1-5.2 (P2.-5.3) CR FLTR 51A (51B) dP HIGH/LOW clears following fan start	S / U
			Contacts EO to check cooling coil WMA-CC-51A2 (51B2) in service	S / U
Role Play As EO acknowledge and report cooling coil in service **Termination Cue:** The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: Control Room HVAC is shutdown following brief maintenance on a section of common ductwork.

Valve and power supply checklists are complete.

Prerequisites are met for Control Room HVAC system start.

Cue:

The CRS has directed you to start Control Room ventilation per PPM 2.10.3 Section 5.1.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0498-N-CR-HVAC	**Validation Time:**	6 Minutes
Prerequisiste Training:	82-RSY-1304-L6	**Time Critical:**	No
PPM Reference:	2.10.3 Rev 25	**Location:**	Simulator
NUREG 1123 Ref:	290003Ga09 (3.6/3.5)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/21/96

STUDENT JPM INFORMATION CARD

Initial Conditions: Control Room HVAC is shutdown following brief maintenance on a section of common ductwork.

Valve and power supply checklists are complete.

Prerequisites are met for Control Room HVAC system start.

Cue:

The CRS has directed you to start Control Room ventilation per PPM 2.10.3 Section 5.1.

290003GA09 **Control Room HVAC**
Ability to locate and operate components, including local controls.
(3.6/3.5)

Question:
What permissives are required to be satisfied for WMA-TIC-11A to control temperature in the control room?

Answer:
Emergency Chill Water Pump 1A control switch in "AUTO", and
Recirculation Fan, WMA-FN-1A, "ON" or has "AUTO STARTED", and
"RUN/AUTO" switch on HVAC local control rack in the "AUTO" position, and
Emergency Chill Water system pressure GE 100psig.

Reference:
EWD-84E-0017

Comments:

Question:
The FSAR requires control room temperature to be maintained 72 °F to 78 °F (Normal). Why is the Technical Specification Allowable Value for control room temperature <104 °F (Emergency)?

Answer:
104 °F is based on Standby Service Water supply to the air handling units (RadWaste chillers INOP).

Reference:
FSAR 6.4.2.2

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: RESTART OF RPS-MG-1

LESSON LENGTH: 6 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000251	Rev. No.	4
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Donald Hughes DATE: 4/14/95

REVISED BY: Randy Guthrie DATE: 8/22/96

TECHNICAL REVIEW BY ______ DATE ______

INSTRUCTIONAL REVIEW BY ______ DATE ______

APPROVED BY ______ DATE ______
Training Manager

Matrix Update	Vision # 729	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
N/A

Malfunctions:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
N/A

Task Standard:
Simulate steps which would restart RPS-MG-1 per PPM 2.7.6.

RESULTS OF JPM:

Examinee (Please Print): ______________________________

Evaluator (Please Print): ______________________________

Overall Evaluation	(Circle One) SAT / UNSAT	**Exam Code**

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	6 Minutes / NA	

Comments: ______________________________

Evaluator's Signature: ______________________ **Date:** ______________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
Note: All steps occur in Div A RPS Motor Generator (MG) room at RW Building 467'	1	Ensure MG supply breaker is closed	At MC7A/1B, ensures RPS-Bus Mtr Gen. Set MG-1 switch is closed (vertical position)	S / U
Cue: Switch is in vertical position	Comments:			
	2	Ensure the motor is off	At C72-S001-A, ensures green MOTOR OFF light is lit	S / U
Cue: Green light is lit	Comments:			
	3	Ensure MG output breaker is open	At RPS-MG-1 panel, ensures Generator Output breaker is in OFF	S / U
Cue: Breaker is open	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	4	Start the RPS MG set	Depresses and holds MOTOR ON pushbutton	S / U*
			Ensures green MOTOR OFF light extinquishes and red MOTOR ON light is lit	S / U
			Releases MOTOR ON pushbutton when MG speed increase stops	S / U
Cue: Red light is on, green light is off, motor pitch is constant **Cue:** When examinee checks voltage, no voltage is indicated	Comments:			
	5	Reset the overvoltage trip	At RPS-MG-1 panel, momentarily depresses then releases the MOTOR ON pushbutton	S / U*
Cue: Button is depressed	Comments:			
	6	Ensure voltage stabilizes at 120 VAC	Ensures voltage stable at 120 VAC on AC-VOLTS meter	S / U
Cue: Point out voltage stable at 120 VAC on AC-VOLTS meter	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	7	Close RPS MG output breaker	At RPS-MG-1 panel, places GENERATOR OUTPUT breaker in ON (pushed up)	S / U*
Cue: Breaker is closed **Termination Cue:** The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: RPS Division A has been de-energized due to a spurious fault. The fault has been identified and corrected.

Cue:

The CRS has directed you to restart RPS-MG-1 per PPM 2.7.6.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0247-N-RPS	**Validation Time:**	6 Minutes
Prerequisiste Training:	N/A	**Time Critical:**	No
PPM Reference:	2.7.6 Rev 11	**Location:**	Plant
NUREG 1123 Ref:	212000GA9 (4.2/4.2)	**Performance Method:**	Simulate
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/22/96

STUDENT JPM INFORMATION CARD

Initial Conditions: RPS Division A has been de-energized due to a spurious fault. The fault has been identified and corrected.

Cue:

The CRS has directed you to restart RPS-MG-1 per PPM 2.7.6.

THE PERFORMANCE OF THIS JPM WILL BE SIMULATED. CONTROL MANIPULATIONS WILL NOT BE PERFORMED.

RESTART OF RPS-MG-1

212000GA9 **Reactor Protection System**
Ability to locate and operate components, including local controls
(4.2/4.2)

Question:
Following an RPS actuation, the scram signal cannot be reset for 10 seconds after the mode switch is respositioned to SHUTDOWN. What is the purpose of this time delay?

Answer:
Prevents the scram valves from closing prior to full rod travel.

Reference:
RPS System Text

Comments:

Question:
What is the purpose of the EPA breakers in the power supply to the RPS busses?

Answer:
Protects the Class 1E power supply from the Non-Class 1E RPS busses.

Reference:
RPS System Text

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: REDUCE SUPPRESSION POOL LEVEL FROM THE RSD PANEL

LESSON LENGTH: 5 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000145	Rev. No.	7
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Roger Scott DATE: 9/20/93

REVISED BY: Randy Guthrie DATE: 8/20/96

TECHNICAL REVIEW BY: DATE:

INSTRUCTIONAL REVIEW BY: DATE:

APPROVED BY: DATE:
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
N/A

Malfunctions/Remote Triggers:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
N/A

Task Standard:
Remote Shutdown Panel control manipulations are performed in accordance with plant procedures to reduce suppression pool level.

RESULTS OF JPM:

Examinee (Please Print): ______________________________

Evaluator (Please Print): ______________________________

Overall Evaluation	(Circle One) SAT / UNSAT	**Exam Code**

Simulator IC Used	**Validation/Critical Time**	**JPM Completion Time**
N/A	5 Minutes / NA	

Comments: ______________________________

Evaluator's Signature: ____________________ **Date:** ____________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
	1	Ensures RHR-B is in Suppression Pool Cooling	Ensures RHR-B is in Suppression Pool Cooling per Section 5.9	S / U
Cue: RHR-B is in Suppression Pool Cooling per PPM 4.12.1.1 Section 5.9	Comments:			
	2	Notifies Radwaste that water is being transferred	Notifies Radwaste that water is to be transferred to Radwaste from the Suppression Pool with RHR	S / U
Cue: Radwaste acknowledges transfer of water from the Suppression Pool with RHR	Comments:			
	3	Locally opens RHR-V-40 to ≈25%	Directs Ops 2 to open RHR-V-40 using the handwheel to ≈25% at RB 548 B HX RM	S / U*
Cue: Ops 2 reports that RHR-V-40 is open ≈25%	Comments:			

REDUCE SUPPRESSION POOL LEVEL FROM THE RSD PANEL

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	4	Opens RHR-V-49	Places control switch for RHR-V-49 to the OPEN position (Red light on, green light off)	S / U*
Note: Procedure allows increasing reject flow by throttling RHR-V-24B closed and opening RHR-V-40 GT 25% **Cue:** Red light is on above RHR-V-49 control switch **Cue:** Suppression Pool Level is slowly lowering **Cue:** The CRS directs you to increase rate of reject	Comments:			
	5	Throttles closed RHR-V-24B	Places control switch for RHR-V-24B to CLOSE and releases	S / U
Cue: Green and red lights are lit above RHR-V-24B control switch **Cue:** Suppression pool level is now lowering **Cue:** When suppression pool level is rechecked, report level now at -2"	Comments:			
	6	Reopens RHR-V-24B	Places control switch for RHR-V-24B to OPEN and holds until fully open	S / U
Cue: Red light is lit above RHR-V-24B control switch	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	7	Closes RHR-V-49	Places control switch for RHR-V-49 to the CLOSE position (Green light on, red light off)	S / U*
Cue: Green light is lit above RHR-V-49 control switch	Comments:			
	8	Leaves RHR-V-40 as-is	Directs Ops 2 to leave RHR-V-40 as-is	S / U
Cue: Ops 2 acknowledges leave RHR-V-40 as-is **Termination Cue:** The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: The Control Room has been abandoned due to a fire in the back panels.

The Remote Shutdown Panel is manned with Div-2 equipment OPERABLE.

Conditions are satisfied for the use of shutdown cooling EXCEPT that suppression pool level is high and must be lowered to -2".

RHR-B is in suppression pool cooling.

Cue:

> *The CRS has directed you to reduce suppression pool level to prepare for shutdown cooling using PPM 4.12.1.1 starting at Section 5.10.*

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0117-A-RSP SRO-0251-A-RSP	**Validation Time:**	5 Minutes
Prerequisiste Training:	82-RSY-1304-L3	**Time Critical:**	No
PPM Reference:	4.12.1.1 Rev 24	**Location:**	Plant
NUREG 1123 Ref:	219000A4.13 (3.9/3.8)	**Performance Method:**	Simulate
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/20/96

STUDENT JPM INFORMATION CARD

Initial Conditions: The Control Room has been abandoned due to a fire in the back panels.

The Remote Shutdown Panel is manned with Div-2 equipment OPERABLE.

Conditions are satisfied for the use of shutdown cooling EXCEPT that suppression pool level is high and must be lowered to -2".

RHR-B is in suppression pool cooling.

Cue:

The CRS has directed you to reduce suppression pool level to prepare for shutdown cooling using PPM 4.12.1.1 starting at Section 5.10.

REDUCE SUPPRESSION POOL LEVEL FROM THE RSD PANEL

21900A4.13 **RHR/LPCI: Torus/Suppression Pool Cooling Mode**
Ability to manualy operate and/or monitor in the control room suppression pool level.
(3.9/3.8)

Question:
When initiating RHR shutdown cooling, suppression pool level is recommended to be low. Why is this necessary?

Answer:
Initial system alignment/startup will add water to the suppression pool and if not lowered initially, may cause level to rise above EOP entry conditions. (+2")

Reference:
PPM 4.12.1.1

Comments:

Question:
With suppression pool level off-scale low, a manual determination of level is required using a conversion factor for pressure. Which instrument is preferred and why?

Answer:
LPCS local suction pressure instrument. The range of this instrument is 0 - 30 and is more accurate for coversion purposes than other ECCS suction pressure indications.

Reference:
PPM 4.12.1.1

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: PERFORM MANUAL START OF HPCS DG FROM LOCAL PANEL

LESSON LENGTH: 17 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code	LR000199	Rev. No.	7
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Randy Guthrie DATE: 8/3/95

REVISED BY: Randy Guthrie DATE: 8/21/96

TECHNICAL REVIEW BY ______ DATE ______

INSTRUCTIONAL REVIEW BY ______ DATE ______

APPROVED BY ______ DATE ______
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
N/A

Malfunctions:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
N/A

Task Standard:
The HPCS diesel generator is started locally per PPM 2.7.3, Section 5.6.

RESULTS OF JPM:

Examinee (Please Print): ______________________

Evaluator (Please Print): ______________________

Overall Evaluation	(Circle One) SAT / UNSAT	**Exam Code**

Simulator IC Used	**Validation/Critical Time**	**JPM Completion Time**
	17 Minutes / NA	

Comments: ______________________

Evaluator's Signature: ______________________ **Date:** ______________________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
Note: All steps occur at the engine mounted control panel E-CP-DG/EP3 unless otherwise stated	1	Verify alignment of Unit Mode Selector Switch	Ensures Unit Mode Sel Sw is in MAINT Ensures green light lit	S / U S / U
Cue: Unit mode selector switch is in MAINT and the green light is lit	Comments:			
	2	Ensure annunciators are clear	At E-CP-DG/RP3 ensures annunciator alarms are clear except drop 1.1 and 3.1 Contacts Control Room and verifies annunciator alarms clear on H13-P601 except drop 6.8	S / U S / U
Cue: All alarms are clear except drop 1.1, 3.1 and drop 6.8 at H13-P601	Comments:			
	3	Place DG mode selector switch in local	Contacts Control Room to have Diesel Generator Mode Selector Switch at H13-P601 place in the LOCAL position	S / U*
Cue: DG mode selector switch is in LOCAL	Comments:			
	4	Shut down diesel generator space heater	At E-CP-DG/CP3 opens BKR 1	S / U
Cue: BKR 1 is open	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	5	Lowers hydraulic governor setpoint to minimum	Holds hydraulic governor control switch to LOWER until governor motor stops (located on top of governor box on the diesel) then releases switch	S / U*
Cue: Hydraulic governor setpoint is at minimum	Comments:			
	6	Starts the HPCS DG	At E-CP-DG/EP1 depresses diesel UNIT START pushbutton	S / U*
Cue: The HPCS DG is running **Cue:** If the operator checks the red 40, 250, 450 and R1 relay lights, they are lit	Comments:			
	7	Confirms diesel accelerates normally	Checks HPCS-SI-DG3 to confirm DG speed is 425-475 rpm	S / U
Cue: The HPCS DG is running at 450 rpm **Note:** Low air pressure may alarm following DG start, low water pressure should be alarmed and will clear at ≈700 rpm	Comments:			
	8	Ensures air start motors auto disengage	Ensures air start motors disengaged either visaully or audibly	S / U
Cue: Air start motors are disengaged **Note:** Procedure directs diesel shutdown if start motor engagement is detected	Comments			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	9	Verify adequate oil in starting air in-line lubricators	Ensures adequate oil in the starting air in-line lubricator using the method directed in Attachment 6.5	S / U
Cue: There is adequate oil in the starting air in-line lubricators	Comments:			
	10	Checks governor oil level	Ensures governor oil level has dropped to normal operating band using the method directed in Attachment 6.3	S / U
Cue: Governor oil level is normal	Comments:			
Cue: DSA-C-1C is running	11	Ensure DSA-F-3 dP is <10 psid	Ensures DSA-DPI-1C reads LT 10 psid	S / U
Cue: DSA-C-1C reads 6 psid	Comments:			
	12	Informs Control Room of DG start	Contacts Control Room Supervisor to log DG start	S / U
Cue: CRS acknowledges start and has classified and logged the start	Comments:			
Cue: The DG has been idling normally for 7 minutes and the oil is now hot	13	Checks crankcase oil level	Checks crankcase oil level with dipstick Logs level in Attachment 6.3	S / U S / U
Cue: Crankcase oil level has been logged in Attachment 6.3	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	14	Checks starting air pressure	Checks DSA-PI-11 and DSA-PI-12 indicating less than 206 psig	S / U
Cue: Starting air pressure indicating 190 psig on both indicators	Comments:			
Cue: The DG has been operating for 12 minutes at idle	15	Raises engine speed to 925 rpm	Uses hydraulic governor control to set engine speed to 925 rpm as indicated on HPCS-SI-DG3	S / U*
Cue: HPCS DG speed indicates 925 rpm	Comments:			
	16	Align Unit Mode Selector Switch	At E-CP-DG/EP3 places Unit Mode Sel Sw in AUTO	S / U*
			Observes red light illuminates	S / U
Cue: Unit mode selector switch is in AUTO and the red light is illuminated	Comments:			
	17	Ensures generator voltage is correct	Ensures HPCS Supply Voltmeter Source Selector switch in the GEN position	S / U
			Ensures HPCS-VM-DG3/SM4 reads 3740 - 4580 VAC	S / U
Cue: Generator voltage indicates 4000 VAC	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	18	Ensures proper ventilation in diesel room	Ensure DEA-FN-31 and DMA-FN-31 running	S / U
Cue: Diesel generator room ventilation fans are running **Cue:** Normal diesel engine operation has been verified using Attachement 6.3 **Termination Cue:** The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: A manual start of DG-3 is in progress and PPM 2.7.3 Section 5.6 has been completed through Step 17

The plant is in a NON-EMERGENCY condition, SM-2 is energized from TR-S

DG-3 Governor droop switch is in DROOP.

HPCS service water is in service.

Generator space heater breaker is open.

All HPCS diesel generator annunciators are clear except for H13-P601.A1.6-8, HPCS System Out Of Service.

Cue:

The CRS has directed you to continue the DG-3 local start using PPM 2.7.3, Section 5.6.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

Tools/Equipment: None

Safety Items: None

Task Number:	RO-0706-N-DGHP	**Validation Time:**	17 Minutes
Prerequisiste Training:	82-RSY-1305-L5	**Time Critical:**	No
PPM Reference:	2.7.3 Rev 26	**Location:**	Plant
NUREG 1123 Ref:	264000A4.04 (3.7/3.7)	**Performance Method:**	Simulate
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/21/96

STUDENT JPM INFORMATION CARD

Initial Conditions: A manual start of DG-3 is in progress and PPM 2.7.3 Section 5.6 has been completed through Step 17

The plant is in a NON-EMERGENCY condition, SM-2 is energized from TR-S

DG-3 Governor droop switch is in DROOP.

HPCS service water is in service.

Generator space heater breaker is open.

All HPCS diesel generator annunciators are clear except for H13-P601.A1.6-8, HPCS System Out Of Service.

Cue:

The CRS has directed you to continue the DG-3 local start using PPM 2.7.3, Section 5.6.

CONTROL MANIPULATIONS WILL NOT BE PERFORMED. ALL ACTIONS AND STEPS WILL BE SIMULATED.

PERFORM MANUAL START OF HPCS DG FROM LOCAL PANEL

264000A4.04 **Emergency Generators (Diesel/Jet)**
Ability to manually operate and/or monitor in the control room manual start, loading, and stopping of emergency generator (Plant Specific).
(3.7/3.7)

Question:
With the generator synchronized, what are the indications of an underexcited generator and what actions would you take for this condition?

Answer:
KVAR meter deflected downscale, immediately unload the generator and trip the output breaker.

Reference:
PPM 2.7.3

Comments:

Question:
Why is SM-2 transferred to TR-N prior to synchronizing DG-3?

Answer:
To prevent parallelling DG-3 with the Main Generator

Reference:
PPM 2.7.3

Comments:

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: GENERATOR CAPABILITY CURVE INTERPRETATION

LESSON LENGTH: 5 Min MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code		Rev. No.	
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Randy Guthrie DATE: 8/23/96

REVISED BY: ____ DATE: ____

TECHNICAL REVIEW BY: ____ DATE: ____

INSTRUCTIONAL REVIEW BY: ____ DATE: ____

APPROVED BY: ____ DATE: ____
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:

14

Malfunctions:

N/A

Overrides (Optional):

N/A

Special Setup Instructions:

Trip the "A" RRC pump and allow plant conditions to stabilize.

Ensure annunciator 4.800.C3 8-7, Main Generator Overexcitation alarm is in

Task Standard:

Succesful determination of generator operating conditions on the generator capability curve.

RESULTS OF JPM:

Examinee (Please Print): ____________________

Evaluator (Please Print): ____________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	5 Minutes / NA	

Comments: ____________________

Evaluator's Signature: ____________________ Date: ____________________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
	1	Locates Generator Capabilty Curve	Locates Generator Capability Curve: (PPM 2.5.7 Attachment 6.6)	S / U
	Comments:			
	2	Determines generator hydrogen pressure	Determines generator hydorgen pressure: (H13-P820, H2-PI-1)	S / U
	Comments:			
	3	Determines generator MWe	Determines generator MWE (H13-P820, DEH Panel or H13-P800 Indicators or Recorders)	S / U
	Comments:			
	4	Determines generator reactive load	Determines generator MVAR (H13-P820, DEH Panel or H13-P800 Indicators or Recorders)	S / U
	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	5	Determines plant operating conditions on Generator Capability curve	Determines plant operating conditions on generator capability curve (PPM 2.5.7 Attachment 6.6)	S / U*
Termination Cue: The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: The plant was operating at 100% rated thermal power when RRC pump "A" tripped.

Operators are responding to the pump trip..

Annunciator H13-P800.C3.8-7, MAIN GENERATOR OVEREXCITATION has just been received.

Cue:

The CRS has directed you to determine generator operating conditions on the Generator Capability Curve.

Tools/Equipment: None

Safety Items: None

Task Number:		**Validation Time:**	5 Minutes
Prerequisiste Training:		**Time Critical:**	No
PPM Reference:	2.5.7 Rev 25 4.800.C3 8-7 Rev 5	**Location:**	Simulator
NUREG 1123 Ref:	245000K1.01 (3.2/3.3) 245000A4.02 (3.1/2.9)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/23/96

STUDENT JPM INFORMATION CARD

Initial Conditions: The plant was operating at 100% rated thermal power when RRC pump "A" tripped.

Operators are responding to the pump trip..

Annunciator H13-P800.C3.8-7, MAIN GENERATOR OVEREXCITATION has just been received.

Cue:

The CRS has directed you to determine generator operating conditions on the Generator Capability Curve.

8-7 MAIN GENERATOR OVEREXCITATION

8-7 WINDOW	SOURCE	AUTOMATIC ACTIONS
MAIN GENERATOR OVEREXCITATION	E-RLY-59/81G1 (1.26 V/HZ)	GE 1.32 V/Hz causes a generator trip after a time delay.

NOTE: This alarm is activated by a volts/hz relay and indicates either the generator voltage is high or the frequency is low.

1. Confirm V/Hz alarm by reading the digital V/Hz value on E-RLY-59/81G1 (Bd F).

2. If this alarm occurs during Main Turbine Generator Synchronizing with Grid or Main Turbine Generator normal shutdown, ensure indication on E-RLY-59/81G1 (H13-P842) is LT 1.32 V/HZ and continue with PPM 2.5.7, Main Turbine Generator.

NOTE: If system frequency is normal, then this relay is set to alarm at 105% (26,250 V, 1.26 V/Hz) of generator rated voltage, and a generator trip at 110% (27,500 V, 1.32 V/Hz) of generator rated voltage with a 10 minute time delay. When synchronizing the unit, it may be necessary to raise generator voltage above the alarm set point to match it with BPA 500 KV system voltage. This gives the Main Generator Overexcitation alarm, which is not a problem as long as the generator voltage is not kept above the trip set point (1.32V/Hz) for over 10 minutes, without synchronizing the unit (see table below).

3. Determine if the alarm is due to high voltage or low frequency.

4. If the terminal voltage is high, lower the voltage using either the Main Generator Exciter Voltage Adjuster or the Main Generator Exciter Base Adjuster.

5. If the frequency is low adjust the speed of the Main Turbine to 1800 rpm. (N/A if generator is syncronized)

	V/Hz	Required TD	Tolerance
Alarm Point SA	1.26	60 Sec	± 1 Sec
Trip Point S1	1.32	600 Sec	± 7 Sec
Trip Point S2	1.35	300 Sec	± 4 Sec
Trip Point S3	1.38	120 Sec	± 2.2 Sec
Trip Point S4	1.41	50 Sec	± 2.5 Sec
Trip Point S5	1.44	6 Sec	± 1.18 Sec
Trip Point S6	1.50	2 Sec	± 1.06 Sec

REFERENCES: EWD-51E-0044 E512-1 E521-11

Reference SWP-PRO-02

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

ORIGINAL

TEMPORARY CHANGE NOTICE

(12) CONTROL NUMBER 96-537

COMPLETED BY ORIGINATOR

(1) Procedure No: 2.5.7 (2) Current Rev. 25 (3) POC Review Required? [X] Yes [ ] No

(4) Title: MAIN TURBINE GENERATOR

(5) [ ] One-Time-Only - TCN NOT incorporated into procedure

(6) Procedures pages affected by this TCN: 37, 38

(7) Control No. of Incorporated Deviation/TCN: N/A

(8) Procedure pages affected by previous Deviation/TCN: N/A

(9) Summary of Changes

Changed Note on p. 37 and p. 38 to allow use of MSR second stage reheat at less than 660 MWe on recommendation from system engineer.

[ ] Continued

I certify this procedure TCN is in compliance with the criteria on page 2 of this form and SWP-PRO-02

Originated by: M. R. Johnson (10) Print Name | Signature: M Robert John | Date: 7/9/96

INTERIM APPROVAL OF TCN (SRO Approval required for TCNs to POC approved procedure.)

(11) Donald T. Hu... / 7-9-96 — Manager or Supervisor / Date

(11) D... 7-9-96 — Licensed SRO / Date

(13) 1733 / 7-9-96 — Implementation Time & Date

(14) Deadline for POC review and/or approval by Approving Authority (14 days from implementation): 7-23-96

DISTRIBUTION: (Each location must be initialed by individual distributing and/or integrating TCN)

(15) ORIGINATOR/DESIGNEE INTEGRATES

CONTROL ROOM (All Volumes)	S	STA DESK (CR) (Volume 13)	
SHIFT MANAGER (Volumes 1-5, 13, SWP)	S	EOP FLOWCHART (CR) (Volume 5)	
SCRAM BOOK (CR)		CR EMERGENCY SUPPORT (Volume 5.5 series)	

COMPLETED BY PROCEDURE CONTROL

(16) DISTRIBUTION: (Each location must be initialed by individual distributing and/or integrating TCN)

WC	CK	RWCR	CK	DG-2		EMERGENCY PREPAREDNESS	
TSC	CK	REMOTE		DG-3		AAP	
SIMULATOR	CK (2)	DG-1		OSC		OTHER	88

COMPLETED BY PROCEDURE SPONSOR

(17) Reason for Temporary Change (identify the one that most applies):

- [ ] Licensing Issue (e.g., Tech Spec, FSAR)
- [ ] ISCR
- [ ] Temporary Mod.
- [ ] Vendor Manual Change
- [ ] OER
- [ ] PMR
- [ ] Minor Mod
- [X] Procedure Enhanments
- [ ] TSSIP
- [ ] PERA/PTL
- [ ] Site Wide Procedure Prgoram
- [ ] Other (specify)

(18) ALARA review required per PPM 11.2.2.7? [ ] Yes [X] None Required

(19) ALARA Reviewer/Date

(20) Have all other affected procedures been revised or changed? [ ] Yes [X] None Required

(21) Has impact on Model Work Orders, SMS or PTL/RTS been determined and resolved with appropriate personnel? [ ] Yes [X] None Required

(22) Procedure Sponsor: M PRATT (Print Name) | Signature: M Pratt | Date: 7/9/96

APPROVAL

Approving Authority (Plant General Manager for POC reviewed procedures) (24) | Date: 7/18/96 | POC MEETING (if applicable) (23) 96-29

WASHINGTON PUBLIC POWER SUPPLY SYSTEM WNP-2 PLANT PROCEDURES MANUAL		VERIFY PRIOR TO USE DATE
PROCEDURE NUMBER *2.5.7	APPROVED BY	DATE 11/10/95
VOLUME NAME SYSTEM OPERATING PROCEDURES		
SECTION TURBINE GENERATOR AND AUXILIARIES		
TITLE MAIN TURBINE GENERATOR		

TABLE OF CONTENTS Page

1.0 PURPOSE

To provide operating instructions for operation of the Main Turbine Generator.

2.0 REFERENCES

2.1 LICSAR 00069 (Testing OPC, Mechanical and Electrical Overspeed Trip Mechanisms During Reactor Operation) {2.1}

2.2 GE SIL (OER 89075) Max Combined Flow Limiter Setting of 130% {2.2}

2.3 OER 80109C Turbine Generator Bearing Failure Caused by Turbine Lube Oil System Failure {2.3}

2.4 OER 86009J Asymmetric Turbine Loading {2.4}

2.5 PER 91-822, Stuck Open DEH Dump Valve {2.5}

2.6 PER 292-266, Emergency Oil Pump Pressure Test {2.6}

2.7 OER 91031CA, Turbine Failure Caused By Overspeed {2.7}

2.8 PER 293-411, EOP Start Test {2.8}

2.9 M502, Main and Exhaust Steam Flow Diagram

2.10 CVI 01-00,82, EH Fluid System & Lube Diagram (Info only)

2.11 M960, Main Turbine Oil System Flow Diagram

2.12 M959, Electro-Hydraulic Fluid System Flow Diagram

2.13 E502, Main One Line Diagram

2.14 E503, Auxiliary One Line Diagram

2.15 E505, DC One Line Diagram

2.16 E510, Synchronizing Diagram, Sheet 1,2

2.17 E511, Generator Station Tripping Schedule

2.18 E512, Protective Relaying and Control, Sheet 1,2

2.19 E513, Main Action One Line Diagram 500KV Relaying

2.20 E520, Turbine Generator Control, Sheets 1 to 7

2.21 CVI 02-01-000, 113, O&M Manuals Vol 1 and 2, Westinghouse

2.22 Westinghouse 1250-C735 Volume II

2.23 CVI 02,01,00,145, DEH Westinghouse

2.24 PPM 1.11.8, Radiation Work Permit

2.25 PPM 2.2.4, Main Condensate and Feedwater Systems

2.26 PPM 2.2.7, Extraction Steam and Heater Vents/Drains

2.27 PPM 2.2.8, Sealing Steam System

2.28 PPM 2.5.1, Electro-Hydraulic Fluid System

2.29 PPM 2.5.2, Turbine Lube Oil Purification/Storage/Transfer System

2.30 PPM 2.5.3, Generator Seal Oil System

2.31 PPM 2.5.4, H_2/CO_2 System

2.32 PPM 2.5.5, Stator Coil Cooling System

2.33 PPM 2.6.1, Circulating Water and Cooling Towers

2.34 PPM 2.6.3, Air Removal System

2.35 PPM 2.7.1A, 6900 Volt and 4160 Volt AC Electrical Power Distribution System

2.36 PPM 3.2.1, Normal Shutdown to Cold Shutdown

2.37 PPM 3.2.2, Normal Shutdown to Hot Shutdown

3.0 PREREQUISITES

3.1 The following systems are required to be in operation to support Main Turbine:

- Plant Service Water System
- Circulating Water System
- Seal Oil System
- Steam Seal System
- Turbine Oil System
- Stator Coil Cooling System
- Digital Electro-hydraulic System
- Isolated Bus Duct Cooling System
- Generator Hydrogen System
- Condenser Drains/Vents System
- Air Removal System
- Heater Vent System
- Heater Drain System
- Bleed Steam System
- Auxiliary Steam System
- Main Steam System
- Condensate Storage and Transfer System
- Control and Service Air System

3.2 If the Main Turbine startup is the initial startup following a refueling outage, perform the OPC test per Attachment 6.10 prior to Main Turbine startup. This will confirm the operability of the OPC circuits and the turbine trip circuit. △ {2.7}

4.0 PRECAUTIONS AND LIMITATIONS

4.1 The turbine must be on the turning gear at least 1 hour prior to rolling with steam.

4.2 Do not rotate the turbine-generator rotor if the Seal Oil System is not in service.

4.3 The DEH Controller must be energized at least two hours prior to admitting steam to turbine.

4.4 Ensure the turbine lube oil reservoir level is adequate before starting the first oil pump - usually the AC Bearing Oil Pump (TO-P-BOP). [The reservoir should be near full prior to starting the bearing oil pump (TO-P-BOP). This will provide sufficient oil to fill the system and establish the normal reservoir operating level.]

4.5 The generator loop seal vapor extractor must be operated continuously when hydrogen pressure is maintained in the generator.

4.6 Exhaust hood sprays must be available whenever the turbine is operating above 3 RPM (prior to rolling the Main Turbine with steam).

4.7 A turbine lube oil reservoir vapor extractor must be in service when starting and operating the turbine and whenever hydrogen is in the generator.

4.8 The Generator must be pressurized with hydrogen gas per the Capability Curve (Attachment 6.6) before rolling the turbine with steam.

4.9 The Main Turbine lube oil outlet temperature should be at least 100°F prior to exceeding 500 RPM.

4.10 Turbine speed hold recommendations (Attachment 6.4) must be referred to during the turbine roll. Holding at or close to critical speed is POSITIVELY NOT permitted.

4.11 Before rolling the turbine off the turning gear the Reactor Steam Generation Rate shuold be at least 15% and Reactor Pressure should be at least 932 psig.

4.12 Rotor eccentricity should be LT 6 mils per the eccentricity recorder. The portable rotor truth dial indicator measurement at any bearing oil ring should not exceed .001 amplitude with the unit on turning gear.

4.13 Rotor position is based on a nominal thrust bearing clearance of .015". An alarm limit of .035" and trip limit of .040" from the center of the thrust cage clearance (in each direction) is used. Changes in rotor position with passage of time should be noted; the limits given above apply relative to original setting. The System Engineer should be informed of any changes.

4.14 Turbine exhaust steam temperature should not exceed 147°F for extended operation when the exhaust hood spray is out of service. (147°F equates to 7.0" Hg Abs back pressure.) (See Attachment 6.3.)

4.15 When operating with high exhaust temperature, particular attention should be paid to differential expansion, vibration, and bearing metal temperature changes.

4.16 Use of exhaust hood sprays should be minimized by maintaining proper exhaust temperatures with as high a vacuum as possible in the main condenser.

4.17 Operation at LT approximately 65 MWe generator load should be avoided.

4.18 Do not operate with a reheat stop or interceptor valve closed at a reactor power of GT 62% during valve testing.

4.19 The L.P. exhaust hood temperature must not exceed 250°F.

4.20 The L.P. turbine steam inlet temperature should be limited to 400°F when generator load is LT 120 MWe.

4.21 <u>Vibration limits</u> (absolute, peak to peak - mils):

- 4.0 mils - satisfactory.

- 7.0 mils alarm. Re-balancing is indicated if vibration is continuous and of the unbalanced type.

- 14.0 mils - trip or other suitable action. Other suitable action may be load change/speed change, etc., according to specific conditions.

4.22 Differential expansion limits:

(Trip levels are recommended manual trips. No automatic trips are installed.)

Generator end: 0-2000 mils scale	Governor end: 0-1000 mils scale
a. Rotor long:	a. Rotor long:
• Alarm at 645 mils	• Alarm at 150 mils
• Trip at 615 mils	• Trip at 120 mils
b. Rotor short:	b. Rotor short:
• Alarm at 1289 mils	• Alarm at 550 mils
• Trip at 1319 mils	• Trip at 580 mils

4.23 The vacuum breaker valves should not be opened until the steam flow to the condensers has completely stopped and the unit has either coasted down to 200 RPM or is on turning gear, unless rapid turbine coastdown is required.

4.24 If there is severe turbine vibration (18 mils or above), open main condenser vacuum breakers until turbine speed decreases to less than 900 RPM.

4.25 When starting with an initial rotor temperature of 300°F or greater, approximately 120 MWe generator load should be applied after synchronizing to avoid unnecessary cooling of the rotor.

4.26 Should the unit trip from a malfunction, ensure the drains open immediately.

4.27 Before making an actual overspeed test, operate the turbine at GT approximately 120 MWe generator load for at least 8 hours.

4.28 The hydrogen should be purged from the generator before the main oil reservoir is drained.

NOTE: Turbine back pressure is indicated on Pen 2 on MS-PR-1C H13-P820 (Bd B).

NOTE: Condenser vacuum is the LOWEST operable reading (least vacuum) of MS-PI-8A, B, C.

4.29 Prior to exceeding any one of the following condenser back pressure limits on the Main Turbine, REDUCE TURBINE LOAD. If turbine load reduction fails to maintain condenser back pressure within limits, TRIP THE MAIN TURBINE. Administrative back pressure limit is 7" Hg Abs. Refer to Attachment 6.3.

a. For turbine roll	5.5" Hg Abs back pressure
b. For turbine loads LT 560 MWe	5.5" Hg Abs back pressure
c. For turbine loads 560 - 835 MWe	linear slope 5.5 - 8" Hg Abs back pressure
d. For turbine loads GE 835 MWe	8.0" Hg Abs back pressure

NOTE: High back pressure is indicated by high exhaust hood temperatures on TG-TR-SMT, H13-P820 (Bd B) points 4 through 9 or computer points T008AB, T009AB, T010AB.

NOTE: The following temperatures correlate to 5.5" Abs and 7.0" Abs. Refer to Attachment 6.3.

4.30 Prior to exceeding either of the following limits for exhaust hood temperature, REDUCE TURBINE LOAD:

a. For turbine loads LT 560 MWe	135°F
b. For turbine loads GE 560 MWe	147°F

4.31 Last row blade and/or disc attachment fatigue damage can occur during relatively brief periods under high back pressure/low load conditions; the damage is cumulative and irreversible.

4.32 Steam supplied to the turbine glands should contain not less than 25°F superheat.

4.33 The temperature limits of steam in the low pressure turbine glands are 250°F minimum and 350° maximum.

4.34 The turbine should be taken off line if both main oil reservoir vapor extractors fail.

4.35 For periodic trip functional tests, two operators and the Shift Support Supervisor shall be assigned to the Main Turbine pedestal testing area, with communication established between testing area and Control Room.

4.36 Observe the RWP requirements of PPM 1.11.8.

4.37 Air temperature from the exciter cooler should be maintained at 45°C to 50°C. Temperature below 45°C is not recommended due to possible condensation on the diode wheel.

4.38 A Technical Staff or Maintenance expert should be present during OPC testing when at rated speed. (After a turbine maintenance outage.)

4.39 No attempt should be made to roll the turbine with steam when the rotor is stopped. The rotor must be either on the turning gear or being turned with steam leakage prior to rolling the turbine with steam.

4.40 Steam Seals should NOT be put into service unless the turbine is on turning gear. The rotor gland areas could be thermally damaged.

4.41 When rolling the turbine off turning gear, personnel should keep clear of the turning gear operating lever to avoid injury when it disengages.

4.42 Keep drain valves open from startup to approximately 240 MWe generator load. Ensure drain valves are open during shutdown.

4.43 Bearing oil discharge temperatures should not exceed 180°F. Minimum discharge temperature for turning gear operation is 70°F.

4.44 Journal and Thrust Bearing metal temperature should not exceed 225°F. The Turbine should be tripped if metal temperature exceeds 225°F.

4.45 Permissible pressure difference between condenser zones is 2.5 in. Hg. Trip the turbine if this value is exceeded.

4.46 Do not run either vapor extractor (TO-EX-1A or TO-EX-1B) without a bearing oil pump in service because the resulting high oil level may flood the extractor suction.

4.47 All main turbine overspeed trip testing (mechanical and electrical) should be performed on governor valve control, NOT throttle valve speed control.

4.48 The Main Steam line drains (MD-V-75 through MD-V-82, and MD-V-85 through MD-V-87) must be open when governor valves 2 or 3 are closed for more than a minute, to prevent water from building up in the steam lines and causing turbine damage when the governor valves are subsequently reopened. {2.4}

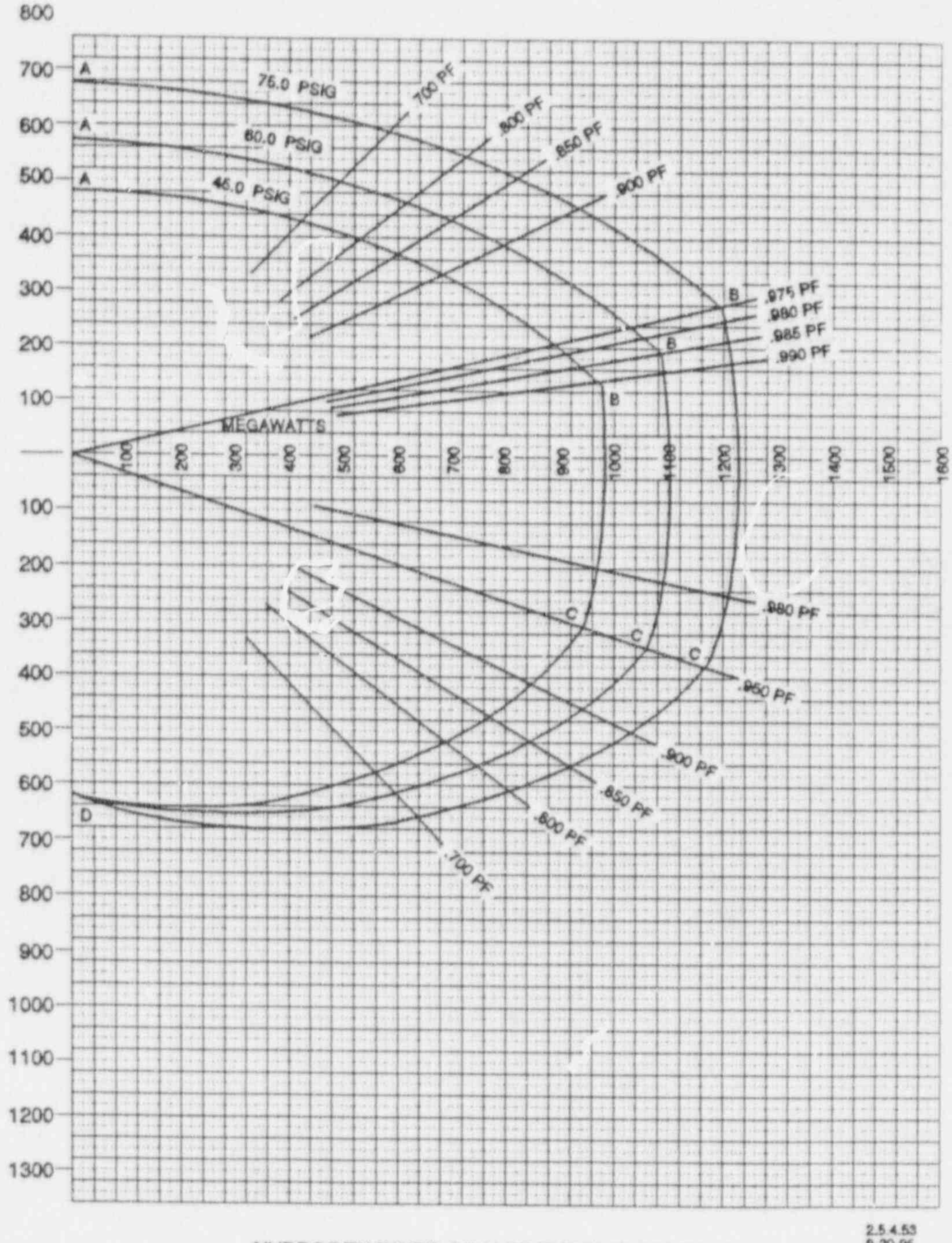
4.49 Failure of a Governor valve to respond to an open signal during testing and the standby DEH pump starting may be an indication of a stuck open hydraulic dump valve. If this occurs, a turbine trip may be required to reset the dump valve. {2.5}

4.50 Do not exceed the Turbine Generator frequency limits per Attachment 6.11.

4.51 Operation outside the Generator Capability Curve (Attachment 6.6) is not recommended. Efforts to operate within the curve during normal system operation should be employed. During system disturbances, the generator may operate outside the curve. The generator will withstand some operation outside the capability curve (5% MVA maximum for 2 hours or less). The voltage regulator and Power System Stabilizer should be allowed to bring the generator back within the capability curve without operator intervention. If the generator, as per applicable annunciator alarm, is going to trip without operator action it is recommended to bring the generator back within the capability curve manually.

GENERATOR CAPABILITY CURVE

CURVE A-B LIMITED BY FIELD WINDING TEMPERATURE
CURVE B-C LIMITED BY STATOR WINDING TEMPERATURE
CURVE C-D LIMITED BY STATOR CORE END HEATING



HYDROGEN INNER-COOLED TURBINE GENERATOR
1230.000 MVA .975 PF 25.0 KV 28406 AMPERES
3 PHASE 60 HERTZ 1800 RPM .58 SCR 75 PSIG

Attachment 6.6

GENERATOR CAPABILITY CURVE
TABULAR VALUES

MVARS (+) OUT/ OVER-EXCITED (-) IN/ UNDER-EXCITED	75 PSIG Min H2 PRESS (1230 MVA Limit) MWe Limit =	74 PSIG Min H2 PRESS (1221 MVA Limit) MWe Limit =	73 PSIG Min H2 PRESS (1213 MVA Limit) MWe Limit =	72 PSIG Min H2 PRESS (1205 MVA Limit) MWe Limit =	71 PSIG Min H2 PRESS (1196 MVA Limit) MWe Limit =	70 PSIG Min H2 PRESS (1189 MVA Limit) MWe Limit =	68 PSIG Min H2 PRESS (1171 MVA Limit) MWe Limit =	66 PSIG Min H2 PRESS (1155 MVA Limit) MWe Limit =	64 PSIG Min H2 PRESS (1138 MVA Limit) MWe Limit =
GT +140			USE	GEN	CURVE	PREV	PAGE		
+101 to +140	1222	1212	1204	1196	1187	1179	1162	1146	1129
+61 to +100	1225	1216	1208	1200	1191	1183	1166	1150	1133
+31 to +60	1228	1219	1211	1203	1194	1187	1169	1153	1136
-30 to +30	1229	1220	1212	1204	1195	1188	1170	1154	1137
-60 to -31	1228	1219	1211	1203	1194	1187	1169	1153	1136
-61 to -120	1224	1215	1207	1199	1189	1181	1164	1137	1131
-121 to -200	1213	1204	1196	1188	1179	1171	1153	1137	1120
LT -200			USE	GEN	CURVE	PREV	PAGE		

Use Recorder E-RECT-W/VAR/G1 on board C for MVAR and for MWe.

Due to rounding and use of broad MVAR ranges in the table, the above MWe Limit values will be conservative when compared to limits computed using actual values of MVAR. This table is intended as a quick method of verifying compliance with the generator capability curve when plant computers are unavailable or computer data is invalid.

Attachment 6.6

WASHINGTON PUBLIC POWER
SUPPLY SYSTEM

INSTRUCTIONAL COVER SHEET

PROGRAM TITLE: LICENSED OPERATOR/STA REQUALIFICATION TRAINING

COURSE TITLE: JOB PERFORMANCE MEASURE

LESSON TITLE: POWER/FLOW MAP INTERPRETATION

LESSON LENGTH: 5 Min   MAXIMUM STUDENTS: 1

INSTRUCTIONAL MATERIALS INCLUDED

Lesson Plan PQD Code		Rev. No.	
OJT Guide PQD Code		Rev. No.	
Simulator Guide PQD Code		Rev. No.	
Student Handout PQD Code		Rev. No.	
JPM PQD Code		Rev. No.	
Checkoff Sheet PQD Code		Rev. No.	
Exam PQD Code		Rev. No.	

DIVISION TITLE: Nuclear Training

DEPARTMENT: Operations Training

PREPARED BY: Randy Guthrie   DATE: 8/22/96

REVISED BY: ______   DATE: ______

TECHNICAL REVIEW BY: ______   DATE: ______

INSTRUCTIONAL REVIEW BY: ______   DATE: ______

APPROVED BY: ______   DATE: ______
Training Manager

Matrix Update	Vision #	WP Update	WA

MINOR REVISION RECORD

Minor Rev Number	Description of Revision	Affected Pages	Entered By	Effective Date	Manager Approval

JPM SETUP

Simulator ICs:
14

Malfunctions:
N/A

Overrides (Optional):
N/A

Special Setup Instructions:
Trip the "A" RRC pump and allow plant conditions to stabilize.

Task Standard:
Succesful determination of plant operating conditions on the power/flow map for single loop conditions.

RESULTS OF JPM:

Examinee (Please Print): ______________________________

Evaluator (Please Print): ______________________________

Overall Evaluation	(Circle One) SAT / UNSAT	Exam Code

Simulator IC Used	Validation/Critical Time	JPM Completion Time
	5 Minutes / NA	

Comments: ______________________________

Evaluator's Signature: ______________________________ Date: ______________

JPM CHECKLIST

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
RECORD START TIME: ________				
	1	Locates Single Loop Operation Power/Flow Map	Locates Single Loop Operation Power Flow Map **Either** PPM 2.2.1 Attachement 6.5 **Or** Operator Aid 91-31 located at H13-P603	S / U
	Comments:			
	2	Determines % Rated Thermal Power	Determines % power using APRM indications	S / U
	Comments:			
	3	Determines % Rated Core Flow	Determines % Rated Core Flow: **Either** PPM 2.2.1 Attachement 6.6 **Or** Operator Aid 91-31 located at H13-P603	S / U
	Comments:			

*** Items are Critical Steps**

Event Control	Step	Element	Standard	Sat/Unsat
	4	Determines plant operating conditions on Single Loop Power/Flow map	Correctly determines plant operating conditions on: **Either** PPM 2.2.1 Attachement 6.5 **Or** Operator Aid 91-31 located at H13-P603	S / U*
Termination Cue: The termination point of this JPM has been reached.	Comments:			
RECORD TERMINATION TIME: ________	Calculate JPM Completion Time: JPM Termination Time: JPM Start Time: -________ JPM Completion Time: (Transfer to RESULTS OF JPM page 3)			

JPM INFORMATION CARD

Initial Conditions: The plant was operating at 100% rated thermal power when RRC pump "A" tripped.

PPM 2.2.1 Section 4.4 has been entered and has been completed through Step 4.4.8.

PPM 4.12.4.7 has been entered and all Immediate Operator Actions have been completed.

Cue:

The CRS has directed you to determine plant operating conditions on the Power/Flow map.

Tools/Equipment: None

Safety Items: None

Task Number:		**Validation Time:**	5 Minutes
Prerequisiste Training:		**Time Critical:**	No
PPM Reference:	2.2.1 Rev 25 4.12.4.7 Rev 13	**Location:**	Simulator
NUREG 1123 Ref:	202001A1.03 (3.6/3.6) 202001GK.06 (3.0/4.1)	**Performance Method:**	Perform
Prepared or Revised by:	Randy Guthrie	**Revision Date:**	8/22/96

STUDENT JPM INFORMATION CARD

Initial Conditions: The plant was operating at 100% rated thermal power when RRC pump "A" tripped.

PPM 2.2.1 Section 4.4 has been entered and has been completed through Step 4.4.8.

PPM 4.12.4.7 has been entered and all Immediate Operator Actions have been completed.

Cue:

The CRS has directed you to determine plant operating conditions on the Power/Flow map.

Reference SWP-PRO-02

WASHINGTON PUBLIC POWER SUPPLY SYSTEM

TEMPORARY CHANGE NOTICE

(12) CONTROL NUMBER 96-440

COMPLETED BY ORIGINATOR

(1) Procedure No: 2.2.1 (2) Current Rev: 25 (3) POC Review Required? [X] Yes [ ] No

(4) Title: Reactor Recirculation System

(5) [ ] One-Time-Only - TCN NOT incorporated into procedure

(6) Procedures pages affected by this TCN: 6

(7) Control No. of Incorporated Deviation/TCN: ~~96-0398~~, 96-475

(8) Procedure pages affected by previous Deviation/TCN: 4, 6,7,14,15,34,35,36

(9) Summary of Changes

Add Precaution and Limitation 3.20 to note RRC-ASD speed at 105% (63 Hz) maximum when supplied by TR-N2. Note is added to reflect FCR #87-0244-6-22, 6/8/96, identified limitations.

[ ] Continued

I certify this procedure TCN is in compliance with the criteria on page 2 of this form and SWP-PRO-02

Originated by: GJ Freeman (Print Name) — [signature] (Signature) — 6/9/96 (Date) (10)

INTERIM APPROVAL OF TCN (SRO Approval required for TCNs to POC-approved procedure.)

(11) RL Koenigs [signature] 6/9/96 — Manager or Supervisor / Date

(11) [signature] 6/9/96 — Licensed SRO / Date

(13) 1701 6/9/96 — Implementation Time & Date

(14) Deadline for POC review and/or approval by Approving Authority (14 days from implementation): 6/23/96

DISTRIBUTION: (Each location must be initialed by individual distributing and/or integrating TCN)

(15) ORIGINATOR/DESIGNEE INTEGRATES

CONTROL ROOM (All Volumes)	JCF	STA DESK (CR) (Volume 13)	N/A
SHIFT MANAGER (Volumes 1-5, 13, SWP)	JCF	EOP FLOWCHART (CR) (Volume 5)	N/A
SCRAM BOOK (CR)	N/A	CR EMERGENCY SUPPORT (Volume 5.5 series)	N/A

COMPLETED BY PROCEDURE CONTROL

(16) DISTRIBUTION: (Each location must be initialed by individual distributing and/or integrating TCN)

WC	CK	RWCR	CK	DG-2		EMERGENCY PREPAREDNESS	
TSC	CK	REMOTE		DG-3		AAP	
SIMULATOR	CK	DG-1		OSC		OTHER	JJ

COMPLETED BY PROCEDURE SPONSOR

(17) Reason for Temporary Change (Identify the one that most applies):

[ ] Licensing Issue (e.g., Tech Spec, FSAR)	[ ] OER	[ ] TSSIP
[ ] ISCR	[X] PMR	[ ] PERA/PTL
[ ] Temporary Mod.	[ ] Minor Mod	[ ] Site Wide Procedure Prgoram
[ ] Vendor Manual Change	[ ] Procedure Enhanments	[ ] Other (specify)

(18) ALARA review required per PPM 11.2.2.7? [ ] Yes [X] None Required

(19) ALARA Reviewer/Date

(20) Have all other affected procedures been revised or changed? [ ] Yes [X] None Required

(21) Has impact on Model Work Orders, SMS or PTL/RTS been determined and resolved with appropriate personnel? [ ] Yes [X] None Required

(22) Procedure Sponsor: ~~RL Koenigs~~ M PRATT (Print Name) — [signature] (Signature) — ~~6/9/96~~ 6/18/96 (Date)

APPROVAL

Approving Authority (Plant General Manager for POC reviewed procedures) (24) [signature] — Date 6/20/96 — POC MEETING (if applicable) (23) 96-25

WASHINGTON PUBLIC POWER SUPPLY SYSTEM WNP-2 PLANT PROCEDURES MANUAL		VERIFY PRIOR TO USE DATE
PROCEDURE NUMBER *2.2.1	APPROVED BY GOS - Revision 25	DATE 06/01/96
VOLUME NAME SYSTEM OPERATING PROCEDURES		
SECTION REACTOR COOLANT SYSTEM AND STEAM SYSTEMS		
TITLE REACTOR RECIRCULATION SYSTEM		

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TABLE OF CONTENTS

1.0 PURPOSE

To provide detailed instructions to operate the Reactor Recirculation System.

2.0 PREREQUISITES

2.1 RRC System Valve Checklist has been completed.

2.2 RRC System Power Supply Checklist has been completed.

2.3 Reactor Closed Cooling Water System in operation per PPM 2.8.3. (Except as noted in Section 5.9.)

2.4 Control Rod Drive System in operation per PPM 2.1.1.

2.5 ASD Cooling System is operating.

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Within 15 minutes prior to startup of an idle recirculation loop, ensure that differential temperature and flow rate is within the following limits, per Technical Specification 3.4.1.4 (4.4.1.4):

- Steam dome to bottom head drain line coolant differential temperature LE 145°F. (Steam dome temperature is determined from reactor pressure and saturated steam tables. Drain line flow has to be established for accurate bottom head drain temperature.)
- If both loops are idle, differential temperature between recirculation loop suction and reactor coolant is LE 50°F.
- If only one loop is idle, loop-to-loop recirculation suction differential temperature is LE 50°F and operating loop flow rate is LE 50% rated loop flow (20,860 gpm).
- LE 50°F between the reactor coolant within the non operating loop and coolant in the RPV, when thermal power is LE 25% of rated thermal power or the recirculation loop flow in the operating loop is LE 10% of rated loop flow.

3.2 Loop flow asymmetry can result in vibration of jet pumps and riser braces. For two loop operation, maintain loop-to-loop flow mismatch LT 10% when LT 70% rated core flow, and maintain loop-to-loop flow mismatch LT 5% when GT 70% rated core flow per Technical Specification 3.4.1.3.

3.3 Maintain power and flow within the prescribed limits of the applicable Power to Flow Operating Map (Attachments 6.4 and 6.5).

3.4 Do not start an idle RRC pump during single loop operation from initial rod pull until the mode switch is in RUN and reactor power is at least 10%.

3.5 Flexible spool pieces used to connect to the WR System are to be removed with blind flanges installed, except for chemical cleaning operations.

3.6 Secure seal purge prior to isolating a recirculation loop (CRD pump discharge pressure may cause over pressurization of an isolated reactor recirculation loop). Initiate seal purge immediately when a recirculation loop is unisolated.

3.7 If a loss of Reactor Closed Cooling Water to the pump seal heat exchangers occurs, operation can continue with adequate cooling provided by seal purge flow alone. The pump is to be secured if motor or bearing cooling water is lost, except as noted in Section 5.6.

3.8 If seal injection fluid flow to the pump stops while the pump is operating, operation can continue with adequate cooling provided by the pump seal heat exchangers. Recirculation pump operation is required to obtain cooling via the heat exchangers.

3.9 If both seal injection fluid flow and heat exchanger Reactor Closed Cooling Water flow are lost while the pumped fluid temperature is GT 200°F, the pump is to be shut down within one minute.

3.10 Attempt to keep seal cooling water temperatures as stable as possible. A sudden change in reactor closed cooling water temperature (i.e., a rapid change in RWCU non-regenerative heat load) could result in thermal shock and failure of reactor recirculation pump seals.

3.11 Do not close recirculation pump block valves RRC-V-67A(B) or RRC-V-23A(B) at reactor coolant temperatures above 310°F for more than 5 minutes unless loop isolation or shutdown cooling is required. This practice prevents valve thermal binding. Do not allow a recirculation loop to cool down with either its suction or discharge valve closed unless absolutely necessary. △ {5.3}

3.12 The Recirculation Pump Motor current limit is 661 amps (8900 HP) and the stator winding temperature limits are:

- 248°F Continuous
- 266°F Intermittent

3.13 The recirculation pump motor guide bearing temperature limit is 205°F. Contact the System Engineer for evaluation if this temperature is exceeded. If the bearing temperature is GE 215° F, the pump is to be tripped.

3.14 During End-Of-Cycle power operations, deliberate reactor power changes by Final Feedwater Temperature Reduction are not permitted while changing recirculation flow.

3.15 During End-of-Cycle power operation, final feedwater temperature is not permitted below 377°F during implementation of Final Feedwater Temperature Reduction.

3.16 Recirculation Pump Motor starts are as follows:

- The motor can be started and brought to speed whenever the motor windings are less than rated temperature (248°F)
- With other conditions permitting, it is good practice to operate for at least 15 minutes after starting in order to cool the motor windings.

3.17 RRC-M/A-R676A(B) and RRC-M/A-R675 signal ramp rate is dependant on the length of time the raise or lower buttons are held depressed. The ramp rates are as follows:

• 0-1.5 seconds	0.2 Hz/sec
• GT 1.5 seconds increasing	0.6 Hz/sec
• GT 1.5 seconds decreasing	3.0 Hz/sec
• GE 15 seconds	Receive "Stuck Pushbutton" alarm and pump stops ramping. Resets when pushbutton is released.

3.18 During Mode 5 Refueling, with fuel bundles removed from the core, the in-core LPRMs and instrument dry tubes will not have sufficient support from the blade guides to protect them from damage caused by cross channel flow. To protect the incore instrumentation tubes, total core flow is restricted to LE 10,000 GPM drive flow via RHR and/or RRC. RHR (LPCI) injection is not permitted during refueling unless needed for a valid LOCA condition. {5.6}

3.19 While on the Startup Transformer (TR-S) limit RRC pump frequency to LE 30 Hz if both RRC pumps are running, or to LE 60 Hz if only one RRC pump is running.

3.20 With both RRC-ASDs supplied from the TR-N2, the RRC-ASDs maximum speeds will be 105% (63 Hz).

4.4 Single Loop Operation

NOTE: This section takes into consideration entry into single loop by either securing an RRC pump as part of a planned evolution, or by the automatic or manual tripping of an RRC pump.

4.4.1 If necessary, initiate ANNA monitoring per PPM 2.1.8.

4.4.2 Ensure both RRC-M/A-676A and RRC-M/A-676B are in MANUAL (log in Control Room Log).

> CAUTION: Entry into the Area of Increased Awareness may result in core oscillations. △ {5.2}

4.4.3 If in or in close proximity to the Area of Increased Awareness, monitor for potential core oscillations per PPM 4.12.4.7.

NOTE: The Technical Specification limit for Single Loop RRC Drive flow is LT 41,725 gpm.

4.4.4 Adjust RRC drive flow in the loop to remain in service to the maximum possible without exceeding the Jet Pump Cavitation curve on Attachment 6.5, (but LT 41,725 gpm) or fuel preconditioning restraints. Log the flow in the Control Room Log. {P-104550}

4.4.5 As soon as possible, increase operating loop flow to GT 34,000 gpm to maintain adequate reverse flow through the idle loop. △ {5.5}

4.4.6 If the pump in the loop to be idled is running, slowly lower RRC-P-1A(B) speed, using RRC-M/A-R676A(B), to 15 hz demand (log in Control Room Log).

4.4.7 If the pump in the loop to be idled is running, trip the pump by depressing the STOP pushbutton.

NOTE: PPM 4.12.4.7 provides guidance for determining position on the P-F map.

4.4.8 Ensure Single Loop Operation within the bounds of the Power to Flow map, Attachment 6.5.

4.4.9 Open CB-RRA(B), CB-RPT4A(B) and CB-RPT3A(B) in the shutdown loop.

> CAUTION: Do not close recirculation pump block valves RRC-V-67A(B) or RRC-V-23A(B) at reactor coolant temperatures above 310°F for more than 5 minutes unless loop isolation or shutdown cooling is required. This practice prevents valve thermal binding.
> {5.3}

> CAUTION: To prevent thermal binding, a recirculation loop should not be allowed to cool down with either its suction or discharge valve closed unless absolutely necessary. {5.3}

4.4.10 Close the pump discharge valve, RRC-V-67A(B), in the idle loop to prevent reverse rotation of the pump (log in Control Room Log).

4.4.11 Within 5 minutes (maximum) after closing, open RRC-V-67A(B) to maintain idle loop temperature and prevent valve binding (log in Control Room Log).

4.4.12 If in Mode 1 or 2, initiate PPM 7.4.4.1.1.1.

NOTE: The following is a list of PPMs that can be used to aid in meeting the requirements of TS 3.4.1.1:

- PPM 4.12.4.7 to determine location on P-F map and if additional action is required for Action items "a.1 or a.2"
- PPM 7.4.2.1 addresses Action items "a.3.b and c"
- PPM 7.4.4.1.1.2 addresses Action item "a.3.e"

\# 4.4.13 Ensure the provisions of Technical Specification 3.4.1.1, Action "a", are met.

CAUTION: Isolation of a recirculation loop (closure of both suction and discharge valves) at elevated temperature (GT 200°F) may cause damage to pump seal elastomers, due to lack of cooling.

CAUTION: Seal purge into an isolated recirculation loop over-pressurizes the loop causing the seal purge relief to lift and discharge to the RB 501 floor.

4.4.14 If isolation of the idle recirculation loop is required, proceed as follows:

a. Secure seal purge injection per step 4.1.3, Seal Purge Shutdown.

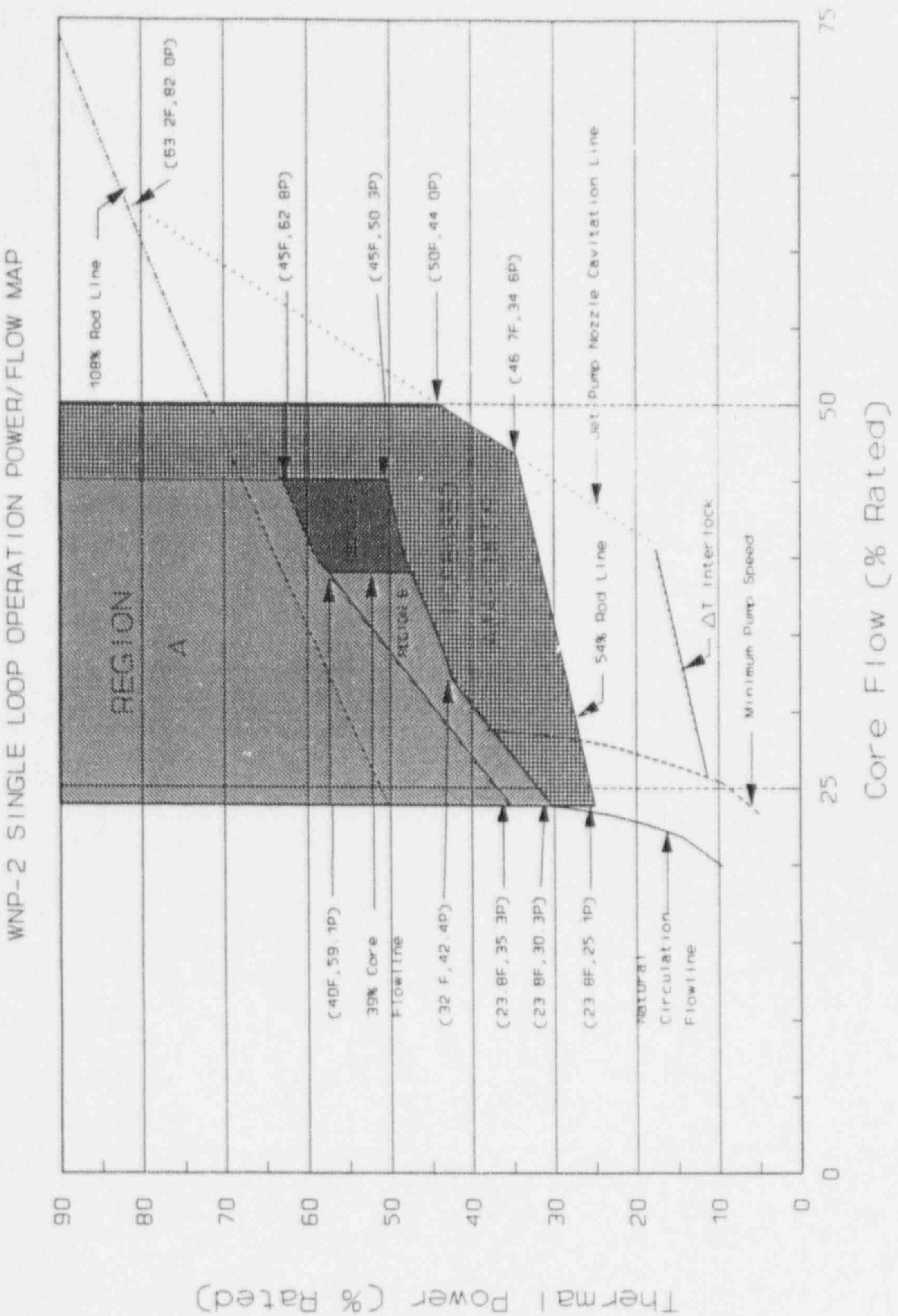
b. Reduce RWCU flow (if necessary due to NPSH considerations) and then close RWCU-V-100(106).

c. Close suction and discharge isolation valves, RRC-V-23A(B) and RRC-V-67A(B), from H13-P602.

d. When recirculation loop suction temperature decreases to LT 150°F, cooling water to the recirculation pump motor, bearings and seals may be secured.

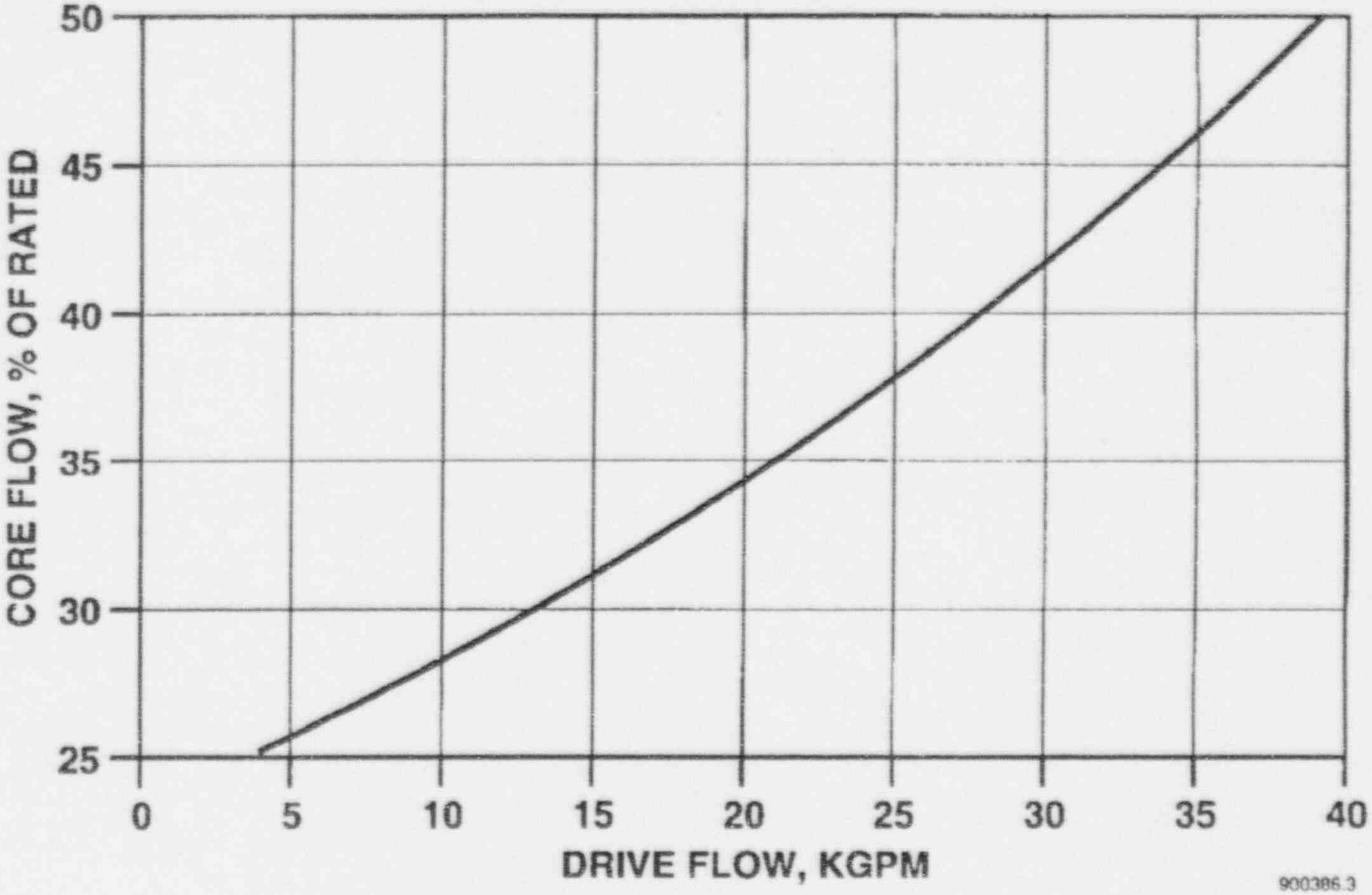
4.4.15 When the idle Recirculation pump can be recovered, restart the idle Recirculation pump per Section 4.2 or 4.3.

WNP-2 SINGLE LOOP OPERATION POWER/FLOW MAP



Attachment 6.5

SINGLE LOOP CORE FLOW/DRIVE FLOW CORRELATION



WASHINGTON PUBLIC POWER SUPPLY SYSTEM	VERIFY PRIOR TO USE
	DATE

WNP-2
PLANT PROCEDURES MANUAL

PROCEDURE NUMBER	APPROVED BY	DATE
*4.12.4.7	MMM - Revision 13	05/07/96

VOLUME NAME

ABNORMAL CONDITION PROCEDURES

SECTION

SITE

TITLE

UNINTENTIONAL ENTRY INTO REGION OF POTENTIAL CORE POWER INSTABILITIES

1.0 ENTRY CONDITIONS

1.1 Entry into Region A on the Power to Flow map.

1.2 Entry into Region B on the Power to Flow map.

1.3 Entry into Region C on the Power to Flow map.

1.4 Unintentional entry into Area of Increased Awareness on the Power to Flow map(s). {P-80197}

1.5 Control system problems (RRC flow control, DEH, and Feedwater Level Control (FWLC) systems).

1.6 When any of the following conditions exist:

- The reactor mode switch is in RUN and both RRC pumps have tripped-off (i.e., neither RRC pump is running).
- One RRC pump has tripped-off and reactor power is GT 25% of rated.
- Both RRC pumps have ramped down to 15 hz.
- A single RRC pump trip has occurred and RRC drive flow in the operating loop is below 39,000 gpm.
- Periodic LPRM upscale or downscale alarms appear on the Full Core Display (H13-P603).
- Any unexplained significant and sustained oscillations in SRM period, LPRM or APRM levels (characteristic oscillation period is 1-3 seconds). The following are provided as examples and do not represent absolute values:

  a. Doubling of LPRM or APRM noise levels.

  b. Peak to Peak APRM limit (10% ÷ GAF) is exceeded.

  c. Any LPRM has oscillations GT 20 watts/cm^2.

2.0 AUTOMATIC ACTIONS

None

3.0 IMMEDIATE OPERATOR ACTIONS

3.1 If at any time any of the following conditions exist, MANUALLY SCRAM the reactor:

- The reactor mode switch is in RUN and both RRC pumps have tripped-off (i.e., neither RRC pump is running).

- If in Region A.

  NOTE: It is reasonable to allow several minutes to diagnose the cause of the oscillations, if they are occurring outside of Region B, C, or the Area of Increased Awareness, or the characteristic oscillation period is outside the expected period, and adequate preconditioning margin is available.

- Periodic LPRM upscale or downscale alarms appear on the Full Core Display (H13-P603).

- Any unexplained significant and sustained oscillations in SRM period, LPRM or APRM levels (characteristic oscillation period is inside 1-3 seconds). The following are provided as examples and do not represent absolute values:

  a. Doubling of LPRM or APRM noise levels.

  b. Peak to Peak APRM limit (10% ÷ GAF) is exceeded.

  c. Any LPRM has oscillations GT 20 watts/cm^2.

4.0 SUBSEQUENT OPERATOR ACTIONS

4.1 If at any time any of the following conditions exist, as soon as possible but within 15 minutes initiate action to exit the region by control rod insertion or core flow increase (flow changes not permitted in Single Loop Operations in Region C without ANNA). Increasing core flow by restarting a Reactor Recirculation pump is not an acceptable method of exiting any region.

- If entry into Region B of the Power to Flow map has occurred.
- If entry into Region C of the Power to Flow map has occurred.
- Any unplanned entry into the Area of Increased Awareness with the reactor in an unanalyzed rod pattern.

> CAUTION: Any core instability induced oscillations should be terminated by a manual reactor scram.

4.2 If the power transients are occurring outside of Region B, C, or the Area of Increased Awareness and are not sinusoidal, or have an oscillation period outside of the 1 to 3 second range, they may be due to a control system problem. Consider the following:

NOTE: Performance of step 4.2.1 is not necessary if there is sufficient margin within the preconditioned envolope to handle the magnitude of the power oscillations.

4.2.1 If the magnitude of the oscillations is GT $\pm$ 20 MWe, reduce reactor power with flow 1% for every 10 MWe that reactor power is oscillating.

4.2.2 Attempt to identify and correct the cause of power oscillations. The most probable sources of oscillations are RRC, DEH, and FWLC systems.

4.3 If percent core thermal power versus percent core flow is outside the Power to Flow map, action should be initiated to return to the inside of the applicable Power to Flow map.

4.4 Refer to Tech Specs (3.2.7, 3.2.8, 3.4.1).

4.5 If the plant is operating in Single Loop, refer to PPM 2.2.1, Reactor Recirculation System, and ensure that all actions for Single Loop Operations have been completed, or are in progress.

. " .

5.0 DISCUSSION

Uncontrolled power oscillations have occurred at WNP-2 and a number of similar events have occurred at other operating BWRs. These events have consistently occurred during operation in regions of high power and low flow. Operation with an abnormal control rod pattern, particularly during sequence exchanges, appears to have contributed to the initiation of some of these events. These neutron flux oscillations have been observed to occur core-wide (in phase) as well as locally (out of phase). Local (also called regional) oscillations typically involve two halves of the core, divided along some plane of symmetry, which oscillate out of phase with each other. It is also theoretically possible to have a larger number of local regions oscillating out of phase.

In order to assure adequate protection to the MCPR safety limit, operation in Region A, where most of the observed instabilities have occurred to date, is prohibited. Due to the relatively low margin to the MCPR safety limit calculated under severe postulated conditions of a regional oscillation at high power and low flow, initiation of a reactor scram is required as soon as posible, but in all cases within 15 minutes of entering Region A (TS 3/4.2.6).

Regions B and C of the Power to Flow map(s) represent regions of lower probability, than Region A, of instability occurrence. If Region B or C is unintentionally entered, action should be initiated as soon as practical, but in all cases within 15 minutes to exit the Region. Tech Specs identify either rod insertion or increasing core flow as acceptable methods of exiting these regions, except while in Region C during Single Loop Operation without ANNA available. In this case, rod insertion is the only acceptable method for exiting Region C. Increasing core flow by restarting a Reactor Recirculation pump is not an acceptable method for exiting any region.

The Area of Increased Awareness represents a region of low probability of instability occurrence. Entry into the Area of Increased Awareness of the Power to Flow map(s) is permitted when the entry is a planned evolution, provided the monitoring equipment requirements of procedure PPM 2.1.8 are satisfied. If an unplanned entry into the Area of Increased Awareness occurs with an unanalyzed rod pattern, prompt action to exit the area is required as a conservative action to prevent core oscillations. An unanalyzed rod pattern is any rod pattern that has not been analyzed as adequate prior to entering the Area of Increased Awareness.

The most probable event that could result in an instability during operation at power is a dual or single recirculation pump trip. Per NRC Bulletin 88-07, Supplement 1, a reactor scram is required if the plant experiences a loss of all recirculation pumps while the Mode switch is in RUN. The NRC has taken this position to simplify operator action by eliminating the need to determine rod line prior to scramming, even though instabilities are not expected below the 70% rod line.

The monitoring of APRM and LPRM signals, and immediate initiation of reactor scram upon detection of oscillations, ensure adequate margin to safety limits is maintained. It is important to recognize that monitoring APRM oscillations alone is not sufficient. It is possible for regional oscillations to occur where LPRMs in different core locations, which have large magnitude oscillations, are oscillating out of phase with LPRMs at other locations. In this situation the averaging process that the APRM circuitry performs on its various LPRM inputs can effectively smooth out and hide the LPRM oscillations, resulting in APRM oscillations which are much lower than for certain individual LPRMs. Periodic LPRM or APRM upscale or downscale alarms are indications of the presence of a core boiling instability if they alarm core wide every 1.5 to 2.5 seconds or regionally every 0.75 to 1.25 seconds. These alarms may occur core wide or only in a particular region.

Reactor power oscillations outside of Region B, C, or the Area of Increased Awareness (AIA) are unlikely, but not impossible. The most likely causes of reactor power oscillation outside of the AIA are control system malfunctions. All these should first be evaluated as a potential core instability oscillations. Power transients that are not sinusoidal or have a period outside of the 1 to 3 second range, are probably due to control system problems. For those cases where the symptoms are not characteristic of a reactor instability the control room operators need to quickly narrow down the possible causes. It is reasonable to allow several minutes to diagnose the cause of the oscillations if they are occurring outside of the AIA and adequate preconditioning margin is available. If control room Operations personnel are not able to promptly determine or correct the cause of the oscillations, then the reactor should be shutdown by manual scram.

6.0 REFERENCES

6.1 NCR 292-0993, Core Oscillations {P-80197}

6.2 NRC Bulletin 88-07, Supplement 1

6.3 BWROG OG-94078, June 6, 1994

6.4 IOM, November 4, 1994, D.K. Atkinson to G. O. Smith

6.5 OER 82122T

6.6 Technical Specifications 3.2.6, 3.2.7, 3.2.8, 3.4.1

6.7 PPM 2.1.8, ANNA Stability Monitoring System

6.8 PPM 2.2.1, Reactor Recirculation System

6.9 PPM 3.3.1, Reactor Scram

7.0 ATTACHMENTS

None

U.S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC
WRITTEN EXAMINATION

APPLICANT INFORMATION

Name:	Region: IV
Date: October 7 1996	Facility/Unit: WNP-2
License Level SRO	Reactor Type: GE
Start Time:	Finish Time:

INSTRUCTIONS

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

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

____
Applicant's Signature

RESULTS

Examination Value	________ Points
Applicant's Score	________ Points
Applicant's Grade	________ Points

SENIOR REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice) NAME:____________________

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

1.	a b c d	____	21.	a b c d	____	41.	a b c d	____
2.	a b c d	____	22.	a b c d	____	42.	a b c d	____
3.	a b c d	____	23.	a b c d	____	43.	a b c d	____
4.	a b c d	____	24.	a b c d	____	44.	a b c d	____
5.	a b c d	____	25.	a b c d	____	45.	a b c d	____
6.	a b c d	____	26.	a b c d	____	46.	a b c d	____
7.	a b c d	____	27.	a b c d	____	47.	a b c d	____
8.	a b c d	____	28.	a b c d	____	48.	a b c d	____
9.	a b c d	____	29.	a b c d	____	49.	a b c d	____
10.	a b c d	____	30.	a b c d	____	50.	a b c d	____
11	a b c d	____	31.	a b c d	____	51.	a b c d	____
12.	a b c d	____	32.	a b c d	____	52.	a b c d	____
13.	a b c d	____	33.	a b c d	____	53.	a b c d	____
14.	a b c d	____	34.	a b c d	____	54.	a b c d	____
15.	a b c d	____	35.	a b c d	____	55.	a b c d	____
16.	a b c d	____	36.	a b c d	____	56.	a b c d	____
17.	a b c d	____	37.	a b c d	____	57.	a b c d	____
18.	a b c d	____	38.	a b c d	____	58.	a b c d	____
19.	a b c d	____	39.	a b c d	____	59.	a b c d	____
20.	a b c d	____	40.	a b c d	____	60.	a b c d	____

SENIOR REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice) NAME:________________________

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

61.	a b c d	____	81.	a b c d	____
62.	a b c d	____	82.	a b c d	____
63.	a b c d	____	83.	a b c d	____
64.	a b c d	____	84.	a b c d	____
65.	a b c d	____	85.	a b c d	____
66.	a b c d	____	86.	a b c d	____
67.	a b c d	____	87.	a b c d	____
68.	a b c d	____	88.	a b c d	____
69.	a b c d	____	89.	a b c d	____
70.	a b c d	____	90.	a b c d	____
71.	a b c d	____	91.	a b c d	____
72.	a b c d	____	92.	a b c d	____
73.	a b c d	____	93.	a b c d	____
74.	a b c d	____	94.	a b c d	____
75.	a b c d	____	95.	a b c d	____
76.	a b c d	____	96.	a b c d	____
77.	a b c d	____	97.	a b c d	____
78.	a b c d	____	98.	a b c d	____
79.	a b c d	____	99.	a b c d	____
80.	a b c d	____	100.	a b c d	____

SENIOR REACTOR OPERATOR

NRC POLICIES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on any part of the examination will result in a denial of your application.

2. If you have any questions concerning the administration of the examination, do not hesitate asking them before starting that part of the test.

3. SRO applicants will be tested at the level of the responsibility of the senior licensed shift position (i.e. Shift Manager).

4. You must pass every part of the examination to receive a license. Applicants for an SRO-upgrade license may require remedial training in order to continue their RO duties if the examination reveals deficiencies in the required knowledge and abilities.

5. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the facilitee licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.

6. 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.

7. To pass the examination, you must achieve a grade of 80 percent or greater. Every question is worth one point.

8. The time limit for completing the examination is four hours.

9. You may bring pens and calculators into the examination room. Use only black ink to ensure legible copies.

10. Print your name in the blank provided on the answer sheet provided and do not leave any question blank. Use only the paper provided and do not write on the back side of the pages. If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

11. If the intent of a question is unclear, ask questions of the NRC examiner or the designated facility instructor only.

12. 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.

13. When you complete the examination, assemble a package including the examination questions, examination aids, answer sheets, and scrap paper and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. The scrap paper will be disposed of immediately after the examination.

14. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied.

SENIOR REACTOR OPERATOR

QUESTION: 1 (1.00)

Following maintenance on Hydraulic Control Unit (HCU) 26-35, the HCU is to be returned to service. Independent verification of valve position is required.

Select the one (1) statement below that correctly describes how independent verification of these valves is accomplished.

a. The first operator opens the valves and seals them open using appropriate seals. The second operator verifies valve position from the control room by observing the "Accumulator Trouble" light on the full core display extinguishes.

b. The first operator opens the valves and seals them open using appropriate seals. The second operator confirms the valves are sealed open.

c. The first operator opens the valves. The second operator observes the valves being opened. No sealing devices are required for these valves.

d. The first operator opens the valves. The second operator confirms the valves are open and seals them using appropriate seals.

ANSWER: b.

KA:	294001K1.01
RO/SRO:	3.7
Reference:	PPM 1.3.29, pg 4 of 26
Comments:	New question (Plant Wide Generic)
LO:	6157, 6159

QUESTION: 2 (1.00)

Which one (1) of the following individuals is responsible for the <u>initial</u> review of plant clearance orders and work packages received from the Clearance Order Review Committee (CORC)?

a. Control Room Operator (CRO)

b. Shift Technical Advisor (STA)

c. Production SRO

d. Control Room Supervisor (CRS)

ANSWER: a.

KA:	294001K1.02
RO/SRO:	4.5
Reference:	PPM 1.3.8, pg 18 of 62
Comments:	New Question (Plant Wide Generic)
LO:	6238

QUESTION: 3 (1.00)

Which one (1) of the following statements would describe "Simultaneous Verification" as it applies to a danger tag clearance order?

a. Two qualified individuals, independently and separately checking the required status of the component or device.

b. A Control Room Operator (CRO) verifying the required status of the component or device using Control Room indications.

c. A second qualified individual, via local panel indications showing the required status of the component or device.

d. Two qualified operators, accompanying each other, check required status, correct identification and location prior to changing component status.

ANSWER: d.

KA:	294001K1.02
RO/SRO:	4.5
Reference:	PPM 1.3.8
Comments:	Modified question (58) (Plant Wide Generic)
LO:	6231

QUESTION: 4 (1.00)

Under normal conditions, keys to locked "High Radiation" areas are issued from which one (1) of the following?

a. Control room.

b. Secondary alarm station.

c. Work control center.

d. Health physics access control.

ANSWER: d.

KA:	294001K1.03
RO/SRO:	3.8
Reference:	PPM 11.2.7.3
Comments:	Modified question (806) (Plant Wide Generic)
LO:	6390

QUESTION: 5 (1.00)

A task must be performed at a location with a general area radiation level of 60 mr/hr. Previous performance of the task indicates that:

One (1) worker can perform the task in 1 hr and 20 min.

Two (2) workers can complete the task in 50 min.

Three (3) workers can complete the task in 30 min.

Four (4) workers can complete the task in 25 min.

Based on the above information, how many workers should be assigned to perform this task?

a. One (1) worker

b. Two (2) workers

c. Three (3) workers

d. Four (4) workers

ANSWER: a.

KA: 294001K1.04
RO/SRO: 3.6
Reference: PPM 1.11.2
Comments: New question (Plant Wide Generic)
LO: None

QUESTION: 6 (1.00)

What is the maximum number of visitors that may accompany one (1) escort into the Main Control Room?

a. Three (3)

b. Five (5)

c. Ten (10)

d. Fifteen (15)

ANSWER: b.

KA:	294001K1.05
RO/SRO:	3.7
Reference:	GET 82-RDT-0300-HO, page 23
Comments:	New question (Plant Wide Generic)
LO:	6097

QUESTION: 7 (1.00)

While inspecting work inside a confined space, the Designated Safety Representative (DSR) reports that combustible gas levels are above 1%. The DSR has ordered you to immediately evacuate the confined space.

Which one (1) of the following actions is required prior to reentry into the confined space?

a. Self Contained Breathing Apparatus (SCBA) and DSR authorization.

b. Hazardous atmosphere has been eliminated and DSR has authorized reentry.

c. Self Contained Breathing Apparatus (SCBA) and standby worker at the entrance to the confined space.

d. "Stay Time" calculated by the DSR in order to reenter the confined space and complete the job.

ANSWER: b.

KA:	294001K1.13
RO/SRO:	3.6
Reference:	PPM 1.9.2, pg 7 of 17
Comments:	New Question (Plant Wide Generic)
LO:	None

QUESTION: 8 (1.00)

Due to an injury sustained on shift, the Fire Brigade Leader has to leave work.

Which one (1) of the following individuals can take the place of the Fire Brigade Leader?

a. Qualified security officer

b. Shift support supervisor

c. Qualified equipment operator

d. Qualified health physics technician

ANSWER: c.

KA:	294001K1.16
RO/SRO:	3.8
Reference:	PPM 1.3.1, pg 40 of 86
Comments:	New Question (Plant Wide Generic)
LO:	None

QUESTION: 9 (1.00)

While reviewing a procedure, you notice a step with a star (★) in the left margin.

Which one (1) of the following is represented by this symbol?

a. Critical to plant/personnel safety step.

b. FSAR Appendix F (Fire Protection Program) commitment step.

c. Technical Specification related step.

d. "For Information Only" step.

ANSWER: b.

KA: 294001A1.01
RO/SRO: 3.4
Reference: SWP-PRO-03, pg. 26 of 65
Comments: New Question (Plant Wide Generic)
LO: 6054

QUESTION: 10 (1.00)

When may a task be performed without an approved procedure present?

a. When the task has no safety significance.

b. When the task procedure number on the cover sheet is proceeded by an asterisk (*).

c. When the task has been previously performed during the shift by the individual and the required steps have been memorized.

d. When the task consiste of simple routine actions frequently performed that don't require step sign-off's, recorded data, or specific sequence.

ANSWER: d.

KA:	294001A1.02
RO/SRO:	4.2
Reference:	SWP-PRO-01
Comments:	Modified Question (5287) (Plant Wide Generic)
LO:	6058

QUESTION: 11 (1.00)

During the performance of a surveillance procedure the Control Room Operator (CRO) informs the Control Room Supervisor (CRS) of a potential problem associated with the next step. After discussion and with concurrence from the Shift Manager it is decided to use a Verbal Temporary Change. At what point in time does this Verbal Temporary Change have to be translated into a Temporary Change Notice (TCN)?

a. Prior to the end of that working shift.

b. Prior to the start of the next calendar day.

c. Within seven (7) working days.

d. Within fourteen (14) working days.

ANSWER: a.

KA:	294001A1.02
RO/SRO:	4.2
Reference:	SWP-PRO-02
Comments:	Modified Question (5305) (Plant Wide Generic)
LO:	6065

QUESTION: 12 (1.00)

An evolution is being performed in accordance with the Reactor Water Cleanup System (RWCU) operating procedure when an error in the procedure is noted. The procedure already has a Temporary Change Notice (TCN) cover sheet attached to the procedure. The Shift Manager (SM) has determined that completion of the work is not essential to plant operations.

Select the one (1) statement below that describes the administrative requirements necessary to continue with this evolution.

a. Develop a temporary procedure to address the problem until the existing procedure can be revised to correct the error.

b. Implement and receive approval for a separate additional TCN to correct this error before continuing with the evolution.

c. Implement a new TCN which corrects the new error and incorporates and cancels the outstanding TCN.

d. Receive verbal authorization to complete the task and record in the Operations Logging System.

ANSWER: c.

KA:	294001A1.02
RO/SRO:	4.2
Reference:	SWP-PRO-02
Comments:	Question # 758 (Plant Wide Generic)
LO:	6067

QUESTION: 13 (1.00)

The plant is operating in Operational Condition 1.

Which one (1) of the following lists the minimum shift crew composition administrative limit as specified in plant procedures?

a. SM, CRS, SSS, three (3) CROs, five (5) EO, ENS communicator, two (2) HP Techs, two (2) Chem Techs, two (2) I & C Techs, Duty Officer.

b. SM, CRS, two (2) CROs, two (2) EOs, STA, HP Tech, Chem Tech.

c. SM, CRS, SSS, three (3) CROs, four (4) EOs, STA, five (5) Fire Brigade members, three (3) HP Techs, Chem Tech.

d. SM, CRS, SSS, two (2) CROs, two (2) EOs, STA, ENS communicator, five (5) Fire Brigade members, three (3) HP Techs, Chem Tech, Elect/I&C Tech, Mechanic, Duty Officer.

ANSWER: c.

KA:	294001A1.03
RO/SRO:	3.7
Reference:	PPM 1.3.1, page 37
Comments:	New Question (Plant Wide Generic)
LO:	6072 (PPM 1.3.1)

QUESTION: 14 (1.00)

On a case-by-case basis, line supervisors/managers can approve the use of signals for communications, if:

1) the signals are not easily confused and are understood by all involved,
2) the concept of three-way communication is applied to the maximum extent possible,
3) a thorough pre-job brief is conducted AND
4) signals are ONLY used...

a. in the Control Room.

b. in severe environments (high noise, heat, or radiation)

c. when physical directions are the "key" elements of the task.

d. when the message originator and message recipient are not readily identifiable to each other by sight and voice.

ANSWER: b.

KA:	294001A1.05
RO/SRO:	3.8
Reference:	PPM 1.3.60, page 5 of 8
Comments:	New Question (Plant Wide Generic)
LO:	None

QUESTION: 15 (1.00)

Who has the responsibility for initiating Emergency Core Cooling Systems (ECCS), if required, during a plant transient?

a. Only the operator responsible for panel H13-P601.

b. The on-shift crew member in closest proximity to panel H13-P601.

c. Only the operator designated by the Control Room Supervisor (CRS) to respond.

d. Any licensed operator at the control console.

ANSWER: d.

KA:	294001A1.09
RO/SRO:	4.2
Reference:	PPM 1.3.1
Comments:	Question (156) (Plant Wide Generic)
LO:	6076

QUESTION: 16 (1.00)

During a plant startup with power at ≈62%, feedwater dissolved oxygen concentration exceeds the fuel warranty requirements.

Which one (1) of the following statements describes actions that should be taken.

a. Initiate an immediate plant shutdown.

b. Initiate immediate corrective actions, increase sampling frequency, and initiate a PER.

c. Increase sampling frequency, initiate a PER, and continue with the startup.

d. Immediately scram the reactor.

ANSWER: b.

KA:	294001A1.14
RO/SRO:	3.4
Reference:	PPM 1.13.1, Pg. 12 of 26
Comments:	New Question (Plant Wide Generic)
LO:	6039

QUESTION: 17 (1.00)

Which one (1) of the following is the LOWEST Emergency Action Level (EAL) at which the WNP-2 administrative exposure hold points are automatically waived?

a. Site Area Emergency (SAE).

b. Unusual Event (UE).

c. General Emergency (GE).

d. Alert.

ANSWER: d.

KA:	294001A1.16
RO/SRO:	4.7
Reference:	PPM 13.2.1
Comments:	Question (6703) (Plant Wide Generic)
LO:	6019

QUESTION: 18 (1.00)

The plant is operating at rated conditions with RRC-IN-ASD/1A (1A ASD UPS inverter) in service and supplying panel E-PP-ASD1/4.

Pushing the red EMER POWER OFF pushbutton on the front of the inverter panel will result in which one (1) of the following?

a. RRC-P-1A ("A" reactor recirculation pump) will immediately trip, RRC-P-1B ("B" reactor recirculation pump) will continue to operate.

b. Both reactor recirculation pumps will immediately trip.

c. Both reactor recirculation pumps will trip after approximately 20 minutes.

d. Both reactor recirculation pumps will continue to operate indefinitely.

ANSWER: b.

KA:	202002A2.07
RO/SRO:	3.3
Reference:	PPM 2.7.4A
Comments:	Modified question (6206) (Plant Sys - Gp I)
LO:	9683

QUESTION: 19 (1.00)

The plant is operating in Mode 1. Both Reactor Recirculation pumps are operating at 45 Hz. Adjustable Speed Drive (ASD) Channel A2 is not running and its white READY light is illuminated.

Which one (1) of the following describes the response of the Recirculation Pumps if the START Pushbutton for RRC-P-1A is pressed?

a. The A2 ASD Channel will start. RRC-P-1A frequency will ramp to 52.2 Hz.

b. The A2 ASD Channel will start. RRC-P-1A will continue to operate at 45 Hz.

c. RRC-P-1A frequency will ramp to 15 Hz, the A2 ASD Channel will start, and RRC-P-1A frequency will ramp back to 45 Hz.

d. RRC-P-1A frequency will ramp to 52.2 Hz and the A2 ASD Channel will start.

ANSWER: b.

KA:	202002K1.02
RO/SRO:	4.2
Reference:	PPM 2.2.1
Comments:	Modified Question (3217) (Plant Sys - Gp I)
LO:	None

QUESTION: 20 (1.00)

Given the following indications:

- Reactor scrammed
- Reactor water level at -95" and down slow
- Drywell pressure at 1.67 psig and up fast.

Which one (1) of the following statements describes the response of the Low Pressure Coolant Injection (LPCI) mode of the Residual Heat Removal (RHR) system to the indications listed above..

a. LPCI will initiate when reactor water level decreases to LE -129".

b. LPCI initiated when reactor water level reached -50".

c. LPCI will initiate when drywell pressure increases to GE 1.68 psig.

d. LPCI initiated when drywell pressure reached 1.65 psig.

ANSWER: d.

KA:	203000K1.13
RO/SRO:	4.0
Reference:	RHR System Text
Comments:	New Question (Plant Sys - Gp I)
LO:	5775

QUESTION: 21 (1.00)

HPCS-V-1 (CST suction) is full closed and HPCS-V-15 (suppression pool suction) is full open during the performance of a High Pressure Core Spray (HPCS) valve operability surveillance when a valid HPCS initiation signal is received.

Which one (1) of the following statements correctly identifies the response of the HPCS system to these conditions.

a. HPCS-V-1 will remain closed.
HPCS-V-15 will remain open.
HPCS-P-1 starts immediately.

b. HPCS-V-15 will start to close.
When HPCS-V-15 is full closed, HPCS-P-1 will start and HPCS-V-1 will open.

c. HPCS-V-1 will remain closed.
HPCS-V-15 will remain open.
HPCS-P-1 must be manually started.

d. HPCS-V-15 will remain open.
When HPCS-V-1 starts to open, HPCS-P-1 will start after a 5 second time delay.

ANSWER: a.

KA:	209002A3.01
RO/SRO:	3.3
Reference:	HPCS Systems Text
Comments:	Modified question (441) (Plant Sys - Gp I)
LO:	5425

QUESTION: 22 (1.00)

Following a valid High Pressure Core Spray (HPCS) initiation on high drywell pressure., the HPCS LEVEL 8 SEALED IN light and alarm are received and HPCS-V-4 (RPV injection valve) closes.

Which one (1) of the following conditions will cause HPCS-V-4 to automatically re-open?

a. Drywell high pressure logic reset.

b. RPV level lowering to +12".

c. RPV level lowering to -51".

d. Drywell high pressure alarm clears.

ANSWER: c.

KA: 209002K4.02
RO/SRO: 3.5
Reference: HPCS System Text
Comments: Modified question (443) (Plant Sys - Gp I)
LO: 5429

QUESTION: 23 (1.00)

An Anticipated Transient Without Scram (ATWS) is in progress concurrent with a loss of MC-8B, suppression pool temperature is 118°F and up slow. Assume all required actions have been completed correctly and no other failures have occurred at this time.

Which one (1) of the following describes the Standby Liquid Control (SLC) system status?

a.	SLC-P-1A - running	SLC-P-1B - running	*(SLC pumps)*
	SLC-V-1A - open	SLC-V-1B - open	*(SLC storage tank outlets)*
	SLC-V-4A - actuated	SLC-V-4B - actuated.	*(Squib valves)*
b.	SLC-P-1A - loss of power	SLC-P-1B - running	*(SLC pumps)*
	SLC-V-1A - loss of power	SLC-V-1B - open	*(SLC storage tank outlets)*
	SLC-V-4A - loss of power	SLC-V-4B - actuated	*(Squib valves)*
c.	SLC-P-1A - off	SLC-P-1B - off	*(SLC pumps)*
	SLC-V-1A - closed	SLC-V-1B - closed	*(SLC storage tank outlets)*
	SLC-V-4A - closed	SLC-V-4B - closed	*(Squib valves)*
d.	SLC-P-1A - running	SLC-P-1B - loss of power	*(SLC pumps)*
	SLC-V-1A - open	SLC-V-1B - loss of power	*(SLC storage tank outlets)*
	SLC-V-4A - actuated	SLC-V-4B - loss of power	*(Squib valves)*

ANSWER: d.

KA:	211000K6.03
RO/SRO:	3.3
Reference:	SLC Systems
Comments:	New question (Plant Sys - Gp I)
LO:	5931h

QUESTION: 24 (1.00)

With the plant in a hydraulic Anticipated Transient Without Scram (ATWS) condition, the Control Room Operator (CRO) carries out the actions of PPM 5.5.11 and resets the scram. Annunciator P603-A8 6-4, SCRAM VALVE PILOT AIR HDR PRESS LOW, fails to clear.

Which one (1) of the following could cause this condition?

a. At least one (1) backup scram valve has failed to ENERGIZE following the scram reset.

b. Alternate Rod Insertion (ARI) logic has not been reset.

c. Both backup scram valves have failed to ENERGIZE following the scram reset.

d. One (1) of the Reactor Protection System (RPS) trip signals has not been bypassed.

ANSWER: b.

KA:	212000A1.11
RO/SRO:	3.3
Reference:	PPM 5.0.10
Comments:	Modified Question (4085) (Plant Sys - Gp I)
LO:	8094 (5.1.2-07)

QUESTION: 25 (1.00)

Which one (1) of the following statements describes all of the conditions that will cause a trip of an Reactor Protection System (RPS) Electric Power Monitoring Assemly (EPA) breaker?

a. Underfrequency, overcurrent, and undervoltage

b. Overfrequency, undervoltage, and overvoltage.

c. Undervoltage, overvoltage, and underfrequency

d. Overfrequency, underfrequency, and overcurrent

ANSWER: c.

KA:	212000K2.01
RO/SRO:	3.3
Reference:	RPS System Text
Comments:	New question (Plant Sys - Gp I)
LO:	5957

QUESTION: 26 (1.00)

With the plant at rated conditions, a GROUP 1 scram solenoid light for Reactor Protection System (RPS) "A" is noted to be deenergized on H13-P603 and H13-P609. During your investigation a loss of RPS B occurs followed almost immediately by a full reactor scram.

What caused the full reactor scram?

a. APRM INOP.

b. Turbine trip.

c. MSIV isolation.

d. Scram discharge volume high level

ANSWER: d.

KA:	212000K3.06
RO/SRO:	4.1
Reference:	RPS Text
Comments:	Modified Question (6201) (Plant Sys - Gp I)
LO:	7676

QUESTION: 27 (1.00)

During a reactor startup, the reactor is subcritical with control rod withdrawal in progress. Source Range Monitor (SRM) count rate has stabilized at 1×10^3 Counts Per Second (CPS) following the last control rod withdrawal.

During withdrawal of the next control rod in the sequence, the first control rod in the next Rod Worth Minimizer (RWM) group, reactor period meters deflect from infinity to ≈20 seconds before turning. Reactor period is now ≈60 seconds increasing (approaching infinity).

Which one (1) of the following actions should be taken for this condition?

a. Verify that the withdrawn control rod did not "double notch" and stop control rod withdrawal to allow stabilization of neutron level.

b. Monitor SRMs and retract SRMs as necessary to maintain count rate LT 1×10^4 CPS.

c. Insert control rods until the reactor is subcritical and notify the Control Room Supervisor (CRS)/Shift Manager (SM) and the Station Nuclear Engineer (SNE).

d. Immediately manually scram the reactor.

ANSWER: a.

KA:	215004A4.01
RO/SRO:	3.8
Reference:	PPM 3.1.2, Step 4.2.2 (2nd CAUTION), page 15; Step 4.2.5 (CAUTION), page 16; Step 4.2.9.d (CAUTION), page 18.
Comments:	Modified Question (815) (Plant Sys - Gp I)
LO:	None

QUESTION: 28 (1.00)

Given the following:

- RPV water level -10" and steady
- Reactor pressure 200 psig and down slow
- Drywell temperature 350°F and down very slow
- No Secondary Containment Control entry conditions exist.
- Emergency depressurization is planned.

Which one (1) of the following is correct concerning the instrument(s) which can be used to determine RPV water level for the given conditions?

a. Wide range only.

b. Narrow range only.

c. None.

d. Fuel zone range only.

ANSWER: a.

KA: 216000K5.07
RO/SRO: 3.8
Reference: NBI Systems Text
Comments: New question (Plant Sys - Gp I)
LO: 5582

QUESTION: 29 (1.00)

Reactor Core Isolation Cooling (RCIC) initiated as expected on a valid low level signal raising RPV level to the Level 8 setpoint.

Which one (1) of the following describes the automatic restart capability of RCIC?

RCIC will...

a. automatically restart when RPV level drops below the Level 8 setpoint.

b. NOT automatically restart unless a high drywell pressure signal is received

c. automatically restart when RPV level drops below the Level 2 setpoint.

d. automatically restart when RPV level drops below the Level 3 setpoint.

ANSWER: c.

KA:	217000A1.03
RO/SRO:	4.0
Reference:	RCIC Systems Text
Comments:	New question (Plant Sys - Gp I)
LO:	5071 and 8735

QUESTION: 30 (1.00)

A transient has resulted in RPV level dropping to -140". The level has remained stable for GT seven (7) minutes. SM-8 has deenergized and Division 1 Automatic Depressurization System (ADS) has been inhibited. After verifying the cause of the loss of SM-8, permission is granted to reenergize the bus.

Assuming no operator actions, which one (1) of the following describes the response of the ADS Logic to the reenergization of SM-8.

a. ADS will initiate 105 seconds after the discharge pressure of "C" Residual Heat Removal (RHR) pump reaches the ADS permissive.

b. ADS will not initiate if the operator resets the division "2" ADS timer within 105 seconds.

c. ADS will initiate immediately when the discharge pressure of "C" Residual Heat Removal (RHR) pump reaches the ADS permissive.

d. ADS will not initiate until the operator resets the division "1" ADS inhibit switch.

ANSWER: c.

KA:	218000K5.01
RO/SRO:	3.8
Reference:	ADS Systems Text
Comments:	New question (Plant Sys - Gp I)
LO:	None

QUESTION: 31 (1.00)

What effect does manually decreasing the output on CAC-FC-67A ("A" recycle flow controller) have on the Containment Atmosphere Control (CAC) system?

a. Reduces flow through the scrubber and reduces oxygen concentration entering the recombiner.

b. Increases flow through the scrubber and increases oxygen concentration entering the recombiner.

c. Reduces flow through the scrubber and increases oxygen concentration entering the recombiner.

d. Increases flow through the scrubber and reduces oxygen concentration entering the recombiner.

ANSWER: b.

KA: 223001A4.13
RO/SRO: 3.4
Reference: CAC System Text
Comments: Question (4357) (Plant Sys - Gp I)
LO: 5133a

QUESTION: 32 (1.00)

Which one (1) of the following is designed to prevent the differential pressure across the primary containment boundary from exceeding the design limit?

a. Reactor building to wetwell vacuum breakers.

b. Wetwell to drywell vacuum breakers.

c. Standby Gas Treatment (SGT) system.

d. Suppression pool "T" quenchers.

ANSWER: a.

KA:	223001K4.06
RO/SRO:	3.3
Reference:	PPM 5.0.10
Comments:	New question (Plant Sys - Gp I)
LO:	8352 (5.1.2-140)

QUESTION: 33 (1.00)

A Loss of Coolant Accident (LOCA) has occurred, all Emergency Core Cooling Systems (ECCS) equipment has functioned as designed. Present plant conditions are as follows:

- RPV level -135" and up slow
- RPV pressure 200 psig and down slow
- Wetwell pressure 9 psig and up very slow
- RHR-V-42A (RPV injection valve) is open

RHR-V-17A (Upper drywell spray inboard isolation valve) is opened in preparation for drywell spray. When the Control Room Operator (CRO) takes the control switch for RHR-V-16A (upper drywell spray outboard isolation) to OPEN, RHR-V-16A will...

a. remain closed until RPV pressure drops below 135 psig.

b. open when RPV water level is GE -129".

c. open immediately.

d. remain closed.

ANSWER: d.

KA:	226001GK.07
RO/SRO:	3.5
Reference:	RHR Systems Text
Comments:	New Question (Plant Sys - Gp I)
LO:	5781

QUESTION: 34 (1.00)

Loss of DP-S1-2 power will render Safety Relief Valve (SRV) control switches INOPERABLE at the location(s) specified in which one (1) of the following?

a. H13-P601 only

b. H13-P601 and H13-P631 (ADS division 2 logic panel)

c. H13-P628 (ADS division 1 logic panel) and E-CP-ARS (Alternate remote shutdown panel)

d. H13-P631 (ADS division 2 logic panel) and C61-P001 (Remote shutdown panel)

ANSWER: d.

KA:	239002K4.05
SRO:	3.7
Reference:	PPM 4.12.1.1 and RSD System Text
Comments:	Modified Question (461) (Plant Sys - Gp I)
LO:	5885a

QUESTION: 35 (1.00)

The plant is operating at 100% power when the Control Room Operator (CRO) reports that RPV pressure is trending down. Shortly after this report the reactor scrams and the Main Steam Isolation Valves (MSIVs) close.

Which one (1) of the following describes the cause of this transient?

a. The selected Digital Electrohydraulic (DEH) pressure controller has slowly failed high.

b. The backup Digital Electrohydraulic (DEH) pressure controller has instantly failed low.

c. The selected Digital Electrohydraulic (DEH) pressure controller has instantly failed low.

d. The backup Digital Electrohydraulic (DEH) pressure controller has slowly failed high.

ANSWER: a.

KA:	241000K3.02
RO/SRO:	4.3
Reference:	DEH System Text
Comments:	Modified Question (6232) (Plant Sys - Gp I)
LO:	5286b

QUESTION: 36 (1.00)

With a plant startup in progress and reactor power at 20%, #3 Turbine Bypass Valve (BPV) is declared INOP.

Which one (1) of the statements below describes the action(s) which must be taken under the above conditions?

a. Restore the inoperable BPV to OPERABLE status within 1 hour or reduce power to less than 5% of rated within the next 4 hours.

b. Continue the startup but do not exceed 90% of rated power until the BPV has been restored to OPERABLE status.

c. Restore the inoperable BPV to OPERABLE status prior to reaching 25% of rated power.

d. Restore the BPV to OPERABLE within 12 hours, or suspend the startup and be in COLD SHUTDOWN within the next 12 hours.

ANSWER: c.

KA:	241000A2.03
RO/SRO:	4.2
Reference:	Tech. Spec. 3.7.9
Comments:	New question (Plant Sys - Gp I)
LO:	None

QUESTION: 37 (1.00)

With the Reactor at 100% power, a trip of COND-P-2B (Condensate Booster Pump 2B) occurred.

With no operator actions, following a time interval the following conditions exist:

- The reactor is scrammed
- RPV water level is at 60" and up very slow
- RPV pressure being maintained using Safety Relief Valves (SRVs)

Which of the following describes the response of Reactor Building Ventilation (RBHVAC) and Standby Gas Treatment (SGT) systems to this transient?

a. RBHVAC will NOT isolate
RBHVAC fans will NOT trip
SGT will auto start

b. RBHVAC will isolate
RBHVAC fans will trip
SGT will auto start.

c. RBHVAC will NOT isolate
RBHVAC fans will NOT trip
SGT will NOT start

d. RBHVAC will isolate
RBHVAC fans trip
SGT will NOT start.

ANSWER: b.

KA:	261000K4.01
RO/SRO:	3.8
Reference:	SGT System Text
Comments:	Modified Question (6240) (Plant Sys - Gp I)
LO:	5828

QUESTION: 38 (1.00)

Following full load operation for a routine surveillance, diesel generator #1 is being cooled down at idle speed. During this time a loss of off-site power occurs.

Which one (1) of the following statements describes the actions necessary to ensure proper operation of the diesel for reenergizing SM-7?

a. Place the excitation mode selector switch in PARALLEL. Ensure that SW-P-1A ("A" service water pump) continues to run or manually trip the diesel.

b. Place the engine speed selector switch in RATED and place the control switch for SW-P-1A to STOP to reset the auto start on the loss of off-site power.

c. Place the excitation mode selector switch in PARALLEL and place the control switch for SW-P-1A to STOP to reset the auto start on the loss of off-site power.

d. Place the engine speed selector switch in RATED. Ensure that SW-P-1A starts as soon as it's discharge valve cycles full closed to full open.

ANSWER: d

KA:	264000K6.08
RO/SRO:	3.7
Reference:	Diesel Generator System Text and PPM 2.7.2A
Comments:	New Question (Plant Sys - Gp I)
LO:	5321

QUESTION: 39 (1.00)

SM-8 is deenergized, which one (1) of the following is a permissive that MUST be satisfied in order for DG-2 to re-energize SM-8?

a. Relay 86DG2 (Engine lockout) must be reset.

b. Breaker 3-8 (feed from SM-3) and 8-3 (feed to SM-8) must both be open.

c. Engine control switch must be in the REMOTE position.

d. Drywell pressure must be greater than 1.65 psig.

ANSWER: a.

KA: 264000A3.05
RO/SRO: 3.5
Reference: Diesel Generator System Text
Comments: Similar Question (302) (Plant Sys - Gp I)
LO: 5316

QUESTION: 40 (1.00)

Steam tunnel cooling fans "A" and "B" are in service. A main steam line break results in steam tunnel pressure in excess of 0.8 psi.

What actions will occur as a result of this transient?

a. Standby gas treatment initiates.

b. Reactor building ventilation isolates.

c. Steam tunnel cooling fan "C" auto starts.

d. Steam tunnel blowout panels relieve.

ANSWER: d.

KA:	290001K5.01
RO/SRO:	3.4
Reference:	Secondary Containment System Text
Comments:	New question (Plant Sys - Gp I)
LO:	7003

QUESTION: 41 (1.00)

Following a reactor scram, the Control Room Operator (CRO) notes that CRD-FIC-600 (CRD system flow controller) output signal is going down

Which one (1) of the following could cause this condition?

a. High charging header flow.

b. High cooling header demand.

c. Low drive header flow.

d. Low scram header flow.

ANSWER: a.

KA:	201001A2.04
RO/SRO:	3.9
Reference:	CRDH System Text
Comments:	New Question (Plant Sys - Gp II)
LO:	5185b

QUESTION: 42 (1.00)

Select the power supply and logic configuration for the Alternate Rod Insertion (ARI) solenoid valves.

a. 125 VDC (DP-S1-1A/2A) - must be ENERGIZED to vent the scram air header.

b. 120 VAC (RPS A) - must be DE-ENERGIZED to vent the scram air header.

c. 125 VDC (DP-S1-1D/2D) - must be DE-ENERGIZED to vent the scram air header.

d. 120 VAC (IN-2) - must be ENERGIZED to vent the scram air header.

ANSWER: a.

KA:	201001K2.05
RO/SRO:	4.5
Reference:	DC Power Systems Text
Comments:	Modified question (175) (Plant Sys - Gp II)
LO:	5262

QUESTION: 43 (1.00)

After completing the Immediate Actions for a reactor scram, the Control Room Operator (CRO) notices a WITHDRAW rod block has been applied

Which one (1) of the following is true concerning this condition?

This rod block...

a. will automatically be bypassed when the scram is reset.

b. can be manually bypassed by bypassing the RWM.

c. will automatically be bypassed 10 seconds after placing the reactor mode switch in SHUTDOWN.

d. CANNOT be bypassed.

ANSWER: d.

KA:	201002K4.02
RO/SRO:	3.5
Reference:	RPS System Text
Comments:	New Question (Plant Sys - Gp II)
LO:	5952

QUESTION: 44 (1.00)

The reactor is in Operational Condition 5, the Control Room Supervisor (CRS) has directed the Control Room Operator (CRO) to select control rod 30-55 to verify its position. The CRO reports that control rod 30-55 cannot be selected.

Which one (1) of the following could cause this condition?

a. The refuel bridge is near or over the core.

b. The fuel grapple is not full up.

c. Another control rod is withdrawn past "00".

d. The fuel grapple is loaded.

ANSWER: c.

KA: 201002K3.01
RO/SRO: 3.4
Reference: Fuel Handling Text
Comments: New question (Plant Sys - Gp I)
LO: 5359 & 5360

QUESTION: 45 (1.00)

With the plant at rated conditions a Group 1 isolation occurred with RPV pressure peaking at 1145 psig during the transient.

Which one (1) of the following describes the direct effect on the reactor recirculation pump breakers?

a. No breakers are effected

b. Only breakers CB-RPT-3A and CB-RPT-3B trip.

c. Breakers CB-RPT-3A, CB-RPT-3B, CB-RPT-4A, CB-RPT-4B trip.

d. Only breakers CB-RPT-4A and CB-RPT-4B trip.

ANSWER: b.

KA:	202001A2.14
RO/SRO:	4.2
Reference:	RRC Systems Text, PPM 4.602.A6-1.2/1.6
Comments:	Modified question (3893) (Plant Sys - Gp II)
LO:	5023e

QUESTION: 46 (1.00)

The plant is operating at 100% power when the "A" reactor recirculation pump trips. After referring to the Power/Flow map, the CRS directs the CRO to increase flow on the "B" reactor recirculation pump.

Of the following, which one (1) is the MAXIMUM allowable single loop recirculation flow?

a. 31,600 GPM

b. 37,500 GPM

c. 41,500 GPM

d. 45,000 GPM

ANSWER: c.

KA:	202001GK.06
RO/SRO:	4.1
Reference:	Tech. Spec. 3.4.1.1.3d
Comments:	Modified question (3877) (Plant Sys - Gp II)
LO:	None

QUESTION: 47 (1.00)

Following a loss of SM-7 and an Anticipated Transient Without Scram (ATWS) condition, boron injection is required.

What effect will Standby Liquid Control (SLC) initiation have on Reactor Water Cleanup (RWCU) system valves?

a. RWCU-V-104 (RWCU system bypass) opens.

b. RWCU-V-1 (RWCU inboard isolation) closes.

c. RWCU-V-4 (RWCU outboard isolation) closes.

d. RWCU-V-40 (RPV/RWCU return isolation) closes.

ANSWER: c.

KA:	204000K4.04
RO/SRO:	3.6
Reference:	RWCU System Text
Comments:	New Question (Plant Sys - Gp II)
LO:	5035

QUESTION: 48 (1.00)

With the plant at 30% power, which one (1) of the following describes the effect that a loss of rod position information for a single control rod will have on the Reactor Manual Control System (RMCS)?

a. A rod insert and withdraw block will be generated via the Rod Worth Minimizer (RWM).

b. A rod withdraw block will be generated via the Rod Sequence Control System (RSCS).

c. A rod insert block will be generated via the Rod Position Indication System (RPIS).

d. No rod blocks are generated, a loss of rod position indication only.

ANSWER: d.

KA:	214000K3.03
RO/SRO:	3.2
Reference:	RMCS Systems Text
Comments:	Modified Question (4286) (Plant Sys - Gp II)
LO:	7754a

QUESTION: 49 (1.00)

The plant is operating at 100% power when both 500 KV generator output breakers trip.

If the main turbine <u>fails to trip</u>, which one (1) of the following describes the short term response of the main turbine Overspeed Protection Controller (OPC) for this condition?

a. OPC initially actuates and then resets. Thereafter main turbine speed is controlled at 100% of rated by the Digital Electrohydaulic (DEH) control system.

b. OPC initially actuates and does NOT reset. Main turbine speed coasts down to 0 rpm.

c. OPC repeatedly actuates and resets to control main turbine speed LT 103% of rated.

d. OPC repeatedly actuates and resets to control pressure at Pressure Setpoint.

ANSWER: c.

KA:	245000K4.09
RO/SRO:	3.2
Reference:	Main Turbine Systems Text
Comments:	Modified question (228) (Plant Sys - Gp II)
LO:	5566

QUESTION: 50 (1.00)

The plant is operating at 50% power with both Reactor Feed Pump Turbines (RFPTs) operating in automatic control when RFPT "A" governor valves become stuck in the present position.

Assuming NO OPERATOR ACTIONS (other than rasing power), how will RFPT "A" speed and RPV level respond if reactor power is raised to 100%?

	RFPT "A" SPEED	RPV Level
a.	Decrease	Remain the same
b.	Decrease	Lower
c.	Increase	Remain the same
d.	Remain approximately the same	Lower

ANSWEP c.

KA: 259001K3.01
RO/SRO: 3.9
Reference: Feedwater/Condensate System Text
Comments: New Question-(Plant Sys - Gp II)
LO: None

QUESTION: 51 (1.00)

Which one (1) of the following will automatically transfer IN-2 to the alternate AC power supply?

a. Inverter overvoltage
Low frequency
Missed commutation pulse
Low DC voltage.

b. Low DC voltage
Inverter overvoltage
Low load
Blown DC fuse.

c. Inverter undervoltage
Low frequency
Missed commutation pulse
Blown DC fuse.

d. Inverter undervoltage
Inverter overvoltage
High load
Low DC voltage.

ANSWER: d.

KA:	262002K4.01
RO/SRO:	3.4
Reference:	UPS Systems Text
Comments:	Question (3799) (Plant Sys - Gp II)
LO:	5892

QUESTION: 52 (1.00)

A loss of 250 VDC Motor Control Center MC-S2-1A has occurred.

Which one (1) of the following describes the direct effect this condition will have on the Reactor Core Isolation Cooling (RCIC) System?

a. RCIC initiation logic power is lost, but RCIC can still be manually initiated.

b. RCIC-V-1 (RCIC turbine trip valve) indication and control will be lost rendering RCIC INOPERABLE.

c. RCIC flow control will not function in automatic, but can still be used in manual.

d. RCIC valve indications are lost, however, all system functions still work.

ANSWER: b.

KA:	263000K3.03
RO/SRO:	3.8
Reference:	DC Power System Text
Comments:	New question (Plant Sys - Gp II)
LO:	7657

QUESTION: 53 (1.00)

A reactor startup from cold conditions is in progress, a vacuum is being drawn in the main condenser using both AR-P-1A and AR-P-1B (mechanical vacuum pumps). MS-RIS-610B (main steam line radiation monitor) has generated an INOP trip.

Which one (1) of the following describes the effect of the above conditions?

a. Both AR-P-1A and AR-P-1B will trip.

b. Neither AR-P-1A or AR-P-1B will trip.

c. Only AR-P-1B will trip.

d. Only AR-P-1A will trip.

ANSWER: b.

KA:	272000K1.02
RO/SRO:	3.5
Reference:	PRM System Text
Comments:	New Question (Plant Sys - Gp II)
LO:	5647f

QUESTION: 54 (1.00)

The plant is operating at 100% power when an EO, investigating an Accumulator Trouble alarm, reports that an HCU Nitrogen Accumulator has completely de-pressurized.

Which one (1) of the following describes the scram capability of the affected control rod?

a. The rod can be scrammed because CRD Drive Header pressure is greater than Scram Discharge Volume pressure.

b. The rod can be scrammed because RPV pressure is greater than Scram Discharge Volume pressure.

c. The rod can NOT be scrammed because Nitrogen Accumulator pressure is less than RPV pressure.

d. The rod can NOT be scrammed because Scram Inlet and Scram Outlet valves have lost their pneumatic supply.

ANSWER: b.

KA:	201003K4.04
RO/SRO:	3.7
Reference:	CRDM System
Comments:	Question (3524) (Plant Sys - Gp III)
LO:	5215

QUESTION: 55 (1.00)

While withdrawing control rods during a plant startup, the control room operator (CRO) reports that a control rod will not move and appears to be stuck.

Which one (1) of the following describes an option that could be used to attempt to move this control rod?

a. Adjust cooling water flow to GT 80 gpm and allow the rod to be forced in.

b. Use the Single Rod Insert (SRI) switches to scram the rod and then recover it.

c. Apply continuous withdrawal signals in two minute increments.

d. Apply a continuous insert signal, release, then apply a continuous withdrawal signal.

ANSWER: d.

KA:	201003A2.01
RO/SRO:	3.6
Reference:	CRDH System Text
Comments:	New question (Plant Sys - Gp III)
LO:	5204

QUESTION: 56 (1.00)

Initial Conditions:

- Reactor startup in progress.
- RPV pressure ≈450 psig and going up
- Main condenser vacuum ≈23"
- SM-1, SM-2, and SM-3 being powered from the startup transformer (TR-S)
- COND-P-2A ("A" condensate booster pump) running
- CW-P-1C ("C" circulating water pump) running
- COND-P-1A and COND-P-1B ("A" & "B" condensate pumps) running

Maintenance has requested that Operations start the CW-P-1A & CW-P-1B ("B" & "C" circulating water pumps) for post maintenance testing.

Using the above information, determine which one (1) of the following statements is correct.

a. Starting the third circulating water pump will cause an undervoltage trip of TR-S.

b. Operation of more than one (1) circulating water pump at this point in the startup is not recommended due to tube erosion concerns.

c. Starting two (2) additional circulating water pumps should not cause any significant problems for plant operations.

d. If CW-P-1A is started last, the transient on SM-1 will cause a trip of COND-P-1A and COND-P-2A on over current.

ANSWER: a.

KA:	256000K6.02
RO/SRO:	3.1
Reference:	CW/TMU Systems Text, pg 15 & PPM 2.6.1 Sec. 5.3.13, Page 18 of 93
Comments:	New question (Plant Sys - Gp III)
LO:	7765

QUESTION: 57 (1.00)

RFW-V-14 (condensate cleanup flow valve) is full closed and RFW-V-65A & RFW-V-65B (RPV inlet isolation valves) are full open.

Which one (1) of the following describes the response of these valves if the control switch for RFW-V-14 is taken to OPEN?

a. RFW-V-65A & RFW-V-65B will remain open. RFW-V-14 will remain closed.

b. RFW-V-65A & RFW-V-65B will remain open. RFW-V-14 will open.

c. RFW-V-65A & RFW-V-65B will close. RFW-V-14 will open when both RFW-V-65A & RFW-V-65B are full closed.

d. RFW-V-65A & RFW-V-65B will close. RFW-V-14 will immediately open.

ANSWER: a.

KA:	256000GK.07
RO/SRO:	3.4
Reference:	PPM 2.2.4, NOTE from Step 5.1.38, page 18
Comments:	New question (Plant Sys - Gp III)
LO:	None

QUESTION: 58 (1.00)

The Plant is operating at ≈100% power when the following annunciators are received on panel H13-P800:

- BUS 2 OC LOCKOUT
- BUS 2 UNDERVOLTAGE
- BKR N1-2 TRIP

Which one (1) of the following automatic actions is expected under the above conditions?

a. Reactor scram due to loss of COND-P-1A ("A" condensate pump).

b. Auto start of the High Pressure Core Spray (HPCS) diesel generator.

c. Reactor scram due to a main turbine trip.

d. Auto start of diesel generator #1.

ANSWER: b.

KA: 295003K2.02
RO/SRO: 4.2
Reference: AC Systems Text
Comments: Modified Question (340) (Emer & Abn - Gp I)
LO: 7767

QUESTION: 59 (1.00)

During a "Station Blackout" plant parameters are as follows:

- RPV water level	-52" and up slow
- RPV pressure	850 psig and down slow
- Wetwell pressure	19 psig and up slow
- Drywell temperature	243°F and up slow
- Wetwell temperature	112°F
- Wetwell level	+ 3"

Which one (1) of the following interlocks must be defeated to allow continued Reactor Core Isolation Cooling (RCIC) system operation under these conditions?

a. High exhaust pressure turbine trip.

b. RCIC exhaust diaphragm rupture isolation.

c. Level 2 RCIC turbine trip.

d. Drywell high temperature RCIC system isolation.

ANSWER: a.

KA:	295003A1.03
RO/SRO:	4.4
Reference:	PPM 5.6.1
Comments:	Modified Question (4402) (Emer & Abn - Gp I)
LO:	5722

QUESTION: 60 (1.00)

A reactor scram has just occurred. The Rod Sequence Control System (RSCS) and Rod Worth Minimizer (RWM) have not functioned to give the ALL RODS IN information.

Which one (1) of the following H13-P603 indications may be used to verify rods full in?

a. White Reactor Protection System (RPS) group lights deenergized.

b. Amber backup scram lights deenergized.

c. Green full in lights energized

d. Blue scram lights energized.

ANSWER: c.

KA: 295006GK.05
RO/SRO: 4.0
Reference: RSCS Systems Text
Comments: Modified question (3746) (Emer & Abn - Gp I)
LO: 5807

QUESTION: 61 (1.00)

Initial plant conditions are as follows:

- Reactor power 100%
- RPV pressure 1020 psig
- RPV water level 36"

A reactor scram occurs and the scram inlet valve (126) of a single control rod mechanically binds and fails to open.

Which one (1) of the following describe the control rod's response to this failure?

a. Fully inserts and its blue scram light is energized.

b. Fails to insert and its blue scram light is energized.

c. Fully inserts and its blue scram light is deenergized.

d. Fails to insert and its blue scram light is deenergized.

ANSWER: c.

KA:	295006A1.06
RO/SRO:	3.6
Reference:	CRDH System Text
Comments:	Modified Question (341) (Emer & Abn - Gp I)
LO:	5184

QUESTION: 62 (1.00)

The reactor is operating at ≈98% power. An equipment operator reports a lube oil leak in the "B" feedwater pump room. Immediately after acknowledging the report, RFW-P-1B ("B" reactor feedwater pump) trips on low lube oil pressure.

Which one (1) of the following describes the effect this condition has on the reactor recirculation system?

a. Only RRC-P-1B ("B" reactor recirculation pump) will runback to 15Hz.

b. Both RRC-P-1A and RRC-P-1B ("A" & "B" reactor recirculation pumps) will runback to 27Hz.

c. Both RRC-P-1A and RRC-P-1B ("A" & "B" reactor recirculation pumps) will runback to 15 Hz.

d. Only RRC-P-1B ("B" reactor recirculation pump) will runback to 52.2 Hz.

ANSWER: b.

KA:	295009K2.03
RO/SRO:	3.2
Reference:	ASD System Text
Comments:	New question (Emer & Abn - Gp I)
LO:	9683

QUESTION: 63 (1.00)

Which one (1) of the follwoing protective features is designed to actuate to ensure net positive suction head for the Reactor Recirculation pumps?

a. Level 1 trip

b. Level 2 trip

c. Level 3 runback

d. Level 4 runback

ANSWER: b.

KA:	295009A1.03
RO/SRO:	3.1
Reference:	RRC System Text
Comments:	Modified Question (5556) (Emer & Abn - Gp I)
LO:	5023

QUESTION: 64 (1.00)

The plant has experienced a transient, Emergency Operating Procedures (EOPs) have been entered and conditions are as follows:

RPV water level	-150"and down slow
RPV pressure	180 psig and down slow
Wetwell temperature	110°F and up slow
RHR loop "A" injecting to the RPV	
RHR loop "B" in suppression pool cooling	
All other injection sources are unavailable	

Which one (1) of the following statements best describes actions that need to be taken given the above information?

a. Open seven (7) Automatic Depressurization System (ADS) Safety Relief Valves (SRVs) to emergency depressurize.

b. RHR loop "B" should be removed from suppression pool cooling and injected into the RPV.

c. RHR loop "A" should be removed from injection and placed into suppression pool cooling.

d. No actions are required until RPV level lowers to LE -192".

ANSWER: b.

KA:	295013K2.01
RO/SRO:	3.7
Reference:	PPM 5.2.1
Comments:	New question (Emer & Abn - Gp I)
LO:	8304

SENIOR REACTOR OPERATOR

QUESTION: 65 (1.00)

The control room operator (CRO) is withdrawing control rods with the reactor critical and power indicating on the IRMs just prior to the point of adding heat. The CRO observes an unexpected rapid increase in power and a period indication of ≈30 seconds.

Assuming NO OPERATOR ACTION, which one (1) of the following scram signals will terminate this transient?

a. Reactor short period.

b. Average Power Range Monitor (APRM) neutron flux high.

c. Source Range Monitor (SRM) upscale

d. Intermediate Range Monitor (IRM) neutron flux high

ANSWER: d.

KA: 295014A2.01
RO/SRO: 4.2
Reference: IRM System Text
Comments: Modified Question (249) (Emer & Abn - Gp I)
LO: 5459

QUESTION: 66 (1.00)

The plant is operating at ≈98% power when the following indications are noted:

Reactor power down slow.
Megawatts down slow.
Control air pressure down slow.
Three (3) control rods indicate FULL-IN with scram lights energized on the full core display.

Which one (1) of the following statements describes the actions required to be taken given the above indications.

a. NO actions are required until the first Main Steam Isolation Valve (MSIV) is showing dual position indication.

b. Close or verify closed CN-V-65 (containment instrument air crosstie shut-off valve.

c. Initiate a manual reactor scram and refer to PPM 3.3.1.

d. Lower core flow to reduce reactor power to LT 90% of rated core thermal power.

ANSWER: c.

KA:	295015A1.02
RO/SRO:	4.2
Reference:	CAS System Text and PPM 4.1.1.7B
Comments:	New Question (Emer & Abn - Gp I)
LO:	7605

QUESTION: 67 (1.00)

Which one (1) of the following systems was specifically designed to ensure reactor power could be monitored under DBA/LOCA conditions?

a. Source Range Monitoring (SRM) system

b. Local Power Range Monitoring (LPRM) system.

c. Wide Range Monitoring (WRM) system.

d. Intermediate Range Monitoring (IRM) system

ANSWER: c.

KA:	295015K2.08
RO/SRO:	3.7
Reference:	WRM System Text
Comments:	Modified Question (3707) (Emer & Abn - Gp I)
LO:	5963

QUESTION: 68 (1.00)

The control room evacuation procedure directs isolating certain control room current meters using the Current Transformer (CT) shorting switches.

Which one (1) of the following lists the locations of these CT shorting switches?

a. "B" residual heat removal pump, "B" service water pump, SL-71 feeder, and SL-73 feeder breaker cubicles.

b. "A" residual heat removal pump, "A" service water pump, SL-81 feeder, and SL-83 feeder breaker cubicles.

c. "A" residual heat removal pump, "A" service water pump, Startup Transformer (TR-S) feeder, SL-71 feeder, and SL-73 feeder breaker cubicles.

d. "B" residual heat removal pump, "B" service water pump, Backup Transformer (TR-B) feeder, SL-81 feeder, and SL-83 feeder breaker cubicles.

ANSWER: d.

KA:	295016GK.06
RO/SRO:	4.1
Reference:	Remote Shutdown Panel System Text, pg. 14
Comments:	New Question (Emer & Abn - Gp I)
LO:	7737

QUESTION: 69 (1.00)

A "Most Immediate" control room evacuation is required due to heavy smoke intrusion.

Which one (1) of the following statements lists only IMMEDIATE ACTIONS that should be taken prior to exiting the control room?

a. Manually scram the reactor, lock the reactor mode switch in SHUTDOWN and close the Main Steam Isolation Valves (MSIVs).

b. Manually scram the reactor, initiate Reactor Core Isolation Cooling (RCIC) and make a plant announcement.

c. Manually scram the reactor, close the MSIVs and transfer RPV level control to RFW-FCV-10A and RFW-FCV-10B (feedwater startup valev to the reactor).

d. Manually scram the reactor, lock the reactor mode switch in SHUTDOWN and start diesel generator #2

ANSWER: a.

KA:	295016K3.01
RO/SRO:	4.2
Reference:	PPM 4.12.1.1
Comments:	Modified Question (256) (Emer & Abn - Gp I)
LO:	None

QUESTION: 70 (1.00)

The plant has experienced a transient, PPM 5.1.2 has been entered, plant parameters are as follows:

- RPV water level	-145" and steady
- Drywell pressure	10 psig and down slow
- Wetwell temperature	110°F and up very slow

- Main Steam Isolation Valves (MSIVs) are closed
- Both Standby Liquid Control (SLC) pumps are injecting

Which one (1) of the following identifies a valid annunciator that would preclude/prevent reopening the MSIVs?

a. LPCS/RHR A INIT RPV LEVEL LOW -129".

b. DRYWELL PRESS HIGH TRIP.

c. NSSSS ISOL MSL FLOW HIGH.

d. RC-1 HALF TRIP.

ANSWER: c.

KA:	295017K3.01
RO/SRO:	3.9
Reference:	PPM 5.1.2 and NS4 System Text
Comments:	Modified Question (677) (Emer & Abn - Gp I)
LO:	None

QUESTION: 71 (1.00)

A spent fuel assembly is dropped during transport in the spent fuel pool. The bridge operator observes bubbles rising from the dropped assembly.

Which one (1) of the following is an IMMEDIATE ACTION for this situation?

a. Place all assemblies in a safe location, leave the area, and call the control room.

b. Immediately evacuate the refuel floor of all personnel.

c. Contact Health Physics and ask for an area survey, then inform the Control Room Supervisor (CRS).

d. Contact the refuel floor supervisor and the system engineer, then attempt to recover the dropped assembly.

ANSWER: b.

KA:	295023K1.01
RO/SRO:	3.9
Reference:	PPM 4.12.3.1, Rev and Fuel Handling System Text
Comments:	Modified Question (508) (Emer & Abn - Gp I)
LO:	7713

QUESTION: 72 (1.00)

PPM 5.2.1 "Primary Containment Control" directs that when drywell pressure exceeds 39 psig the primary containment is to be vented to reduce and maintain wetwell pressure below the Primary Containment Pressure Limit (PCPL).

Which one (1) of the following statements describes the preferred vent path and the reason that this path is preferred?

a. Drywell, this is the vent path with the highest flowrate capacity.

b. Wetwell, to take advantage of suppression pool scrubbing for minimizing the amount of radioactivity released.

c. Drywell, in order to minimize the moisture saturation and breakdown of the Standby Gas Treatment (SGT) system charcoal adsorbers.

d. Wetwell, in order to minimize cycling, and potential failure of the wetwell to drywell vacuum breakers.

ANSWER: b.

KA:	295024K3.07
RO/SRO:	4.0
Reference:	PPM 5.2.1
Comments:	Question (512) (Emer & Abn - Gp I)
LO:	8363 (PPM 5.2.1)

QUESTION: 73 (1.00)

The plant was operating at ≈98% power when a leak in the discharge of a condensate booster pump caused a low suction pressure trip of the reactor feedwater pumps. RPV level dropped to -25" initially and is now going down very slow, the Control Room Supervisor (CRS) has entered PPM 5.1.1, RPV Control, and is executing all legs concurrently. Wetwell temperature has just been reported at 92°F and up slow.

Which one (1) of the following describes the Emergency Operating Procedure (EOP) implementation to be used under these conditions?

a. Continue PPM 5.1.1, RPV Control, RPV level steps, AND enter PPM 5.3.1, Secondary Containment Control.

b. Continue PPM 5.1.1, RPV Control, AND concurrently enter PPM 5.2.1, Primary Containment Control.

c. Complete PPM 5.1.1, RPV Control, RPV level steps, THEN enter PPM 5.2.1, Primary Containment Control.

d. Reenter PPM 5.1.1, RPV Control, AND concurrently enter PPM 4.12.4.1A High Energy Line Break.

ANSWER: b.

KA:	295024GK.11
RO/SRO:	4.5
Reference:	PPM 5.0.10, Sect. 3.5, PPM 5.1.1, PPM 5.2.1
Comments:	Modified Question (721) (Emer & Abn - Gp I)
LO:	8017

QUESTION: 74 (1.00)

A plant transient has occurred which has caused an isolated Anticipated Transient Without Scram (ATWS) condition with Average Power Range Monitors (APRMs) indicating ≈15% power and RPV Pressure ≈1080 psig. The Control Room Supervisor (CRS) directs the Control Room Operator (CRO) to restore and maintain RPV pressure 800 to 1000 psig using Safety Relief Valves (SRVs).

Which one (1) of the following describes why pressure is being lowered and maintained below it's initial value?

This pressure band...

a. avoids Safety Relief Valve (SRV) lifting due to high pressure.

b. ensures that the shutoff head of the Standby Liquid Control (SLC) pumps is not exceeded.

c. prevents the Heat Capacity Temperature Limit (HCTL) from being exceeded.

d. Ensures that any potential break leak rate will be lower than the design basis for Emergency Core Cooling Systems (ECCS).

ANSWER: a.

KA:	295025K2.01
RO/SRO:	4.1
Reference:	PPM 5.0.10, Sect. 8.23. step P-5
Comments:	Modified Question (678) (Emer & Abn - Gp I)
LO:	8163

SENIOR REACTOR OPERATOR

QUESTION: 75 (1.00)

The plant is in a condition requiring the Control Room Supervisor (CRS) to execute PPM 5.1.1, RPV Level Control, and PPM 5.2.1, Primary Containment Control, concurrently. The CRS has directed a pressure reduction which exceeds the normal, allowable RPV cooldown rate of 100°F/Hr.

Which one (1) of the following describes a condition that would allow the CRS to take this action?

a. Prevent RPV level from going LT Top of Active Fuel (TAF).

b. Prevent exceeding Drywell Spray Initiation Limit (DSIL).

c. Prevent exceeding Heat Capacity Temperature Limit (HCTL).

d. Prevent exceeding Maximum Primary Containment Water Level Limit (MPCWLL).

ANSWER: c.

KA:	295025A2.03
RO/SRO:	4.1
Reference:	PPM 5.0.10
Comments:	Modified Question (Emer & Abn - Gp I)
LO:	8048 (PPM 5.1.1)

QUESTION: 76 (1.00)

A plant transient has caused a reactor scram. The following conditions exist:

- APRM indication	10%
- RPV level	-30"
- RPV pressure	1000 psig
- Drywell pressure	0.25 psig
- Drywell temperature	125°F
- Wetwell level	-1.5"
- Wetwell temperature	95°F

Which one (1) of the following identifies the Emergency Operating Procedures (EOPs) that should have been entered given the above conditions?

a. PPM 5.1.3, Emergency RPV Depressurization
PPM 5.3.1, Secondary Containment Control
PPM 5.1.2, RPV Control - ATWS

b. PPM 5.1.1, RPV Control
PPM 5.2.,1 Primary Containment Control
PPM 5.3.1, Secondary Containment Control

c. PPM 5.1.1, RPV Control
PPM 5.2.1, Primary Containment Control
PPM 5.1.5, Emergency RPV Depressurization - ATWS

d. PPM 5.1.1, RPV Control
PPM 5.1.2, RPV Control - ATWS
PPM 5.2.1, Primary Containment Control

ANSWER: d

KA: 295026GK.12
RO/SRO: 4.5
Reference: PPM 5.0.10
Comments: Modified Question (732) (Emer & Abn - Gp I)
LO: 8017 (PPM 5.0.10)

SENIOR REACTOR OPERATOR

QUESTION: 77 (1.00)

A plant transient has caused a reactor scram. Plant conditions are as follows:

- Reactor power	≈15%
- RPV pressure	1000 psig and steady
- RPV level	-125" and down
- Wetwell temperature	165°F and up slow
- Wetwell level	32.5' and up very slow

Which one (1) of the following describes the operation of the Safety Relief Valves (SRVs) with the above conditions?

a. Heat Capacity Level Limit (HCLL) has been exceeded, emergency depressurization is required.

b. Safety Relief Valve Tailpipe Level Limit (SRVTPLL) has been exceeded, emergency depressurization is required.

c. Heat Capacity Temperature Limit (HCTL) has been exceeded, emergency depressurization is required.

d. No limits have been exceeded, cycle SRVs to maintain RPV pressure between 800 and 1000 psig.

ANSWER: c.

KA:	295026K3.01
RO/SRO:	4.1
Reference:	PPM 5.2.1, ADS System Text
Comments:	New question (Emer & Abn - Gp I)
LO:	8379 (PPM 5.2.1-77)

QUESTION: 78 (1.00)

Which one (1) of the following is a consequence of exceeding the Heat Capacity Level Limit (HCLL)?

a. The Safety Relief Valve (SRV) tailpipe "T" quenchers become uncovered.

b. RPV depressurization may challenge the pressure suppression function.

c. Safety Relief Valve (SRV) tailpipe chugging may occur.

d. Emergency Core Cooling System (ECCS) pumps will cavitate due to the loss of available Net Positive Suction Head (NPSH).

ANSWER: b.

KA:	295030K1.03
RO/SRO:	4.1
Reference:	PPM 5.0.10, Sect 7.3
Comments:	Modified Question (6099) (Emer & Abn - Gp I)
LO:	8377 (PPM 5.0.10)

QUESTION: 79 (1.00)

Which one (1) of the following defines the minimum level for the Heat Capacity Level Limit (HCLL)?

a. The SRV tailpipe quenchers.

b. The RCIC Turbine Exhaust line.

c. The Drywell-Wetwell Downcomers.

d. The RHR/LPCS suction Strainer.

ANSWER: c.

KA:	295030GK.07
RO/SRO:	3.9
Reference:	PPM 5.0.10, pg 87
Comments:	Modified Question (685) (Emer & Abn - Gp I)
LO:	7785 (PPM 5.2.1-76)

QUESTION: 80 (1.00)

During an Anticipated Transient withour Scram (ATWS) condition with the reactor not shutdowr, reactor water level is intentionally lowered to...

a. the point were reactor power is LT 5% and maintained at LE that level until Cold Shutdown Boron Weight (CSBW) has been injected.

b. -65" and maintained regardless of reactor power to ensure adequate core cooling.

c. -50", the combination of the reduced level and Reactor Core Isolation Cooling (RCIC) injection will help reduce reactor power.

d. -65" to -192" to suppress reactor power while maintaining adequate core cooling.

ANSWER: d.

KA:	295031A2.01
RO/SRO:	4.6
Reference:	PPM 5.0.10, PPM 5.1.2
Comments:	New Question (Emer & Abn - Gp I)
LO:	8149 (PPM 5.1.2-48)

QUESTION: 81 (1.00)

In PPM 5.1.4, RPV Flooding, achieving FLOODING COMPLETION TIME ensures that RPV level is GE to...

a. the Top of Active Fuel (TAF).

b. the Main Steam Line (MSL) openings.

c. 2/3 core height.

d. the reactor head vents..

ANSWER: a.

KA:	295031K1.01
RO/SRO:	4.7
Reference:	PPM 5.0.10, pg 137
Comments:	Modified Question (659) (Emer & Abn - Gp I)
LO:	8219 (PPM 5.1.4-14)

QUESTION: 82 (1.00)

When using the Reactor Core Isolation Cooling (RCIC) system for alternate boron injection, the contents of the Standby Liquid Control (SLC) storage tank are gravity fed to the RCIC pump suction by a temporary hose connection originating at...

a. any drain off the SLC suction piping.

b. the drain off of the SLC storage tank.

c. a drain on the common SLC discharge header, downstream of SLC-V-4A & SLC-V-4B (squib valves).

d. the tank side of either the "A" or "B" SLC system relief valve piping.

ANSWER: d.

KA:	295037K2.13
RO/SRO:	4.1
Reference:	PPM 5.5.8 and RCIC System Text
Comments:	Modified Question (3728) (Emer & Abn - Gp I)
LO:	5929

QUESTION: 83 (1.00)

Which one (1) of the following describes two (2) methods that can be used for positive confirmation that all rods are fully inserted?

a. Average Power Range Monitors (APRMs) LT 5% power and Reactor Engineering calculation showing adequate shutdown margin.

b. Graphic Display System (GDS) and Plant Process Computer Replacement System (PPCRS).

c. Plant Process Computer Replacement System (PPCRS) and Quick Emergency Dose Projection System (QEDPS).

d. Graphic Display System (GDS) and Average Power Range Monitors (APRM)s LT 5% power.

ANSWER: b.

KA:	295037A2.01
RO/SRO:	4.3
Reference:	PPM 5.0.10, page 222
Comments:	New Question (Emer & Abn - Gp II)
LO:	8182 (5.1.1-37 & 5.1.2-58)

QUESTION: 84 (1.00)

The plant is operating at 75% power and 70% core flow when an electrical malfunction in the main turbine trip circuitry causes both reactor recirculation pumps to trip off.

Which one (1) of the following IMMEDIATE ACTIONS should be taken?

a. The recirculation pump trips will cause a RPV high pressure scram. Perform the immediate scram actions per PPM 3.3.1.

b. Refer to the single loop operating procedure in PPM 2.2.1 to restart one of the reactor recirculation pumps.

c. Confirm the loss of both reactor recirculation pumps and then manually scram the reactor.

d. Use the fast shutdown sequence control rods to exit Region "C" within 15 minutes.

ANSWER: c.

KA:	295001G.10
RO/SRO:	3.7
Reference:	PPM 4.12.4.7
Comments:	Question (503) (Emer & Abn - Gp II)
LO:	5023c

QUESTION: 85 (1.00)

The reactor is operating at 93% power when a loss of all circulating water pumps occurs. Assuming NO OPERATOR ACTION, as vacuum degrades to 14" Hg, what will be the effect on RPV water level?

RPV water level will...

a. increase to +54" and then cycle between -50" and +54".

b. decrease to LT 0" and then stabilize at +18".

c. be maintained at setpoint.

d. decrease to +13" and then stabilize at +36".

ANSWER: b.

KA:	295002K3.01
RO/SRO:	3.8
Reference:	FWLC System Text
Comments:	Modified Question (6270) (Emer & Abn - Gp II)
LO:	5400f

QUESTION: 86 (1.00)

Due to a fault, MC-7A has been deenergized and will be out of service for a minimum of eight (8) hours.

Which one (1) of the following will be affected by this condition?

a. Uninterruptable Power Supply (UPS) static inverter IN-1.

b. Critical instrument inverter IN-2.

c. ATWS/ARI Division 2 logic power.

d. DG-1 control circuit power

ANSWER: a.

KA:	295004K2.03
RO/SRO:	3.3
Reference:	DC Power System Text
Comments:	New question (Emer & Abn - Gp II)
LO:	5263

QUESTION: 87 (1.00)

The turbine throttle valve closure and governor valve fast closure Reactor Protection System (RPS) scrams are bypassed with reactor power LT 30%.

Which one (1) of the following statements correctly describes the bases for allowing these trips to be bypassed?

a. A smaller void coefficient at lower power levels adequately reduces the severity of the turbine trip or load reject.

b. At low power levels, adequate margin to the Minimum Critical Power Ratio (MCPR) safety limit is provided by the RPV steam dome pressure high scram.

c. Load reject transients, which are most severe, cannot occur because the Digital Electrohydraulic (DEH) overspeed protection controller is bypassed.

d. Below 30 % power, normal plant steam loads and bypass valve operation are sufficient to prevent Safety Relief Valve (SRV) operation.

ANSWER: b.

KA:	295005K1.02
RO/SRO:	3.6
Reference:	Tech. Spec. Bases 2.2.1.3
Comments:	Question (248) (Emer & Abn - Gp II)
LO:	None

QUESTION: 88 (1.00)

A plant startup is in progress with reactor pressure ≈500 psig. RFW-FCV-10A and RFW-FCV-10B (feedwater startup valves to the reactor) both fail full open. RPV level is 55" and rising.

What IMMEDIATE ACTIONS should be taken to preclude flooding the main steam lines?

a. Prior to reaching an RPV level of +80", scram the reactor, and close the Main Steam Isolation Valves (MSIVs).

b. Stop the condensate booster pumps before RPV water level exceeds +80".

c. Prior to reaching an RPV level of +108", close RFW-V-118 (feedwater startup valve isolation) and leave it closed until RPV level is LT +54".

d. Stop all condensate and condensate booster pumps before RPV water level exceeds +60".

ANSWER: b.

KA:	295008A1.08
RO/SRO:	3.5
Reference:	PPM 4.2.1.2
Comments:	Modified Question (504) (Emer & Abn - Gp II)
LO:	5400

QUESTION: 89 (1.00)

With reactor power at 68% and TSW-P-1B ("B" plant service water pump) Out Of Service (OOS)and danger tagged for maintenance, an electrical fault causes TSW-V-53A ("A" plant service water pump discharge valve) to close and TSW-P-1A ("A" plant service water pump) to trip. Attempts to restart the pump and open the valve have failed.

Which one (1) of the following IMMEDIATE ACTIONS is required?

a. Monitor main generator temperatures and reduce load as necessary.

b. Monitor control air compressors for high temperature alarms and transfer to alternate cooling as required.

c. Trip RRC-P-1A ("A" reactor recirculation pump) and refer to the single loop operating procedure.

d. Manually scram the reactor and refer to PPM 3.3.1.

ANSWER: d.

KA:	295018K2.02
RO/SRO:	3.6
Reference:	TSW Systems Text and PPM 4.8.4.1
Comments:	Modified Question (260) (Emer & Abn - Gp II)
LO:	5854

QUESTION: 90 (1.00)

Which one (1) of the following is expected to occur at a control air header pressure of 80 psig?

a. SA-PCV-2 (control/service air crosstie valve) closes.

b. Standby control air compressor(s) automatically start.

c. CAS-PCV-1 (desiccant dryer bypass valve) opens.

d. Control air header low pressure alarm is received.

ANSWER: a

KA:	295019A2.01
RO/SRO:	3.6
Reference:	CAS System Text
Comments:	New Question (Emer & Abn - Gp II)
LO:	5878

QUESTION: 91 (1.00)

CAS-C-1A ("A" control air compressor) tripped due to high HP cylinder discharge air temperature following a loss of Plant Service Water (TSW). Fire water has been aligned to Cooling Jack Water (CJW) heat exchanger. The control switch for CAS-C-1A is still in RUN.

Which one (1) of the following describes the conditions that will restart CAS-C-1A?

CAS-C-1A will restart...

a. automatically if system pressure is LE 110 psig.

b. when the high temperature alarm is cleared and the control switch is taken to STOP and then back to RUN.

c. when the high temperature alarm is cleared and the RESET pushbutton at the local control cabinet is depressed.

d. when the high temperature alarm is cleared.

ANSWER: c.

KA:	295019GK.05
RO/SRO:	3.3
Reference:	CAS System Text
Comments:	Modified Question (4078) (Emer & Abn - Gp II)
LO:	5872

QUESTION: 92 (1.00)

The plant is operating at 100% reactor power when an inadvertent Group 7 Nuclear Steam Supply Shutoff System (NS4) isolation occurs.

Which one (1) of the following describes the expected plant response?

a. Reactor Closed Cooling (RCC) system supply and return containment isolation valves close.

b. Reactor Water Cleanup (RWCU) system containment isolation valves close.

c. Residual Heat Removal (RHR) system reactor water sample isolation valves close.

d. Primary containment recirculation fans trip.

ANSWER: b.

KA:	295020K2.04
RO/SRO:	3.1
Reference:	NS4 System Text
Comments:	Question (259) (Emer & Abn - Gp II)
LO:	5598

QUESTION: 93 (1.00)

A reactor shutdown to cold conditions is in progress. Plant conditions are as follows:

- Reactor mode switch positioned in SHUTDOWN
- RPV pressure is 45 psig
- Residual Heat Removal (RHR) "B" is being warmed up for shutdown cooling mode
- Residual Heat Removal (RHR) "A" has been removed from service for ten (10) days

Which one (1) of the following statements describes action(s) which must be taken for these conditions?

a. Immediately place RHR Loop "B" in shutdown cooling and be in at least cold shutdown within one (1) hour.

b. Perform a physical walkdown of the Reactor Water Cleanup (RWCU) system and then place the system in service to maintain reactor coolant temperature as low as possible.

c. Demonstrate operability of at least one (1) alternate method of decay heat removal.

d. Maintain both reactor recirculation pumps in operation until RHR-P-2A ("A" residual heat removal pump) is repaired and returned to service.

ANSWER: c.

KA:	295021GK.08
RO/SRO:	3.9
Reference:	Tech Spec 3.4.9.1
Comments:	Question (577) (Emer & Abn - Gp II)
LO:	None

SENIOR REACTOR OPERATOR

QUESTION: 94 (1.00)

The plant is operating at ≈97% when the following annunciators are received:

H13-P603.A7-6.7	ROD ACCUMULATOR TROUBLE *- (The full core display indicates this alarm is for a fully withdrawn rod)*
H13-P603.A7-3.8	CRD CHARGE WATER PRESS LOW

The control room operator (CRO) observes that CRD-P-1A ("A" control rod drive pump) motor current indicates zero (0) amps with the red light on.

Which one (1) of the following describes the IMMEDIATE ACTIONS required for this situation?

a. Place the reactor mode switch to SHUTDOWN and carry out the scram recovery per PPM 3.3.1, Reactor Scram.

b. Place the Control Rod Drive (CRD) flow controller in MANUAL and raise controller output while monitoring CRD-P-1A motor current.

c. Place the standby CRD suction filter in service locally and start CRD-P-1B.

d. Place the CRD flow controller in MANUAL, set the controller output at zero (0) and start CRD-P-1B.

ANSWER: d.

KA:	295022A1.01
RO/SRO:	3.4
Reference:	PPM 4.1.1.2
Comments:	Modified Question (360) (Emer & Abn - Gp II)
LO:	5192

QUESTION: 95 (1.00)

Following a small steam line break inside primary containment, average drywell temperature has increased by about 100 °F.

Assuming that actual RPV water level remains constant, indicated vessel level could be...

a. higher, as heating of the reference leg decreases differential pressure.

b. lower, as heating of the reference leg increases differential pressure.

c. higher, as heating of the reference leg increases differential pressure.

d. lower, as heating of the reference leg decreases differential pressure.

ANSWER: a

KA:	295028K1.01
RO/SRO:	3.7
Reference:	PPM 5.0.10
Comments:	Question (567) (Emer & Abn - Gp II)
LO:	8448 (PPM 5.1.1-65)

QUESTION: 96 (1.00)

Given plant conditions as follows:

- Wetwell level 36'
- Wetwell pressure 10 psig
- RPV pressure 1000 psig

Using the attached curves, identify the possible results of Safety Relief Valve (SRV) actuation.

Actuation of an SRV...

a. is allowed and desired given the above conditions.

b. at this elevated wetwell level could result in damage to SRV internals.

c. will result in exceeding the suppression pool boundary design load.

d. could result in damage to the SRV tail pipe, quenchers, or supports.

ANSWER: d.

KA:	295029K2.06
RO/SRO:	3.5
Reference:	PPM 5.0.10, Section 7.16
Comments:	New Question (Emer & Abn - Gp II)
LO:	8381 (PPM 5.2.1-83)

QUESTION: 97 (1.00)

PPM 5.3.1, Secondary Containment Control, was entered due to confirmed high temperatures and steam in the 1A Reactor Water Cleanup (RWCU) pump room. RWCU-V-1 & RWCU-V-4 (RWCU suction isolation valves) cannot be isolated from the control room. Maximum Safe Operating Values for the RWCU system have NOT been exceeded.

Which one (1) of the following describes the actions to be taken for this situation?

a. Emergency depressurize.

b. Shutdown the reactor per PPM 3.2.1.

c. Continue efforts to isolate RWCU and enter PPM 5.1.1, RPV Level Control.

d. Isolate Reactor Building Ventilation (RBHVAC) and initiate the Standby Gas Treaetment (SGT) system.

ANSWER: c.

KA:	295032K3.03
RO/SRO:	3.9
Reference:	PPM 5.3.1
Comments:	Question (737) (Emer & Abn - Gp II)
LO:	8457 (PPM 5.3.1-10)

QUESTION: 98 (1.00)

Which one of the following lists actions that can be used to mitigate off-site doses for an accident which releases radioactivity inside secondary containment?

a. Isolate primary systems leaking into the area
Shutdown Reactor Building Ventilation (RBHVAC)
Isolate the Standby Gas Treatment (SGT) system

b. Isolate the Standby Gas Treatment (SGT) system
Shut down the reactor
Emergency depressurize the reactor

c. Isolate primary systems leaking into the area
Shutdown Reactor Building Ventilation (RBHVAC)
Shut down the reactor

d. Isolate primary systems leaking into the area
Shut down the reactor
Emergency depressurize the reactor

ANSWER: d.

KA:	295033K203
RO/SRO:	3.9
Reference:	PPM 5.3.1 and 5.0.10
Comments:	New Question (Emer & Abn - Gp II)
LO:	8460 (PPM 5.1.3-18)

QUESTION: 99 (1.00)

A transport cask filled with Control Rod Drive (CRD) "spud end" filters has tipped over on the 501' elevation of the Reactor Building (RB). ARM-RIS-33 (RB 501' area radiation monitor) is alarming on control room panel H13-P614. Reactor building exhaust plenum radiation levels are at ≈15 mr/hr and up fast.

Which one (1) of the following is an "expected" response to the above conditions?

a. CW-P-1B & CW-P-1C ("B" & "C" circulating water pumps) trip.

b. Any traversing in-core probe (TIP) inserted into the core will automatically withdraw and isolate.

c. Drywell Equipment Drain (EDR) and Floor Drain (FDR) sumps isolate.

d. Containment Nitrogen (CN) makeup isolates.

ANSWER: d.

K/A:	295034K2.02
RO/SRO:	3.9
Reference:	PPM 4.12.4.6, page 2
Comments:	New Question (Emer & Abn - Gp II)
LO:	5597

QUESTION: 100 (1.00)

A controller failure causes reactor building pressure to increase to GT +4.0" Wg.

Which one (1) of the following describes the expected AUTOMATIC action(s) for this condition?

a. Both the supply and exhaust fans will trip. The standby fans will NOT start.

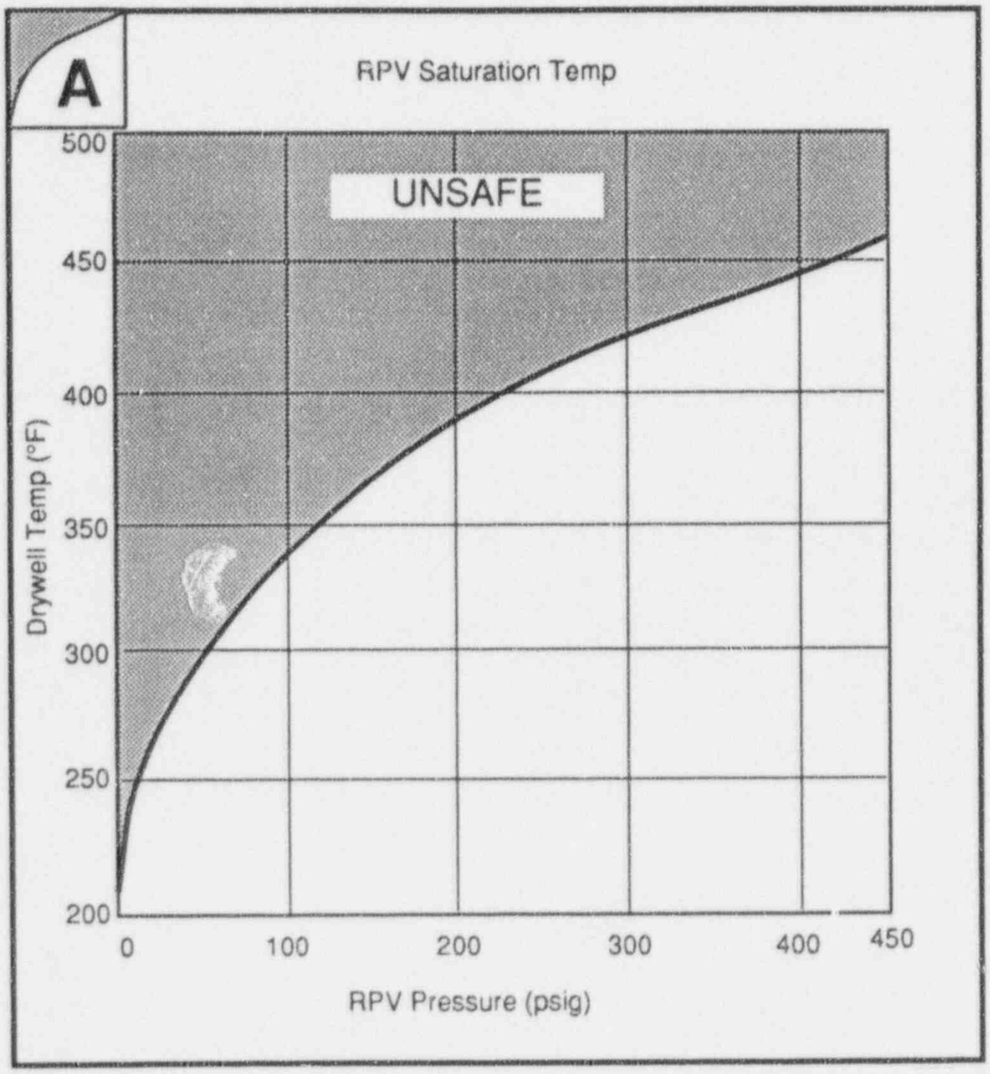
b. The supply and exhaust fans will be unaffected. The supply plenum relief damper will open to reduce pressure.

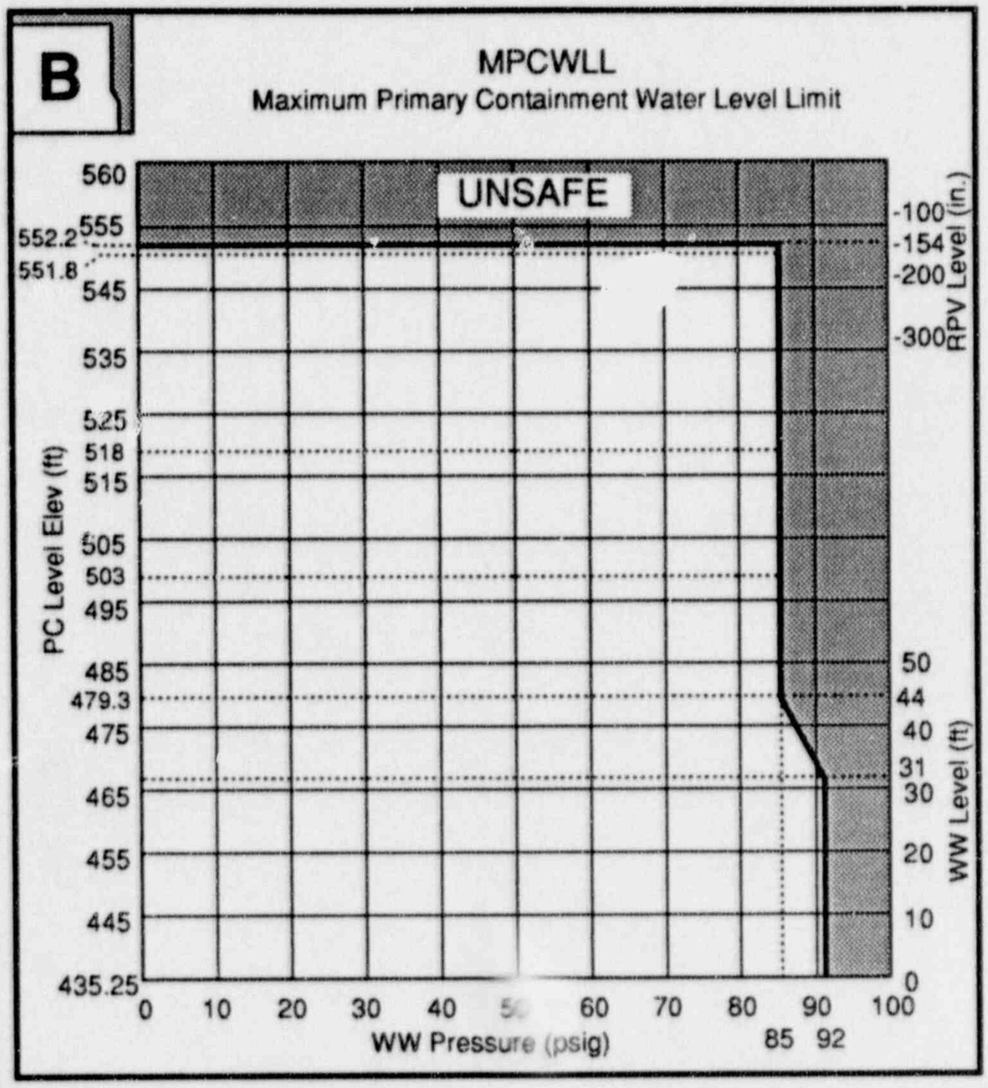
c. Only the operating exhaust fan will trip. The standby exhaust fan will NOT start. Supply fans will be unaffected.

d. Only the operating supply fan will trip. The standby supply fan will NOT start. Exhaust fans will be unaffected.

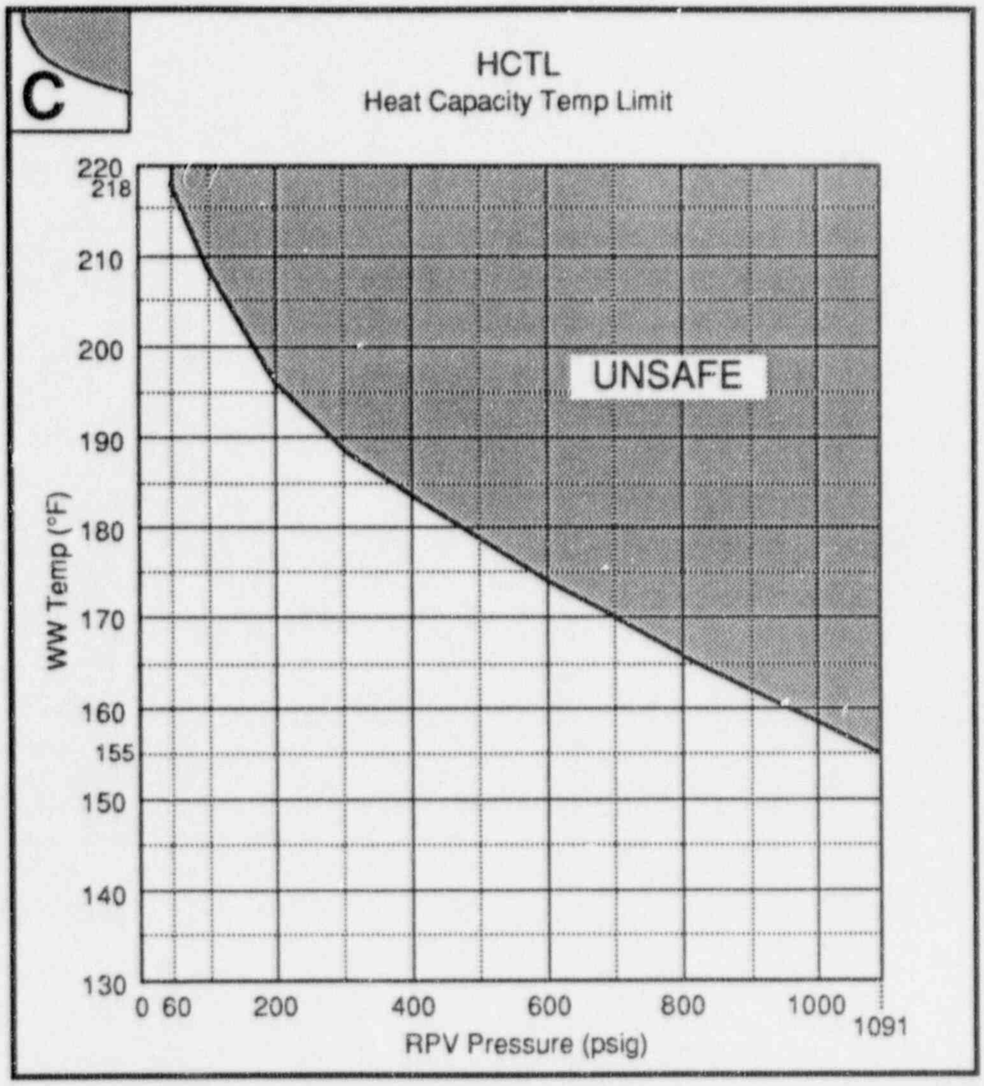
ANSWER: a.

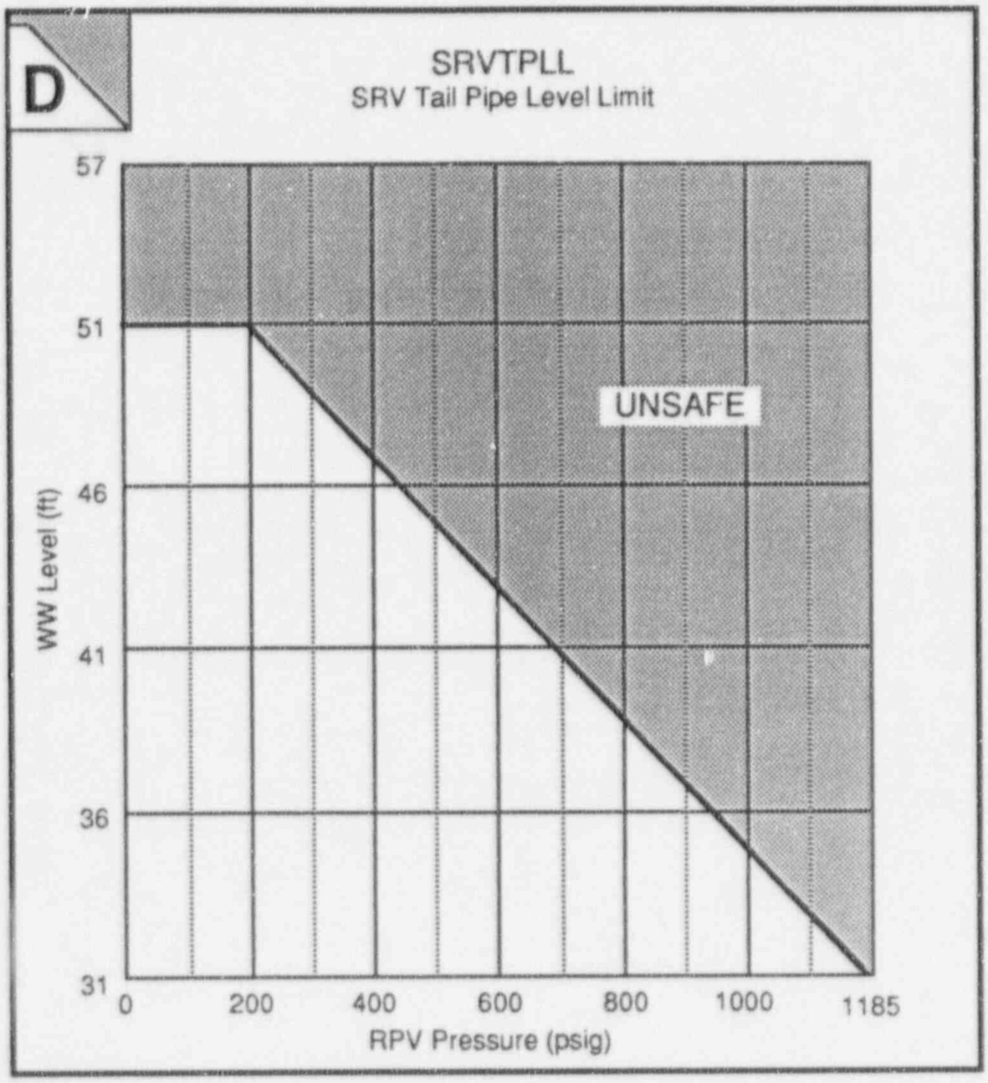
KA:	295035A1.02
RO/SRO:	3.8
Reference:	PPM 4.10.1.1
Comments:	Modified Question (5534) (Emer & Abn - Gp II)
LO:	6878

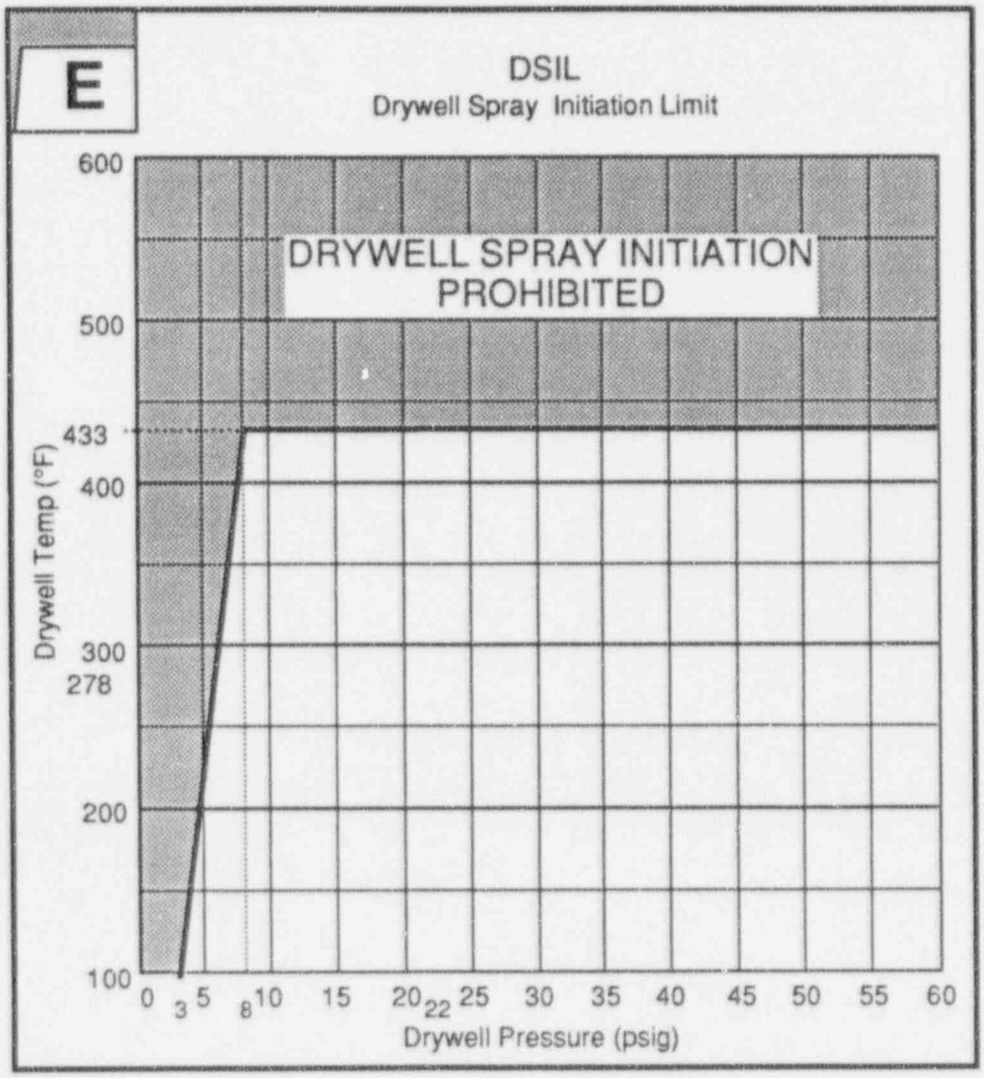

A
RPV Saturation Temp
UNSAFE
Drywell Temp (°F)
500
450
400
350
300
250
200
0
100
200
300
400
450
RPV Pressure (psig)

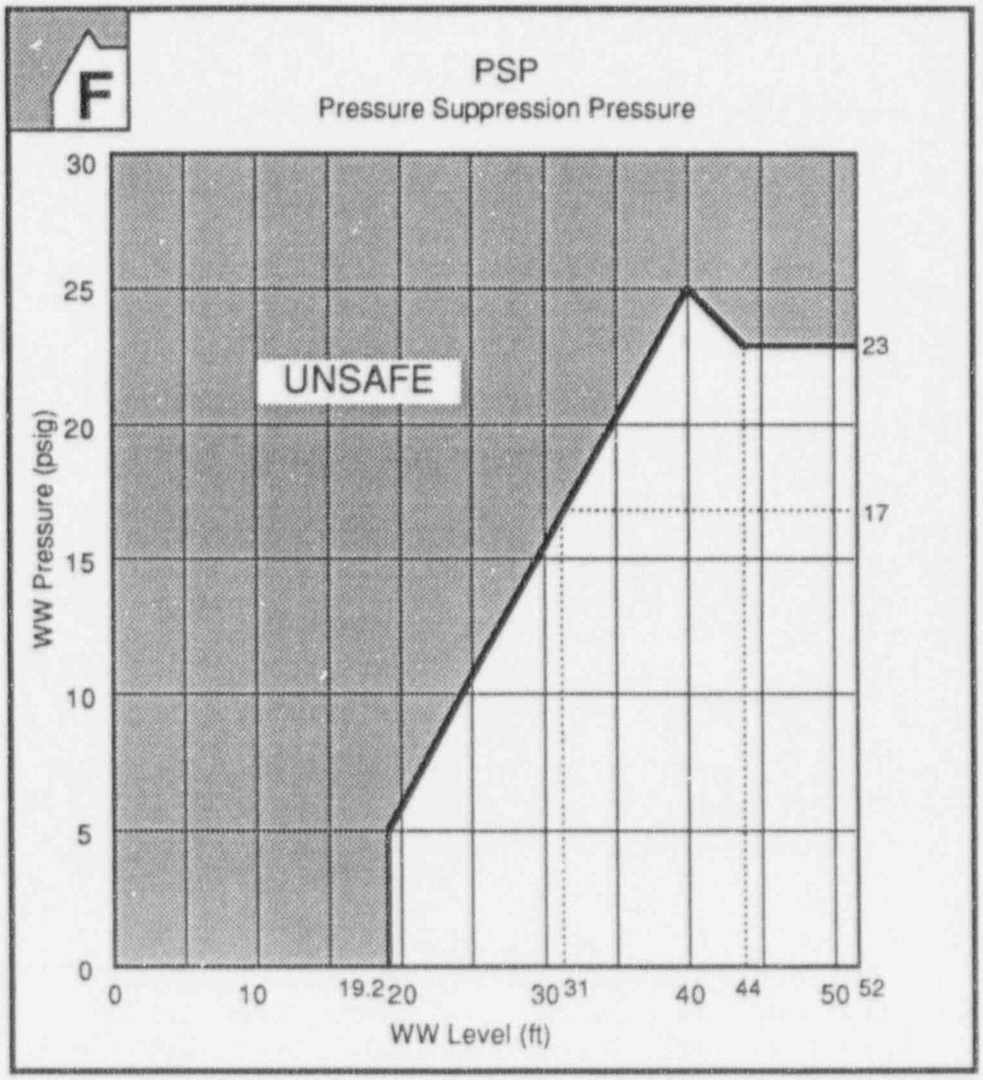


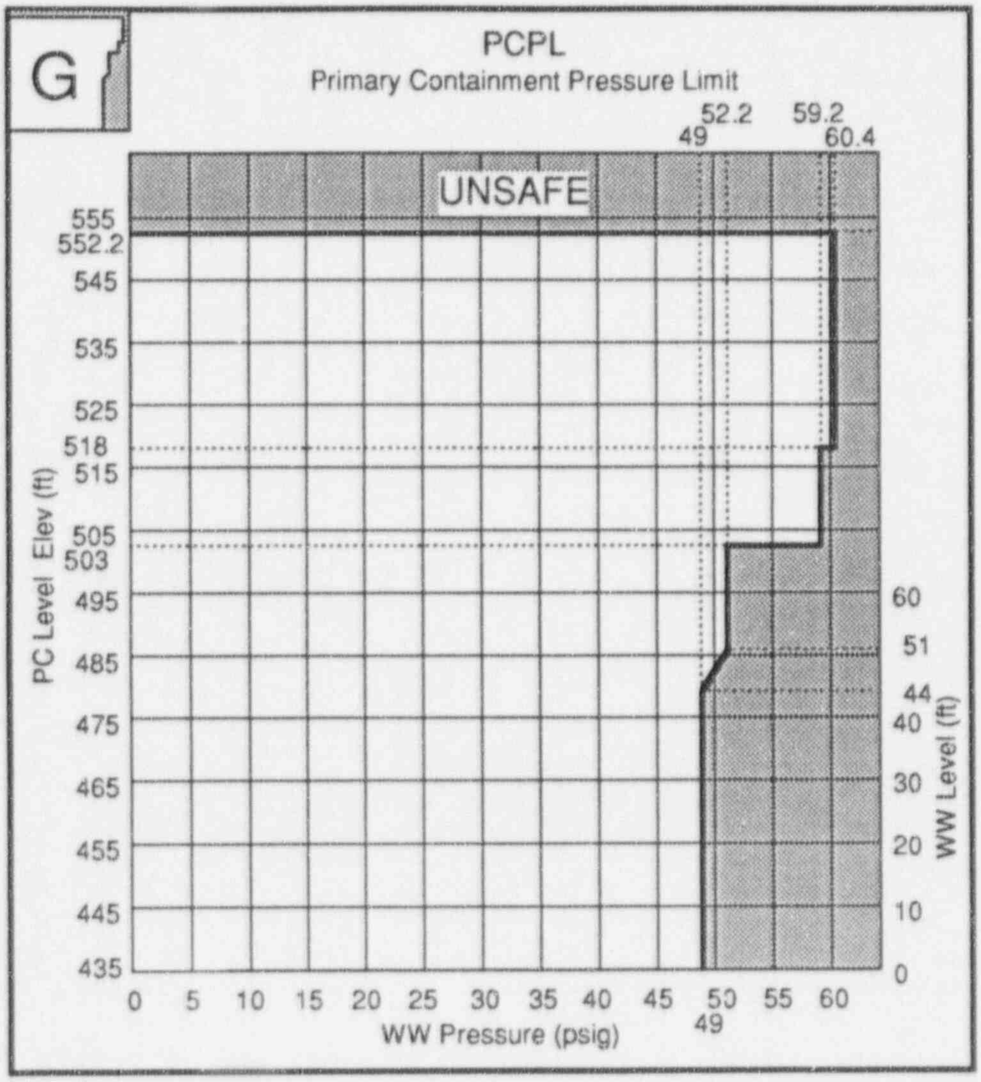
B
MPCWLL
Maximum Primary Containment Water Level Limit
UNSAFE
PC Level Elev (ft)
560
555
552.2
551.8
545
535
525
518
515
505
503
495
485
479.3
475
465
455
445
435.25
RPV Level (in.)
-100
-154
-200
-300
WW Level (ft)
50
44
40
31
30
20
10
0
WW Pressure (psig)
0
10
20
30
40
50
60
70
80
90
100
85
92

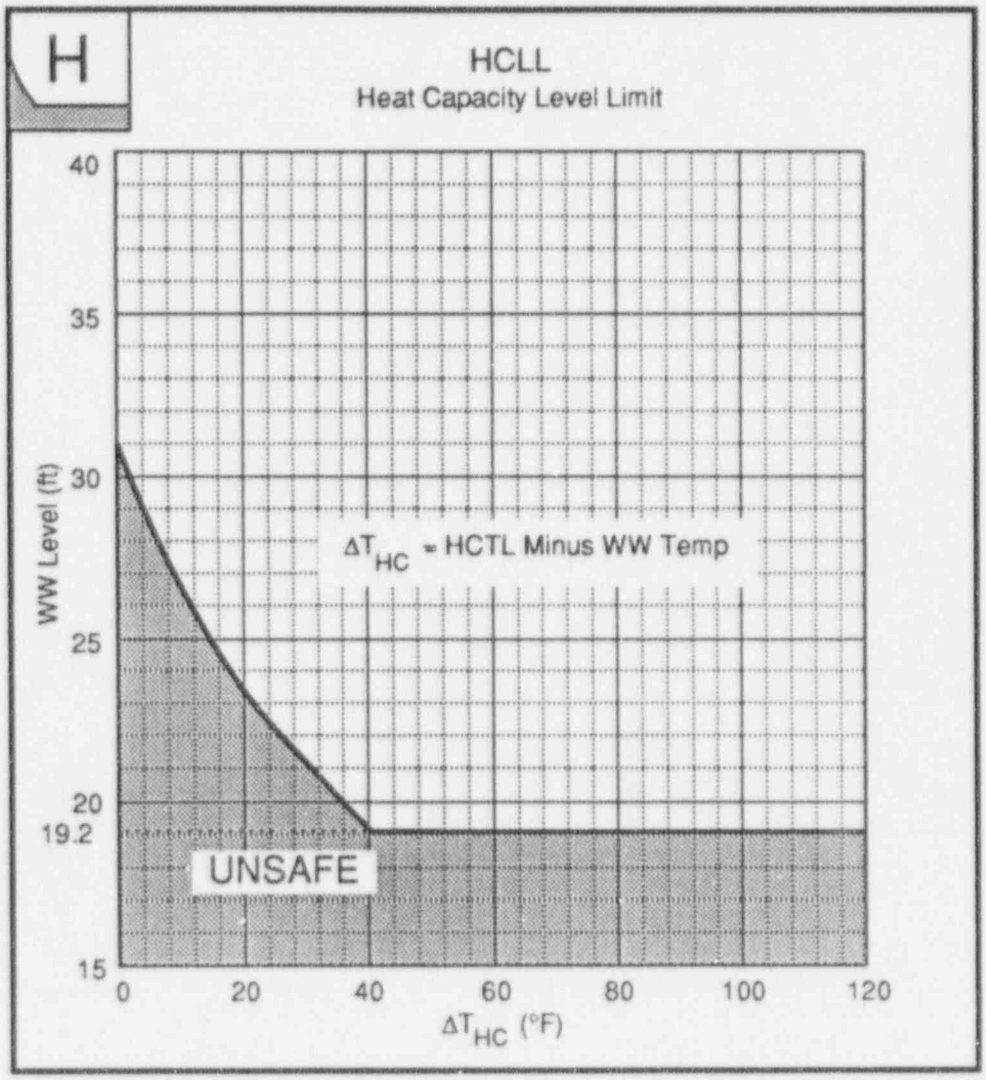

C
HCTL
Heat Capacity Temp Limit
UNSAFE
WW Temp (°F)
220
218
210
200
190
180
170
160
155
150
140
130
0
60
200
400
600
800
1000
1091
RPV Pressure (psig)

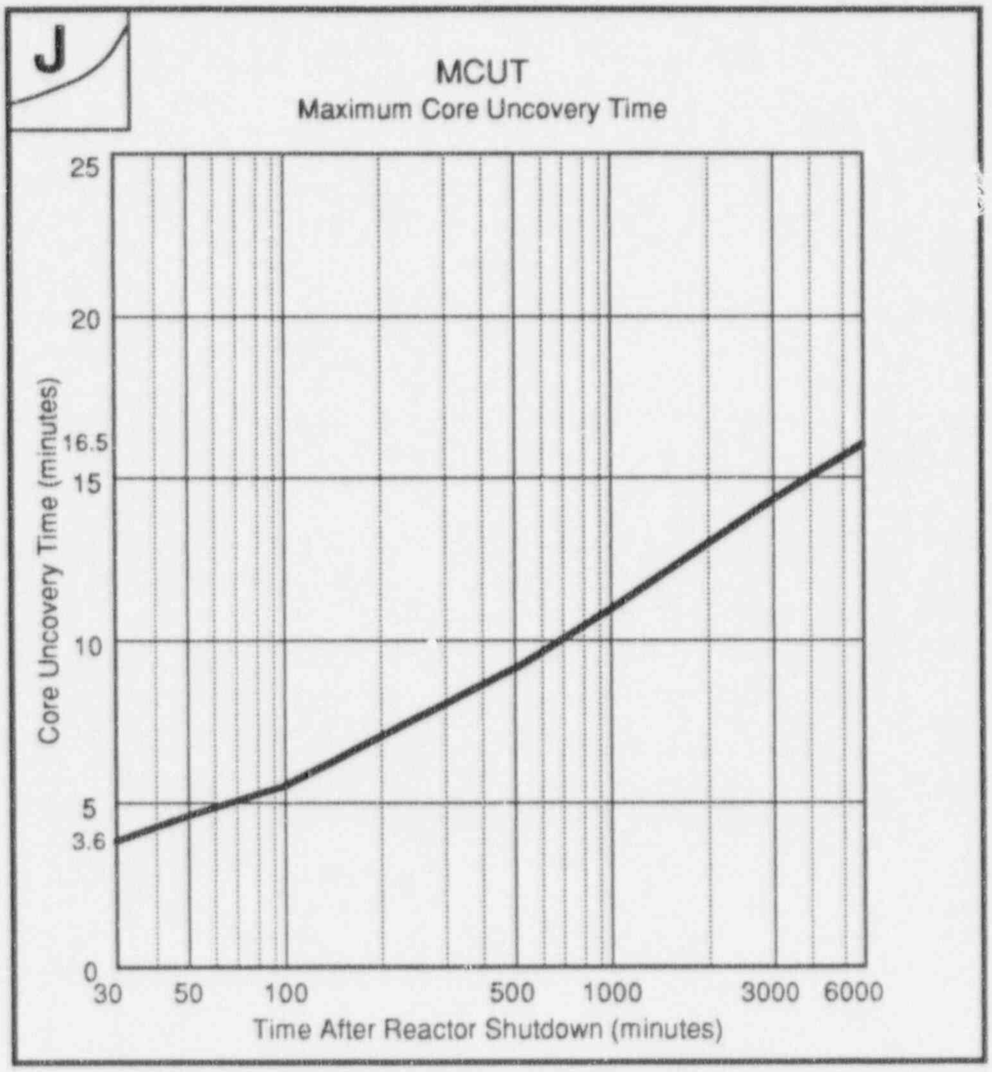

D
SRVTPLL
SRV Tail Pipe Level Limit
UNSAFE
WW Level (ft)
57
51
46
41
36
31
0
200
400
600
800
1000
1185
RPV Pressure (psig)


E
DSIL
Drywell Spray Initiation Limit
DRYWELL SPRAY INITIATION
PROHIBITED
600
500
433
400
300
278
200
100
Drywell Temp (°F)
0
3
5
8
10
15
20
22
25
30
35
40
45
50
55
60
Drywell Pressure (psig)


F
PSP
Pressure Suppression Pressure
UNSAFE
WW Pressure (psig)
0
5
10
15
20
25
30
23
17
0
10
19.2
20
30
31
40
44
50
52
WW Level (ft)


G
PCPL
Primary Containment Pressure Limit
49
52.2
59.2
60.4
UNSAFE
555
552.2
545
535
525
518
515
505
503
495
485
475
465
455
445
435
PC Level Elev (ft)
60
51
44
40
30
20
10
0
WW Level (ft)
0 5 10 15 20 25 30 35 40 45 50 55 60
49
WW Pressure (psig)


H
HCLL
Heat Capacity Level Limit
WW Level (ft)
40
35
30
25
20
19.2
15
ΔT_HC = HCTL Minus WW Temp
UNSAFE
0
20
40
60
80
100
120
ΔT_HC (°F)


J
MCUT
Maximum Core Uncovery Time
Core Uncovery Time (minutes)
25
20
16.5
15
10
5
3.6
0
30
50
100
500
1000
3000
6000
Time After Reactor Shutdown (minutes)

U.S. NUCLEAR REGULATORY COMMISSION
SITE SPECIFIC
WRITTEN EXAMINATION

APPLICANT INFORMATION

Name:		Region:	IV
Date:	October 7 1996	Facility/Unit:	WNP-2
License Level	RO	Reactor Type:	GE
Start Time:		Finish Time:	

INSTRUCTIONS

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

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

____

Applicant's Signature

RESULTS

Examination Value	________ Points
Applicant's Score	________ Points
Applicant's Grade	________ Points

REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice) NAME ________________________

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

1.	a b c d ____	21.	a b c d ____	41.	a b c d ____
2.	a b c d ____	22.	a b c d ____	42.	a b c d ____
3.	a b c d ____	23.	a b c d ____	43.	a b c d ____
4.	a b c d ____	24.	a b c d ____	44.	a b c d ____
5.	a b c d ____	25.	a b c d ____	45.	a b c d ____
6.	a b c d ____	26.	a b c d ____	46.	a b c d ____
7.	a b c d ____	27.	a b c d ____	47.	a b c d ____
8.	a b c d ____	28.	a b c d ____	48.	a b c d ____
9.	a b c d ____	29.	a b c d ____	49.	a b c d ____
10.	a b c d ____	30.	a b c d ____	50.	a b c d ____
11.	a b c d ____	31.	a b c d ____	51.	a b c d ____
12.	a b c d ____	32.	a b c d ____	52.	a b c d ____
13.	a b c d ____	33.	a b c d ____	53.	a b c d ____
14.	a b c d ____	34.	a b c d ____	54.	a b c d ____
15.	a b c d ____	35.	a b c d ____	55.	a b c d ____
16.	a b c d ____	36.	a b c d ____	56.	a b c d ____
17.	a b c d ____	37.	a b c d ____	57.	a b c d ____
18.	a b c d ____	38.	a b c d ____	58.	a b c d ____
19.	a b c d ____	39.	a b c d ____	59.	a b c d ____
20.	a b c d ____	40.	a b c d ____	60.	a b c d ____

REACTOR OPERATOR

ANSWER SHEET

Multiple Choice (Circle or X your choice) NAME: ____________________

If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

61.	a b c d ____	81.	a b c d ____
62.	a b c d ____	82.	a b c d ____
63.	a b c d ____	83.	a b c d ____
64.	a b c d ____	84.	a b c d ____
65.	a b c d ____	85.	a b c d ____
66.	a b c d ____	86.	a b c d ____
67.	a b c d ____	87.	a b c d ____
68.	a b c d ____	88.	a b c d ____
69.	a b c d ____	89.	a b c d ____
70.	a b c d ____	90.	a b c d ____
71.	a b c d ____	91.	a b c d ____
72.	a b c d ____	92.	a b c d ____
73.	a b c d ____	93.	a b c d ____
74.	a b c d ____	94.	a b c d ____
75.	a b c d ____	95.	a b c d ____
76.	a b c d ____	96.	a b c d ____
77.	a b c d ____	97.	a b c d ____
78.	a b c d ____	98.	a b c d ____
79.	a b c d ____	99.	a b c d ____
80.	a b c d ____	100.	a b c d ____

REACTOR OPERATOR

NRC POLICIES AND GUIDELINES FOR LICENSE EXAMINATIONS

During the administration of this examination the following rules apply:

1. Cheating on any part of the examination will result in a denial of your application.

2. If you have any questions concerning the administration of the examination, do not hesitate asking them before starting that part of the test.

3. SRO applicants will be tested at the level of the responsibility of the senior licensed shift position (i.e. Shift Manager).

4. You must pass every part of the examination to receive a license. Applicants for an SRO-upgrade license may require remedial training in order to continue their RO duties if the examination reveals deficiencies in the required knowledge and abilities.

5. The NRC examiner is not allowed to reveal the results of any part of the examination until they have been reviewed and approved by NRC management. Grades provided by the facilitee licensee are preliminary until approved by the NRC. You will be informed of the official examination results about 30 days after all the examinations are complete.

6. 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.

7. To pass the examination, you must achieve a grade of 80 percent or greater. Every question is worth one point.

8. The time limit for completing the examination is four hours.

9. You may bring pens and calculators into the examination room. Use only black ink to ensure legible copies.

10. Print your name in the blank provided on the answer sheet provided and do not leave any question blank. Use only the paper provided and do not write on the back side of the pages. If you decide to change your original answer, draw a single line through the error, enter the desired answer, and initial the change.

11. If the intent of a question is unclear, ask questions of the NRC examiner or the designated facility instructor only.

12. 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.

13. When you complete the examination, assemble a package including the examination questions, examination aids, answer sheets, and scrap paper and give it to the NRC examiner or proctor. Remember to sign the statement on the examination cover sheet indicating that the work is your own and that you have neither given nor received assistance in completing the examination. The scrap paper will be disposed of immediately after the examination.

14. After you have turned in your examination, leave the examination area as defined by the proctor or NRC examiner. If you are found in this area while the examination is still in progress, your license may be denied.

QUESTION: 1 (1.00)

Which one (1) of the following statements would describe "Simultaneous Verification" as it applies to a danger tag clearance order?

a. Two qualified individuals, independently and separately checking the required status of the component or device.

b. A Control Room Operator (CRO) verifying the required status of the component or device using Control Room indications.

c. A second qualified individual, via local panel indications showing the required status of the component or device.

d. Two qualified operators, accompanying each other, check required status, correct identification and location prior to changing component status.

ANSWER: d.

KA:	294001K1.02
RO/SRO:	3.9
Reference:	PPM 1.3.8
Comments:	Modified question (58) (Plant Wide Generic)
LO:	6231

QUESTION: 2 (1.00)

A Control Room Operator (CRO) is getting ready to leave the control room to go to the Production Center when an equipment operator calls and requests that someone bring him a "High Radiation" key.

Select the one (1) statement below that correctly describes the location from which keys to locked "High Radiation" areas are normally (non emergency conditions) issued.

a. The control room.

b. Secondary alarm station.

c. Work control center.

d. Health physics access control.

ANSWER: d.

KA:	294001K1.03
RO/SRO:	3.3
Reference:	PPM 11.2.7.3
Comments:	Modified question (806) (Plant Wide Generic)
LO:	6390

QUESTION: 3 (1.00)

A task must be performed at a location with a general area radiation level of 60 mr/hr. Previous performance of the task indicates that:

One (1) worker can perform the task in 1 hr and 20 min.

Two (2) workers can complete the task in 50 min.

Three (3) workers can complete the task in 30 min.

Four (4) workers can complete the task in 25 min.

Based on the above information, how many workers should be assigned to perform this task?

a. One (1) worker

b. Two (2) workers

c. Three (3) workers

d. Four (4) workers

ANSWER: a.

KA: 294001K1.04
RO/SRO: 3.3
Reference: PPM 1.11.2
Comments: New question (Plant Wide Generic)
LO: None

QUESTION: 4 (1.00)

What is the maximum number of visitors that may accompany one (1) escort into the Main Control Room?

a. Three (3)

b. Five (5)

c. Ten (10)

d. Fifteen (15)

ANSWER: b.

KA: 294001K1.05
RO/SRO: 3.2
Reference: GET 82-RDT-0300-HO, page 23
Comments: New question (Plant Wide Generic)
LO: 6097

QUESTION: 5 (1.00)

With the plant operating at rated power which one (1) of the following will require double valve isolation on a clearance order?

a. COND-FCV-15B ("B" condensate booster pump minimum flow valve)

b. CRD-FU-10A ("A" control rod drive pump suction filter)

c. FPC-HX-1B ("B" fuel pool cooling heat exchanger)

d. SCW-P-1A ("A" stator cooling water pump)

ANSWER: a.

KA:	294001K1.09
RO/SRO:	3.4
Reference:	PPM 1.3.8, page 24
Comments:	Modified Question (Plant Wide Generic)
LO:	6255

QUESTION: 6 (1.00)

During the middle of the last shift, maintenance completed their work in a main condenser waterbox. You have been requested to enter the waterbox and inspect it prior to closure.

Which one (1) of the following describes the requirements, if any, that must be met prior to your entry?

a. No restrictions apply to this situation.

b. Perform atmospheric testing.

c. Complete the pre-entry checklist.

d. The Designated Safety Representative (DSR) must be present.

ANSWER: b.

KA:	294001K1.14
RO/SRO:	3.2
Reference:	PPM 1.9.2
Comments:	New Question (Plant Wide Generic)
LO:	None

QUESTION: 7 (1.00)

Due to an injury sustained on shift, the Fire Brigade Leader has to leave work.

Which one (1) of the following individuals can take the place of the Fire Brigade Leader?

a. Qualified security officer

b. Shift support supervisor

c. Qualified equipment operator

d. Qualified health physics technician

ANSWER: c.

KA:	294001K1.16
RO/SRO:	3.5
Reference:	PPM 1.3.1, pg 40 of 86
Comments:	New Question (Plant Wide Generic)
LO:	None

QUESTION: 8 (1.00)

When may a task be performed without an approved procedure present?

a. When the task has no safety significance.

b. When the task procedure number on the cover sheet is proceeded by an asterisk (*).

c. When the task has been previously performed during the shift by the individual and the required steps have been memorized.

d. When the task consiste of simple routine actions frequently performed that don't require step sign-off's, recorded data, or specific sequence.

ANSWER: d.

KA:	294001A1.02
RO/SRO:	4.2
Reference:	SWP-PRO-01
Comments:	Modified Question (5287) (Plant Wide Generic)
LO:	6058

QUESTION: 9 (1.00)

The plant is operating in Operational Condition 1.

Which one (1) of the following lists the minimum shift crew composition administrative limit as specified in plant procedures?

a. SM, CRS, SSS, three (3) CROs, five (5) EO, ENS communicator, two (2) HP Techs, two (2) Chem Techs, two (2) I & C Techs, Duty Officer.

b. SM, CRS, two (2) CROs, two (2) EOs, STA, HP Tech, Chem Tech.

c. SM, CRS, SSS, three (3) CROs, four (4) EOs, STA, five (5) Fire Brigade members, three (3) HP Techs, Chem Tech.

d. SM, CRS, SSS, two (2) CROs, two (2) EOs, STA, ENS communicator, five (5) Fire Brigade members, three (3) HP Techs, Chem Tech, Elect/I&C Tech, Mechanic, Duty Officer.

ANSWER: c.

KA:	294001A1.03
RO/SRO:	2.7
Reference:	PPM 1.3.1, page 37
Comments:	New Question (Plant Wide Generic)
LO:	6072 (PPM 1.3.1)

QUESTION: 10 (1.00)

On a case-by-case basis, line supervisors/managers can approve the use of signals for communications, if:

1) the signals are not easily confused and are understood by all involved,
2) the concept of three-way communication is applied to the maximum extent possible,
3) a thorough pre-job brief is conducted AND
4) signals are ONLY used...

a. in the Control Room.

b. in severe environments (high noise, heat, or radiation)

c. when physical directions are the "key" elements of the task.

d. when the message originator and message recipient are not readily identifiable to each other by sight and voice.

ANSWER: b.

KA:	294001A1.05
RO/SRO:	3.4
Reference:	PPM 1.3.60, page 5 of 8
Comments:	New Question (Plant Wide Generic)
LO:	None

QUESTION: 11 (1.00)

Who has the responsibility for initiating Emergency Core Cooling Systems (ECCS), if required, during a plant transient?

a. Only the operator responsible for panel H13-P601.

b. The on-shift crew member in closest proximity to panel H13-P601.

c. Only the operator designated by the Control Room Supervisor (CRS) to respond.

d. Any licensed operator at the control console.

ANSWER: d.

KA: 294001A1.09
RO/SRO: 3.3
Reference: PPM 1.3.1
Comments: Question (156) (Plant Wide Generic)
LO: 6076

QUESTION: 12 (1.00)

During shift turnover and control panel walkdown, annunciator P602.A13-3.5, ASD UPS TROUBLE, is noted to be in the alarmed state.

Which one (1) of the following describes the oncoming Control Room Oerators (CROs) responsibility for panel annunciators?

a. Verify that this annunciator correctly reflects plant conditions.

b. Ensure that this annunciator is logged in the control room log.

c. Place a "Problem Sticker" adjacent to this annunciator window.

d. Remove the logic card for this annunciator.

ANSWER: a.

KA:	294001A1.13
RO/SRO:	4.5
Reference:	PPM 1.3.1, Section 4.20.5
Comments:	Modified Question # 379 (Plant Wide Generic)
LO:	6087

QUESTION: 13 (1.00)

An Anticipated Transient Withour Scram (ATWS) is in progress. Plant conditions are as follows:

- RPV level -60" and down slow
- RPV pressure 945 psig
- Reactor power 10% and down slow

The Graphic Display System (GDS) on panel H13-P602 is selected to the Group Isolation screen. Nuclear Steam Supply Shutoff System (NS4) Group 1 indicates red.

Which one (1) of the following explains the reason GDS is providing this information?

a. An NS4 Group 1 isolation has occurred

b. An NS4 logic failure has occurred.

c. A GDS malfunction has occurred.

d. PPM 5.5.6 has been performed.

ANSWER: d.

KA:	294001A1.15
RO/SRO:	3.2
Reference:	GDS display
Comments:	New Question (Plant Wide Generic)
LO:	None

QUESTION: 14 (1.00)

Following a reactor scram, the Control Room Operator (CRO) notes that CRD-FIC-600 (CRD system flow controller) output signal is going down

Which one (1) of the following could cause this condition?

a. High charging header flow.

b. High cooling header demand.

c. Low drive header flow.

d. Low scram header flow.

ANSWER: a.

KA: 201001A2.04
RO/SRO: 3.8
Reference: CRDH System Text
Comments: New Question (Plant Sys - Gp II)
LO: 5185b

QUESTION: 15 (1.00)

Select the power supply and logic configuration for the Alternate Rod Insertion (ARI) solenoid valves.

a. 125 VDC (DP-S1-1A/2A) - must be ENERGIZED to vent the scram air header.

b. 120 VAC (RPS A) - must be DE-ENERGIZED to vent the scram air header.

c. 125 VDC (DP-S1-1D/2D) - must be DE-ENERGIZED to vent the scram air header.

d. 120 VAC (IN-2) - must be ENERGIZED to vent the scram air header.

ANSWER: a.

KA:	201001K2.05
RO/SRO:	4.5
Reference:	DC Power Systems Text
Comments:	Modified question (175) (Plant Sys - Gp II)
LO:	5262

QUESTION: 16 (1.00)

The reactor is in Operational Condition 5, the Control Room Supervisor (CRS) has directed the Control Room Operator (CRO) to select control rod 30-55 to verify its position. The CRO reports that control rod 30-55 cannot be selected.

Which one (1) of the following could cause this condition?

a. The refuel bridge is near or over the core.

b. The fuel grapple is not full up.

c. Another control rod is withdrawn past "00".

d. The fuel grapple is loaded.

ANSWER: c.

KA:	201002K3.01
RO/SRO:	3.4
Reference:	Fuel Handling Text
Comments:	New question (Plant Sys - Gp I)
LO:	5359 & 5360

QUESTION: 17 (1.00)

After completing the Immediate Actions for a reactor scram, the Control Room Operator (CRO) notices a WITHDRAW rod block has been applied

Which one (1) of the following is true concerning this condition?

This rod block...

a. will automatically be bypassed when the scram is reset.

b. can be manually bypassed by bypassing the RWM.

c. will automatically be bypassed 10 seconds after placing the reactor mode switch in SHUTDOWN.

d. CANNOT be bypassed.

ANSWER: d.

KA:	201002K4 02
RO/SRO:	3.5
Reference:	RPS System Text
Comments:	New Question (Plant Sys - Gp II)
LO:	5952

QUESTION: 18 (1.00)

The plant is operating at rated conditions with RRC-IN-ASD/1A (1A ASD UPS inverter) in service and supplying panel E-PP-ASD1/4.

Pushing the red EMER POWER OFF pushbutton on the front of the inverter panel will result in which one (1) of the following?

a. RRC-P-1A ("A" reactor recirculation pump) will immediately trip, RRC-P-1B ("B" reactor recirculation pump) will continue to operate.

b. Both reactor recirculation pumps will immediately trip.

c. Both reactor recirculation pumps will trip after approximately 20 minutes.

d. Both reactor recirculation pumps will continue to operate indefinitely.

ANSWER: b.

KA:	202002A2.07
RO/SRO:	3.3
Reference:	PPM 2.7.4A
Comments:	Modified question (6206) (Plant Sys - Gp I)
LO:	9683

QUESTION: 19 (1.00)

The plant is operating in Mode 1. Both Reactor Recirculation pumps are operating at 45 Hz. Adjustable Speed Drive (ASD) Channel A2 is not running and its white READY light is illuminated.

Which one (1) of the following describes the response of the Recirculation Pumps if the START Pushbutton for RRC-P-1A is pressed?

a. The A2 ASD Channel will start. RRC-P-1A frequency will ramp to 52.2 Hz.

b. The A2 ASD Channel will start. RRC-P-1A will continue to operate at 45 Hz.

c. RRC-P-1A frequency will ramp to 15 Hz, the A2 ASD Channel will start, and RRC-P-1A frequency will ramp back to 45 Hz.

d. RRC-P-1A frequency will ramp to 52.2 Hz and the A2 ASD Channel will start.

ANSWER: b.

KA:	202002K1.02
RO/SRO:	4.2
Reference:	PPM 2.2.1
Comments:	Modified Question (3217) (Plant Sys - Gp I)
LO:	None

QUESTION: 20 (1.00)

Given the following indications:

- Reactor scrammed
- Reactor water level at -95" and down slow
- Drywell pressure at 1.67 psig and up fast

Which one (1) of the following statements describes the response of the Low Pressure Coolant Injection (LPCI) mode of the Residual Heat Removal (RHR) system to the indications listed above.

a. LPCI will initiate when reactor water level decreases to LE -129".

b. LPCI initiated when reactor water level reached -50".

c. LPCI will initiate when drywell pressure increases to GE 1.68 psig.

d. LPCI initiated when drywell pressure reached 1.65 psig.

ANSWER: d.

KA:	203000K1.13
RO/SRO:	3.9
Reference:	RHR System Text
Comments:	New Question (Plant Sys - Gp I)
LO:	5775

QUESTION: 21 (1.00)

The High Pressure Core Spray (HPCS) system is operating in the Condensate Storage Tank to Condensate Storage Tank (CST to CST) full flow test lineup, when a loss of primary containment cooling results in drywell pressure increasing to 1.8 psig.

Which one (1) of the following statements identifies the automatic response of the HPCS system under the above conditions?

a. HPCS-V-4 (injection valve) opens immediately
HPCS-V-10 & HPCS-V-11 (full flow test valves) close immediately
HPCS-V-12 (minimum flow valve) remains closed

b. HPCS-V-10 & HPCS-V-11 (full flow test valves) go full closed
HPCS-V-4 (injection valve) opens after HPCS-V-10 and HPCS-V-11 fully close
HPCS-V-12 (minimum flow valve) cycles open and then closed

c. HPCS-V-10 & HPCS-V-11 (full flow test valves) go full closed
HPCS-V-4 (injection valve) opens after HPCS-V-10 or HPCS-V-11 fully close
HPCS-V-12 (minimum flow valve) cycles open and then closed

d. HPCS-V-4 (injection valve) opens immediately
HPCS-V-10 & HPCS-V-11 (full flow test valves) remain open
HPCS-V-12 (minimum flow valve) remains closed

ANSWER: a

KA:	209002A3.01
RO/SRO:	3.3
Reference:	HPCS Systems Text
Comments:	Modified question (444) (Plant Sys - Gp I)
LO:	5425, 5429

QUESTION: 22 (1.00)

Following a valid High Pressure Core Spray (HPCS) initiation on high drywell pressure., the HPCS LEVEL 8 SEALED IN light and alarm are received and HPCS-V-4 (RPV injection valve) closes.

Which one (1) of the following conditions will cause HPCS-V-4 to automatically re-open?

a. Drywell high pressure logic reset.

b. RPV level lowering to +12".

c. RPV level lowering to -51".

d. Drywell high pressure alarm clears.

ANSWER: c.

KA:	209002K4.02
RO/SRO:	3.4
Reference:	HPCS System Text
Comments:	Modified question (443) (Plant Sys - Gp I)
LO:	5429

QUESTION: 23 (1.00)

An Anticipated Transient Without Scram (ATWS) is in progress concurrent with a loss of MC-8B, suppression pool temperature is 118°F and up slow. Assume all required actions have been completed correctly and no other failures have occurred at this time.

Which one (1) of the following describes the Standby Liquid Control (SLC) system status?

a.	SLC-P-1A - running	SLC-P-1B - running	*(SLC pumps)*
	SLC-V-1A - open	SLC-V-1B - open	*(SLC storage tank outlets)*
	SLC-V-4A - actuated	SLC-V-4B - actuated	*(Squib valves)*
b.	SLC-P-1A - loss of power	SLC-P-1B - running	*(SLC pumps)*
	SLC-V-1A - loss of power	SLC-V-1B - open	*(SLC storage tank outlets)*
	SLC-V-4A - loss of power	SLC-V-4B - actuated	*(Squib valves)*
c.	SLC-P-1A - off	SLC-P-1B - off	*(SLC pumps)*
	SLC-V-1A - closed	SLC-V-1B - closed	*(SLC storage tank outlets)*
	SLC-V 4A - closed	SLC-V-4B - closed	*(Squib valves)*
d.	SLC-P-1A - running	SLC-P-1B - loss of power	*(SLC pumps)*
	SLC-V-1A - open	SLC-V-1B - loss of power	*(SLC storage tank outlets)*
	SLC-V-4A - actuated	SLC-V-4B - loss of power	*(Squib valves)*

ANSWER: d.

KA:	211000K6.03
RO/SRO:	3.2
Reference:	SLC Systems
Comments:	New question (Plant Sys - Gp I)
LO:	5931h

QUESTION: 24 (1.00)

With the plant in a hydraulic Anticipated Transient Without Scram (ATWS) condition, the Control Room Operator (CRO) carries out the actions of PPM 5.5.11 and resets the scram. Annunciator P603-A8 6-4, SCRAM VALVE PILOT AIR HDR PRESS LOW, fails to clear.

Which one (1) of the following could cause this condition?

a. At least one (1) backup scram valve has failed to ENERGIZE following the scram reset.

b. Alternate Rod Insertion (ARI) logic has not been reset.

c. Both backup scram valves have failed to ENERGIZE following the scram reset.

d. One (1) of the Reactor Protection System (RPS) trip signals has not been bypassed.

ANSWER: b.

KA:	212000A1.11
RO/SRO:	3.4
Reference:	PPM 5.0.10
Comments:	Modified Question (4085) (Plant Sys - Gp I)
LO:	8094 (5.1.2-07)

QUESTION: 25 (1.00)

The "A" Reactor Protection System (RPS) Motor Generator (MG) set has tripped. The plant is presently operating with a half scram at 100% power.

The status of the white indicating lights associated with the MG SET TRANSFER SWITCH on H13-P610 is as follows:

- GENERATOR A FEED	deenergized
- ALTERNATE FEED	energized
- GENERATOR B FEED	energized

The MG Set Transfer switch is in NORMAL.

Based on these conditions, which one (1) of the following statements is true?

Placing the MG Set Transfer switch to...

a. ALT B will allow resetting the Electric Power Monitoring Assembly (EPA) breakers for the "A" RPS MG

b. ALT A will cause the GENERATOR A FEED light to energize.

c. ALT B will cause a full scram.

d. ALT A will allow resetting the Electric Power Monitoring Assembly (EPA) breakers for the "A" RPS MG

ANSWER: c.

KA:	212000K2.01
RO/SRO:	3.2
Reference:	RPS System Text
Comments:	Similar question (Plant Sys - Gp I)
LO:	5961

QUESTION: 26 (1.00)

The plant is operating at 100% power with AR-EX-1A ("A" gland steam condenser exhauster) in service when a trip of RPS-MG-2 ("B" reactor protection system motor generator) occurs. Upon checking the full core display, it is noted that control rod 30-07 has scrammed and is fully inserted.

Assuming NO OPERATOR ACTIONS, after a time interval, the reactor will fully scram due to which one (1) of the following?

a. Main turbine trip (throttle valve closure/governor valve fast closure).

b. Drywell high pressure.

c. Main steam isolation valve (MSIV) closure.

d. Scram discharge volume high level.

ANSWER: d.

KA:	212000K3.06
RO/SRO:	4.0
Reference:	CRDH System Text, PPM 4.7.6.1
Comments:	New Question (Plant Sys - Gp I)
LO:	None

QUESTION: 27 (1.00)

During a reactor startup, the reactor is subcritical with control rod withdrawal in progress. Source Range Monitor (SRM) count rate has stabilized at 1×10^3 Counts Per Second (CPS) following the last control rod withdrawal.

During withdrawal of the next control rod in the sequence, the first control rod in the next Rod Worth Minimizer (RWM) group, reactor period meters deflect from infinity to ≈20 seconds before turning. Reactor period is now ≈60 seconds increasing (approaching infinity).

Which one (1) of the following actions should be taken for this condition?

a. Verify that the withdrawn control rod did not "double notch" and stop control rod withdrawal to allow stabilization of neutron level.

b. Monitor SRMs and retract SRMs as necessary to maintain count rate LT 1×10^4 CPS.

c. Insert control rods until the reactor is subcritical and notify the Control Room Supervisor (CRS)/Shift Manager (SM) and the Station Nuclear Engineer (SNE).

d. Immediately manually scram the reactor.

ANSWER: a.

KA:	215004A4.01
RO/SRO:	3.9
Reference:	PPM 3.1.2, Step 4.2.2 (2nd CAUTION), page 15; Step 4.2.5 (CAUTION), page 16; Step 4.2.9.d (CAUTION), page 18.
Comments:	Modified Question (815) (Plant Sys - Gp I)
LO:	None

QUESTION: 28 (1.00)

Given the following:

- RPV water level -10" and steady
- Reactor pressure 200 psig and down slow
- Drywell temperature 350°F and down very slow
- No Secondary Containment Control entry conditions exist.
- Emergency depressurization is planned.

Which one (1) of the following is correct concerning the instrument(s) which can be used to determine RPV water level for the given conditions?

a. Wide range only.

b. Narrow range only.

c. None.

d. Fuel zone range only.

ANSWER: a.

KA:	216000K5.07
RO/SRO:	3.6
Reference:	NBI Systems Text
Comments:	New question (Plant Sys - Gp I)
LO:	5582

QUESTION: 29 (1.00)

Reactor Core Isolation Cooling (RCIC) initiated as expected on a valid low level signal raising RPV level to the Level 8 setpoint.

Which one (1) of the following describes the automatic restart capability of RCIC?

RCIC will...

a. automatically restart when RPV level drops below the Level 8 setpoint.

b. NOT automatically restart unless a high drywell pressure signal is received.

c. automatically restart when RPV level drops below the Level 2 setpoint.

d. automatically restart when RPV level drops below the Level 3 setpoint.

ANSWER: c.

KA: 217000A1.03
RO/SRO: 4.0
Reference: RCIC Systems Text
Comments: New question (Plant Sys - Gp I)
LO: 5071 and 8735

QUESTION: 30 (1.00)

A transient has resulted in RPV level dropping to -140". The level has remained stable for GT seven (7) minutes. SM-8 has deenergized and Division 1 Automatic Depressurization System (ADS) has been inhibited. After verifying the cause of the loss of SM-8, permission is granted to reenergize the bus.

Assuming no operator actions, which one (1) of the following describes the response of the ADS Logic to the reenergization of SM-8.

a. ADS will initiate 105 seconds after the discharge pressure of "C" Residual Heat Removal (RHR) pump reaches the ADS permissive.

b. ADS will not initiate if the operator resets the division "2" ADS timer within 105 seconds.

c. ADS will initiate immediately when the discharge pressure of "C" Residual Heat Removal (RHR) pump reaches the ADS permissive.

d. ADS will not initiate until the operator resets the division "1" ADS inhibit switch.

ANSWER: c.

KA:	218000K5.01
RO/SRO:	3.8
Reference:	ADS Systems Text
Comments:	New question (Plant Sys - Gp I)
LO:	None

QUESTION: 31 (1.00)

What effect does manually decreasing the output on CAC-FC-67A ("A" recycle flow controller) have on the Containment Atmosphere Control (CAC) system?

a. Reduces flow through the scrubber and reduces oxygen concentration entering the recombiner.

b. Increases flow through the scrubber and increases oxygen concentration entering the recombiner.

c. Reduces flow through the scrubber and increases oxygen concentration entering the recombiner.

d. Increases flow through the scrubber and reduces oxygen concentration entering the recombiner.

ANSWER: b.

KA: 223001A4.13
RO/SRO: 3.4
Reference: CAC System Text
Comments: Question (4357) (Plant Sys - Gp I)
LO: 5133a

QUESTION: 32 (1.00)

Which one (1) of the following is designed to prevent the differential pressure across the primary containment boundary from exceeding the design limit?

a. Reactor building to wetwell vacuum breakers.

b. Wetwell to drywell vacuum breakers.

c. Standby Gas Treatment (SGT) system.

d. Suppression pool "T" quenchers.

ANSWER: a.

KA:	223001K4.06
RO/SRO:	3.1
Reference:	PPM 5.0.10
Comments:	New question (Plant Sys - Gp I)
LO:	8352 (5.1.2-140)

QUESTION: 33 (1.00)

The plant is in OPERATIONAL CONDITION 4, when fluctuations are observed in the output voltage of IN-2.

Assuming NO OPERATOR ACTIONS which one (1) of the following describes the expected result of continued IN-2 voltage degradation?

a. RCIC-V-8, RCIC-V-63, & RCIC-V-76 (reactor core isolation cooling steam line isolation valves) close.

b. Rod Worth Minimizer, (RWM), Rod Sequence Control System (RSCS) and Reactor Manual Control System (RMCS) become INOPERABLE.

c. Nuclear Steam Supply Shutoff System (NS4) inboard isolations and loss of fire control panels 1, 2, & 3.

d. Loss of the full core display and the ROLM telephones.

ANSWER: c.

KA:	223002K6.07
RO/SRO:	3.2
Reference:	LER 84-118
Comments:	New Question (Plant Sys - Gp I)
LO:	None

QUESTION: 34 (1.00)

The plant was operating at 100% power when a steam leak developed in the drywell. Current plant conditions are as follows:

RPV water level	+12"
RPV pressure	950 psig
Drywell pressure	2.5 psig
Drywell temperature	135°F

Which one (1) of the following lists of Nuclear Steam Supply Shutoff System (NS4) groups SHOULD have received isolation/initiation signals?

a. Group 1
Group 4
Group 5

b. Group 2
Group 3
Group 6

c. Group 3
Group 4
Group 5

d. Group 1
Group 2
Group 7

ANSWER: c.

KA:	223002A2.10
SRO:	3.9
Reference:	NS4 System Text
Comments:	Modified Question (299) (Plant Sys - Gp I)
LO:	5597

QUESTION: 35 (1.00)

Loss of DP-S1-2 power will render Safety Relief Valve (SRV) control switches INOPERABLE at the location(s) specified in which one (1) of the following?

a. H13-P601 only

b. H13-P601 and H13-P631 (ADS division 2 logic panel)

c. H13-P628 (ADS division 1 logic panel) and E-CP-ARS (Alternate remote shutdown panel)

d. H13-P631 (ADS division 2 logic panel) and C61-P001 (Remote shutdown panel)

ANSWER: d.

KA:	239002K4.05
SRO:	3.6
Reference:	PPM 4.12.1.1 and RSD System Text
Comments:	Modified Question (461) (Plant Sys - Gp I)
LO:	5885a

QUESTION: 36 (1.00)

The plant is operating at 100% power when the Control Room Operator (CRO) reports that RPV pressure is trending down. Shortly after this report the reactor scrams and the Main Steam Isolation Valves (MSIVs) close.

Which one (1) of the following describes the cause of this transient?

a. The selected Digital Electrohydraulic (DEH) pressure controller has slowly failed high.

b. The backup Digital Electrohydraulic (DEH) pressure controller has instantly failed low.

c. The selected Digital Electrohydraulic (DEH) pressure controller has instantly failed low.

d. The backup Digital Electrohydraulic (DEH) pressure controller has slowly failed high.

ANSWER: a.

KA:	241000K3.02
RO/SRO:	4.2
Reference:	DEH System Text
Comments:	Modified Question (6232) (Plant Sys - Gp I)
LO:	5286b

QUESTION: 37 (1.00)

With a plant startup in progress and reactor power at 20%, #3 Turbine Bypass Valve (BPV) is declared INOP.

Which one (1) of the statements below describes the action(s) which must be taken under the above conditions?

a. Restore the inoperable BPV to OPERABLE status within 1 hour or reduce power to less than 5% of rated within the next 4 hours.

b. Continue the startup but do not exceed 90% of rated power until the BPV has been restored to OPERABLE status.

c. Restore the inoperable BPV to OPERABLE status prior to reaching 25% of rated power.

d. Restore the BPV to OPERABLE within 12 hours, or suspend the startup and be in COLD SHUTDOWN within the next 12 hours.

ANSWER: c.

KA:	241000A2.03
RO/SRO:	4.1
Reference:	Tech. Spec. 3.7.9
Comments:	New question (Plant Sys - Gp I)
LO:	None

QUESTION: 38 (1.00)

The plant is operating at 50% power with both Reactor Feed Pump Turbines (RFPTs) operating in automatic control when RFPT "A" governor valves become stuck in the present position.

Assuming NO OPERATOR ACTIONS (other than rasing power), how will RFPT "A" speed and RPV level respond if reactor power is raised to 100%?

	RFPT "A" SPEED	RPV Level
a.	Decrease	Remain the same
b.	Decrease	Lower
c.	Increase	Remain the same
d.	Remain approximately the same	Lower

ANSWER: c.

KA: 259001K3.01
RO/SRO: 3.9
Reference: Feedwater/Condensate System Text
Comments: New Question-(Plant Sys - Gp II)
LO: None

QUESTION: 39 (1.00)

SGT-V-5B-2 (exhaust to stack) fails to open upon receipt of a valid initiation signal.

Which one (1) of the following describes the response of the Standby Gas Treatment (SGT) train "B" to this condition?

a. SGT-FN-1B-2 (lead fan) starts and trips on low flow. SGT train "B" remains in this condition until the automatic start logic is reset.

b. SGT-FN-1B-2 (lead fan) starts and trips on low flow. Automatic valve re-alignment and start of SGT-FN-1B-1 (lag fan) allow SGT train "B" to perform it's design function.

c. SGT-FN-1B-2 (lead fan) and SGT-FN-1B-1 (lag fan) do NOT receive an automatic start signal while SGT-FN-5B-2 (exhaust to stack) is in the closed position.

d. SGT-FN-1B-2 (lead fan) starts and trips on low flow. SGT-FN-1B-1 (lag fan) will then start, but will also trip on low flow.

ANSWER: b.

KA:	261000K4.01
RO/SRO:	3.7
Reference:	SGT System Text
Comments:	Similar Question (3587) (Plant Sys - Gp I)
LO:	5828

QUESTION: 40 (1.00)

Following full load operation for a routine surveillance, diesel generator #1 is being cooled down at idle speed. During this time a loss of off-site power occurs.

Which one (1) of the following statements describes the actions necessary to ensure proper operation of the diesel for reenergizing SM-7?

a. Place the excitation mode selector switch in PARALLEL. Ensure that SW-P-1A ("A" service water pump) continues to run or manually trip the diesel.

b. Place the engine speed selector switch in RATED and place the control switch for SW-P-1A to STOP to reset the auto start on the loss of off-site power.

c. Place the excitation mode selector switch in PARALLEL and place the control switch for SW-P-1A to STOP to reset the auto start on the loss of off-site power.

d. Place the engine speed selector switch in RATED. Ensure that SW-P-1A starts as soon as it's discharge valve cycles full closed to full open.

ANSWER: d.

KA:	264000K6.08
RO/SRO:	3.6
Reference:	Diesel Generator System Text and PPM 2.7.2A
Comments:	New Question (Plant Sys - Gp I)
LO:	5321

QUESTION: 41 (1.00)

SM-8 is deenergized, which one (1) of the following is a permissive that MUST be satisfied in order for DG-2 to re-energize SM-8?

a. Relay 86DG2 (Engine lockout) must be reset.

b. Breaker 3-8 (feed from SM-3) and 8-3 (feed to SM-8) must both be open.

c. Engine control switch must be in the REMOTE position.

d. Drywell pressure must be greater than 1.65 psig.

ANSWER: a.

KA: 264000A3.05
RO/SRO: 3.4
Reference: Diesel Generator System Text
Comments: Similar Question (302) (Plant Sys - Gp I)
LO: 5316

QUESTION: 42 (1.00)

While withdrawing control rods during a plant startup, the control room operator (CRO) reports that a control rod will not move and appears to be stuck.

Which one (1) of the following describes an option that could be used to attempt to move this control rod?

a. Adjust cooling water flow to GT 80 gpm and allow the rod to be forced in.

b. Use the Single Rod Insert (SRI) switches to scram the rod and then recover it.

c. Apply continuous withdrawal signals in two minute increments.

d. Apply a continuous insert signal, release, then apply a continuous withdrawal signal.

ANSWER: d.

KA:	201003A2.01
RO/SRO:	3.4
Reference:	CRDH System Text
Comments:	New question (Plant Sys - Gp III)
LO:	5204

QUESTION: 43 (1.00)

The plant is operating at 100% power when an EO, investigating an Accumulator Trouble alarm, reports that an HCU Nitrogen Accumulator has completely de-pressurized.

Which one (1) of the following describes the scram capability of the affected control rod?

a. The rod can be scrammed because CRD Drive Header pressure is greater than Scram Discharge Volume pressure.

b. The rod can be scrammed because RPV pressure is greater than Scram Discharge Volume pressure.

c. The rod can NOT be scrammed because Nitrogen Accumulator pressure is less than RPV pressure.

d. The rod can NOT be scrammed because Scram Inlet and Scram Outlet valves have lost their pneumatic supply.

ANSWER: b.

KA:	201003K4.04
RO/SRO:	3.6
Reference:	CRDM System
Comments:	Question (3524) (Plant Sys - Gp III)
LO:	5215

QUESTION: 44 (1.00)

Which one (1) of the following identifies one of the boundaries of the region of the power to flow map where operation is PROHIBITED by PPM 4.12.4.7 and Technical Specifications?

a. 55% flow

b. 35% flow

c. 25% flow

d. 45% flow

ANSWER: d.

KA:	202001GK.06
RO/SRO:	3.8
Reference:	Tech. Spec. 3.2.6
Comments:	New Question (Plant Sys - Gp II)
LO:	None

QUESTION: 45 (1.00)

With the plant at rated conditions a Group 1 isolation occurred with RPV pressure peaking at 1145 psig during the transient.

Which one (1) of the following describes the direct effect on the reactor recirculation pump breakers?

a. No breakers are effected

b. Only breakers CB-RPT-3A and CB-RPT-3B trip.

c. Breakers CB-RPT-3A, CB-RPT-3B, CB-RPT-4A, CB-RPT-4B trip.

d. Only breakers CB-RPT-4A and CB-RPT-4B trip.

ANSWER: b.

KA:	202001A2.14
RO/SRO:	3.9
Reference:	RRC Systems Text, PPM 4.602.A6-1.2/1.6
Comments:	Modified question (3893) (Plant Sys - Gp II)
LO:	5023e

QUESTION: 46 (1.00)

Following a loss of SM-7 and an Anticipated Transient Wit' Scram (ATWS) condition, boron injection is required.

What effect will Standby Liquid Control (SLC) initiation have on Reactor Water Cleanup (RWCU) system valves?

a. RWCU-V-104 (RWCU system bypass) opens.

b. RWCU-V-1 (RWCU inboard isolation) closes.

c. RWCU-V-4 (RWCU outboard isolation) closes.

d. RWCU-V-40 (RPV/RWCU return isolation) closes.

ANSWER: c.

KA:	204000K4.04
RO/SRO:	3.6
Reference:	RWCU System Text
Comments:	New Question (Plant Sys - Gp II)
LO:	5035

QUESTION: 47 (1.00)

With the plant at 30% power, which one (1) of the following describes the effect that a loss of rod position information for a single control rod will have on the Reactor Manual Control System (RMCS)?

a. A rod insert and withdraw block will be generated via the Rod Worth Minimizer (RWM).

b. A rod withdraw block will be generated via the Rod Sequence Control System (RSCS).

c. A rod insert block will be generated via the Rod Position Indication System (RPIS).

d. No rod blocks are generated, a loss of rod position indication only.

ANSWER: d.

KA:	214000K3.03
RO/SRO:	3.2
Reference:	RMCS Systems Text
Comments:	Modified Question (4286) (Plant Sys - Gp II)
LO:	7754a

QUESTION: 48 (1.00)

RHR-P-2C ("C" residual heat removal pump) is operating in the test line-up for a surveillance when RHR-P-3 (residual heat removal B/C water leg pump) trips.

Which one (1) of the following describes actions that should be taken for this condition?

a. RHR-P-2C ("C" residual heat removal pump) should remain in operation, if possible, to ensure that the system piping remains filled and to maintain pressure to Residual Heat Removal (RHR) loop "B".

b. RHR-P-2C ("C" residual heat removal pump) should remain in operation, if possible, until RHR-P-3 (residual heat removal B/C water leg pump) can be restored to service. RHR-P-2B ("B" residual heat removal pump) should be placed in wetwell cooling prior to the receipt of the DISCH PRESS HIGH/LOW annunciator.

c. RHR-P-2C ("C" residual heat removal pump) should be shut down. The control switches for both RHR-P-2C ("C" residual heat removal pump) and RHR-P-2B ("B" residual heat removal pump) should be held in OFF until the control power fuses have been removed for both pump breakers.

d. RHR-P-2C ("C" residual heat removal pump) should be shut down to facilitate repair of RHR-P-3 (residual heat removal B/C water leg pump). RHR-P-2B ("B" residual heat removal pump) should be placed in wetwell cooling prior to the receipt of the DISCH PRESS HIGH/LOW annunciator.

ANSWER: b

KA:	219000K1.06
RO/SRO:	3.2
Reference:	RHR System Text, PPM 2.4.2, Section 4.7 and 4.8, page 8
Comments:	New Question (Plant Sys - Gp II)
LO:	5781f

QUESTION: 49 (1.00)

RHR-V-68B (residual heat removal heat exchanger service water discharge valve) has just been stroked closed for a surveillance test.

Which one (1) of the following conditions, if any, would result in RHR-V-68B automatically opening?

a. None, RHR-V-68B does not automatically reposition.

b. Reactor water level at -60".

c. Reactor building exhaust plenum high radiation.

d. "B" residual heat removal pump room high temperature.

ANSWER: b.

KA:	219000K4.09
RO/SRO:	3.3
Reference:	RHR System Text
Comments:	Modified Question (3820) (Plant Sys - Gp II)
LO:	7728c

QUESTION: 50 (1.00)

A Loss of Coolant Accident (LOCA) has occurred, all Emergency Core Cooling Systems (ECCS) equipment has functioned as designed. Present plant conditions are as follows:

- RPV level -135" and up slow
- RPV pressure 200 psig and down slow
- Wetwell pressure 9 psig and up very slow
- RHR-V-42A (RPV injection valve) is open

RHR-V-17A (Upper drywell spray inboard isolation valve) is opened in preparation for drywell spray. When the Control Room Operator (CRO) takes the control switch for RHR-V-16A (upper drywell spray outboard isolation) to OPEN, RHR-V-16A will...

a. remain closed until RPV pressure drops below 135 psig.

b. open when RPV water level is GE -129".

c. open immediately.

d. remain closed.

ANSWER: d.

KA:	226001GK.07
RO/SRO:	3.5
Reference:	RHR Systems Text
Comments:	New Question (Plant Sys - Gp I)
LO:	5781

QUESTION: 51 (1.00)

During Loss Of Coolant Accident (LOCA) conditions with Residual Heat Removal (RHR) "A" unavailable, RHR "B" was placed into both wetwell spray and drywell spray.

What is the expected automatic system response when the high drywell pressure initiation signal subsequently clears?

a. Drywell spray isolates and wetwell spray continues.

b. BOTH drywell and wetwell sprays isolate.

c. Drywell spray continues and wetwell spray isolates.

d. BOTH drywell and wetwell sprays continue.

ANSWER: d.

KA:	230000A4.02
RO/SRO:	3.8
Reference:	RHR System Text
Comments:	Question (199) (Plant Sys - Gp II)
LO:	5781

QUESTION: 52 (1.00)

The plant is operating at 100% power when both 500 KV generator output breakers trip.

If the main turbine fails to trip, which one (1) of the following describes the short term response of the main turbine Overspeed Protection Controller (OPC) for this condition?

a. OPC initially actuates and then resets. Thereafter main turbine speed is controlled at 100% of rated by the Digital Electrohydaulic (DEH) control system.

b. OPC initially actuates and does NOT reset. Main turbine speed coasts down to 0 rpm.

c. OPC repeatedly actuates and resets to control main turbine speed LT 103% of rated.

d. OPC repeatedly actuates and resets to control pressure at Pressure Setpoint.

ANSWER: c.

KA:	245000K4.09
RO/SRO:	3.2
Reference:	Main Turbine Systems Text
Comments:	Modified question (228) (Plant Sys - Gp II)
LO:	5566

QUESTION: 53 (1.00)

Initial Conditions:

- Reactor startup in progress.
- RPV pressure ≈450 psig and going up
- Main condenser vacuum ≈23"
- SM-1, SM-2, and SM-3 being powered from the startup transformer (TR-S)
- COND-P-2A ("A" condensate booster pump) running
- CW-P-1C ("C" circulating water pump) running
- COND-P-1A and COND-P-1B ("A" & "B" condensate pumps) running

Maintenance has requested that Operations start the CW-P-1A & CW-P-1B ("B" & "C" circulating water pumps) for post maintenance testing.

Using the above information, determine which one (1) of the following statements is correct.

a. Starting the third circulating water pump will cause an undervoltage trip of TR-S.

b. Operation of more than one (1) circulating water pump at this point in the startup is not recommended due to tube erosion concerns.

c. Starting two (2) additional circulating water pumps should not cause any significant problems for plant operations.

d. If CW-P-1A is started last, the transient on SM-1 will cause a trip of COND-P-1A and COND-P-2A on over current.

ANSWER: a.

KA:	256000K6.02
RO/SRO:	3.1
Reference:	CW/TMU Systems Text, pg 15 & PPM 2.6.1 Sec. 5.3.13, Page 18 of 93
Comments:	New question (Plant Sys - Gp III)
LO:	7765

QUESTION: 54 (1.00)

Which one (1) of the following describes why cooling is required for a mechanical vacuum pump during it's operation.

a. In addition to air being drawn into the suction, steam is used to seal the pump casing, which would overheat the pump.

b. Cooling is required to enable a lower condenser vacuum to be attained.

c. Cooling is required for the exhaust gases as they exit the mechanical vacuum pump.

d. As air is compressed, heat is produced which would cause the pump to overheat.

ANSWER: d.

KA:	256000GK.07
RO/SRO:	3.4
Reference:	Air Removal System Text
Comments:	Similar Question (41611) (Plant Sys - Gp II)
LO:	None

QUESTION: 55 (1.00)

With bus MC-8A deenergized, what would be the consequence of pushing the REVERSE TRANSFER pushbutton on IN-2?

a. Loss of power to PP-7A-A.

b. No effect, the ABT is power seeking and no transfer will occur.

c. No effect, IN-2 would already be in a reverse power condition.

d. Loss of power to PP-8A-A.

ANSWER: d.

KA:	262002K4.01
RO/SRO:	3.4
Reference:	UPS System Text
Comments:	Similar Question (3491) (Plant Sys - Gp II)
LO:	5892

QUESTION: 56 (1.00)

A loss of 250 VDC Motor Control Center MC-S2-1A has occurred.

Which one (1) of the following describes the direct effect this condition will have on the Reactor Core Isolation Cooling (RCIC) System?

a. RCIC initiation logic power is lost, but RCIC can still be manually initiated.

b. RCIC-V-1 (RCIC turbine trip valve) indication and control will be lost rendering RCIC INOPERABLE.

c. RCIC flow control will not function in automatic, but can still be used in manual.

d. RCIC valve indications are lost, however, all system functions still work.

ANSWER: b.

KA:	263000K3.03
RO/SRO:	3.8
Reference:	DC Power System Text
Comments:	New question (Plant Sys - Gp II)
LO:	7657

QUESTION: 57 (1.00)

A reactor startup from cold conditions is in progress, a vacuum is being drawn in the main condenser using both AR-P-1A and AR-P-1B (mechanical vacuum pumps). MS-RIS-610B (main steam line radiation monitor) has generated an INOP trip.

Which one (1) of the following describes the effect of the above conditions?

a. Both AR-P-1A and AR-P-1B will trip.

b. Neither AR-P-1A or AR-P-1B will trip.

c. Only AR-P-1B will trip.

d. Only AR-P-1A will trip.

ANSWER: b.

KA:	272000K1.02
RO/SRO:	3.5
Reference:	PRM System Text
Comments:	New Question (Plant Sys - Gp II)
LO:	5647f

QUESTION: 58 (1.00)

Due to a line break in the fire protection system header, system pressure has dropped to 108 psig and has remained there for two (2) minutes.

Which one (1) of the following describes the status of the fire protection pumps after this period of time?

a.

FP-P-2A (electric pump)	running
FP-P-2B (electric pump)	running
FP-P-1 (diesel pump)	running
FP-P-110 (diesel pump)	not running

b.

FP-P-2A (electric pump)	running
FP-P-2B (electric pump)	not running
FP-P-1 (diesel pump)	running
FP-P-110 (diesel pump)	not running

c.

FP-P-2A (electric pump)	not running
FP-P-2B (electric pump)	not running
FP-P-1 (diesel pump)	running
FP-P-110 (diesel pump)	running

d.

FP-P-2A (electric pump)	not running
FP-P-2B (electric pump)	not running
FP-P-1 (diesel pump)	running
FP-P-110 (diesel pump)	not running

ANSWER: a.

KA:	286000A2.06
RO/SRO:	3.1
Reference:	Fire Protection System Text
Comments:	Modified Question (3742) (Emer & Abn - Gp II)
LO:	5377

QUESTION: 59 (1.00)

Steam tunnel cooling fans "A" and "B" are in service. A main steam line break results in steam tunnel pressure in excess of 0.8 psi.

What actions will occur as a result of this transient?

a. Standby gas treatment initiates.

b. Reactor building ventilation isolates.

c. Steam tunnel cooling fan "C" auto starts.

d. Steam tunnel blowout panels relieve.

ANSWER: d.

KA:	290001K5.01
RO/SRO:	3.3
Reference:	Secondary Containment System Text
Comments:	New question (Plant Sys - Gp I)
LO:	7003

QUESTION: 60 (1.00)

A leak has developed in the drywell, current plant conditions are as follows:

RPV level	-40" and down slow
RPV pressure	850 psig and down slow
Drywell pressure	1.66 psig and up slow
Reactor building exhaust plenum radiation	15 mr/hr

WMA-FN-51B (recirc fan) has been observed to have automatically started.

Which one (1) of the following describes the reason WMA-FN-51B automatically started?

a. High drywell pressure isolated normal control room ventilation, automatically starting WMA-FN-51B.

b. Low RPV level directly caused an automatic start of WMA-FN-51B.

c. Reactor building exhaust plenum high radiation automatically started WMA-FN-54B (emergency filter unit fan) which subsequently automatically started WMA-FN-51B.

d. High drywell pressure tripped WEA-FN-51 (toilet/kitchen exhaust fan) which caused an automatic start of WMA-FN-51B.

ANSWER: c.

KA:	290003A3.01
RO/SRO:	3.3
Reference:	CR-HVAC System Text
Comments:	New Question (Plant Sys - Gp II)
LO:	7649

QUESTION: 61 (1.00)

A Traversing In-Core Probe (TIP) trace is being taken when a high drywell pressure signal is received.

Which one (1) of the following describes the automatic response of the TIP system?

a. The TIP drive shifts to reverse withdrawing the detector to the "in-shield" position, then the shear valve fires.

b. The TIP shear valve immediately fires, cutting the detector cable and sealing the guide tube.

c. The TIP drive shifts to reverse withdrawing the detector to the "in-shield" position, then the ball valve closes.

d. The TIP ball valve immediately closes, cutting the detector cable and sealing the guide tube.

ANSWER: c.

KA:	215001K4.01
RO/SRO:	3.4
Reference:	TIP System Text
Comments:	New Question (Plant Sys - Gp III)
LO:	6989

QUESTION: 62 (1.00)

RCC-V-129 (reactor closed cooling water supply to fuel pool cooling heat exchangers) has failed closed. Initial fuel pool temperature is 95 °F and going up at 10 °F/hour.

Which one (1) of the following describes the next automatic action, if any, that will occur in the fuel pool cooling system?

a. When fuel pool temperature reaches 125 °F, service water will supply cooling to the fuel pool cooling heat exchangers.

b. As temperature rises in the spent fuel pool, evaporative cooling causes a loss of inventory. The skimmer surge tank level will go down and COND-V-42 (condensate transfer makeup to skimmer surge tank) will open.

c. FPC-V-175 (filter demineralizer bypass) opens at 105 °F to prevent resin breakdown and chemical intrusion.

d. Increasing temperature in the spent fuel pool has NO effect on actions in the fuel pool cooling system.

ANSWER: b.

KA:	233000A2.07
RO/SRO:	3.0
Reference:	FPC System Text
Comments:	New Question (Plant Sys - Gp III)
LO:	5371a

QUESTION: 63 (1.00)

Drywell pressure is currently 2.0 psig and up slow. What effect, if any, does this have on the reactor building ventilation (RBHVAC) system?

a. - REA-V-1, REA-V-2, ROA-V-1 & ROA-V-2 (reactor building ventilation isolation valves) receive a close signal
- REA-FN-1 & REA-FN-2 (reactor building ventilation supply fans) and ROA-FN-1 & ROA-FN-2 (reactor building exhaust fans) receive a trip signal
- Emergency Core Cooling System (ECCS) emergency cooling fans start

b. - RBHVAC continues to operate
- The Standby Gas Treatment (SGT) system will NOT automatically start on high drywell pressure.

c. - REA-V-1, REA-V-2, ROA-V-1 & ROA-V-2 (reactor building ventilation isolation valves) remain open
- REA-FN-1 & REA-FN-2 (reactor building ventilation supply fans) and ROA-FN-1 & ROA-FN-2 (reactor building exhaust fans) receive a trip signal
- Emergency Core Cooling System (ECCS) emergency cooling fans receive a trip signal

d. - RBHVAC continues to operate
- The SGT system will automatically start.

ANSWER: a.

KA:	288000A2.03
RO/SRO:	3.5
Reference:	RBHVAC System Text
Comments:	Question (3330) (Plant Sys - Gp ...)
LO:	5679

QUESTION: 64 (1.00)

Thermal limits are established to maintain fuel integrity.

Which one (1) of the following statements describes the "limiting condition" and/or "failure mechanism" for one of the thermal limits?

a. Critical Power Ratio (CPR) limits ensure that the fuel cladding will not be subjected to greater than 1% plastic strain.

b. Average Planar Linear Heat Generation Rate (APLHGR) limits ensure that the fuel cladding temperature does not exceed 2200 °F during a Design Basis Loss Of Coolant Accident (DBA LOCA).

c. Linear Heat Generation Rate (LHGR) limits prevent fuel clad cracking due to high stress by limiting fuel enthalpy to less than 280 calories/gram.

d. Pre-Conditioning Interim Operating Recommendation (PCIOMR) limits prevent exceeding local power limits which could thermally fatigue the cladding.

ANSWER: b.

KA:	290002K5.01
RO/SRO:	3.5
Reference:	Fuel System Text
Comments:	Question (236) (Plant Sys - Gp III)
LO:	5388

QUESTION: 65 (1.00)

A reactor scram has just occurred. The Rod Sequence Control System (RSCS) and Rod Worth Minimizer (RWM) have not functioned to give the ALL RODS IN information.

Which one (1) of the following H13-P603 indications may be used to verify rods full in?

a. White Reactor Protection System (RPS) group lights deenergized.

b. Amber backup scram lights deenergized.

c. Green full in lights energized

d. Blue scram lights energized.

ANSWER: c.

KA: 295006GK.05
RO/SRO: 4.0
Reference: RSCS Systems Text
Comments: Modified question (3746) (Emer & Abn - Gp I)
LO: 5807

QUESTION: 66 (1.00)

Initial plant conditions are as follows:

- Reactor power 100%
- RPV pressure 1020 psig
- RPV water level 36"

A reactor scram occurs and the scram inlet valve (126) of a single control rod mechanically binds and fails to open.

Which one (1) of the following describe the control rod's response to this failure?

a. Fully inserts and its blue scram light is energized.

b. Fails to insert and its blue scram light is energized.

c. Fully inserts and its blue scram light is deenergized.

d. Fails to insert and its blue scram light is deenergized.

ANSWER: c.

KA:	295006A1.06
RO/SRO:	3.6
Reference:	CRDH System Text
Comments:	Modified Question (341) (Emer & Abn - Gp I)
LO:	5184

QUESTION: 67 (1.00)

The reactor is operating at ≈98% power. An equipment operator reports a lube oil leak in the "B" feedwater pump room. Immediately after acknowledging the report, RFW-P-1B ("B" reactor feedwater pump) trips on low lube oil pressure.

Which one (1) of the following describes the effect this condition has on the reactor recirculation system?

a. Only RRC-P-1B ("B" reactor recirculation pump) will runback to 15Hz.

b. Both RRC-P-1A and RRC-P-1B ("A" & "B" reactor recirculation pumps) will runback to 27Hz.

c. Both RRC-P-1A and RRC-P-1B ("A" & "B" reactor recirculation pumps) will runback to 15 Hz.

d. Only RRC-P-1B ("B" reactor recirculation pump) will runback to 52.2 Hz.

ANSWER: b.

KA: 295009K2.03
RO/SRO: 3.2
Reference: ASD System Text
Comments: New question (Emer & Abn - Gp I)
LO: 9683

QUESTION: 68 (1.00)

The plant has just suffered a turbine trip from 100% power and main turbine bypass valves (BPVs) have stuck open.

Which one (1) of the following describes the consequences of closing MS-V-146 (main steam supply to auxiliaries) to limit the uncontrolled cooldown?

Loss of steam to...

a. building heat
nitrogen inerting
bypass valves,
seal steam evaporators
offgas preheaters

b. steam jet air ejectors
reactor feed pump turbines
seal steam evaporators
moisture separator reheater second stage
offgas preheaters.

c. reactor feed pump turbines
offgas preheaters
moisture separator preheater second stage
nitrogen inerting system.
bypass valves

d. reactor feed pump turbines
moisture separator reheaters first stage
seal steam evaporator
building heat
bypass valves

ANSWER: b.

KA:	295009A1.03
RO/SRO:	3.1
Reference:	PPM 4.2.1.14, Main Steam System Text
Comments:	Similar Question (5459) (Emer & Abn - Gp I)
LO:	5525g

QUESTION: 69 (1.00)

The control room operator (CRO) is withdrawing control rods with the reactor critical and power indicating on the IRMs just prior to the point of adding heat. The CRO observes an unexpected rapid increase in power and a period indication of ≈30 seconds.

Assuming NO OPERATOR ACTION, which one (1) of the following scram signals will terminate this transient?

a. Reactor short period.

b. Average Power Range Monitor (APRM) neutron flux high.

c. Source Range Monitor (SRM) upscale

d. Intermediate Range Monitor (IRM) neutron flux high

ANSWER: d.

KA:	295014A2.01
RO/SRO:	4.2
Reference:	IRM System Text
Comments:	Modified Question (249) (Emer & Abn - Gp I)
LO:	5459

QUESTION: 70 (1.00)

The plant is operating at ≈98% power when the following indications are noted:

Reactor power down slow.
Megawatts down slow.
Control air pressure down slow.
Three (3) control rods indicate FULL-IN with scram lights energized on the full core display.

Which one (1) of the following statements describes the actions required to be taken given the above indications.

a. NO actions are required until the first Main Steam Isolation Valve (MSIV) is showing dual position indication.

b. Close or verify closed CN-V-65 (containment instrument air crosstie shut-off valve.

c. Initiate a manual reactor scram and refer to PPM 3.3.1.

d. Lower core flow to reduce reactor power to LT 90% of rated core thermal power.

ANSWER: c.

KA:	295015A1.02
RO/SRO:	4.2
Reference:	CAS System Text and PPM 4.1.1.7B
Comments:	New Question (Emer & Abn - Gp I)
LO:	7605

QUESTION: 71 (1.00)

Which one (1) of the following systems was specifically designed to ensure reactor power could be monitored under DBA/LOCA conditions?

a. Source Range Monitoring (SRM) system.

b. Local Power Range Monitoring (LPRM) system.

c. Wide Range Monitoring (WRM) system.

d. Intermediate Range Monitoring (IRM) system

ANSWER: c.

KA:	295015K2.08
RO/SRO:	3.7
Reference:	WRM System Text
Comments:	Modified Question (3707) (Emer & Abn - Gp I)
LO:	5963

QUESTION: 72 (1.00)

PPM 5.2.1 "Primary Containment Control" directs that when drywell pressure exceeds 39 psig the primary containment is to be vented to reduce and maintain wetwell pressure below the Primary Containment Pressure Limit (PCPL).

Which one (1) of the following statements describes the preferred vent path and the reason that this path is preferred?

a. Drywell, this is the vent path with the highest flowrate capacity.

b. Wetwell, to take advantage of suppression pool scrubbing for minimizing the amount of radioactivity released.

c. Drywell, in order to minimize the moisture saturation and breakdown of the Standby Gas Treatment (SGT) system charcoal adsorbers.

d. Wetwell, in order to minimize cycling, and potential failure of the wetwell to drywell vacuum breakers.

ANSWER: b.

KA:	295024K3.07
RO/SRO:	4.0
Reference:	PPM 5.2.1
Comments:	Question (512) (Emer & Abn - Gp I)
LO:	8363 (PPM 5.2.1)

QUESTION: 73 (1.00)

The plant was operating at ≈98% power when a leak in the discharge of a condensate booster pump caused a low suction pressure trip of the reactor feedwater pumps. RPV level dropped to -25" initially and is now going down very slow, the Control Room Supervisor (CRS) has entered PPM 5.1.1, RPV Control, and is executing all legs concurrently. Wetwell temperature has just been reported at 92°F and up slow.

Which one (1) of the following describes the Emergency Operating Procedure (EOP) implementation to be used under these conditions?

a. Continue PPM 5.1.1, RPV Control, RPV level steps, AND enter PPM 5.3.1, Secondary Containment Control.

b. Continue PPM 5.1.1, RPV Control, AND concurrently enter PPM 5.2.1, Primary Containment Control.

c. Complete PPM 5.1.1, RPV Control, RPV level steps, THEN enter PPM 5.2.1, Primary Containment Control.

d. Reenter PPM 5.1.1, RPV Control, AND concurrently enter PPM 4.12.4.1A High Energy Line Break.

ANSWER: b

KA:	295024GK.11
RO/SRO:	4.5
Reference:	PPM 5.0.10, Sect. 3.5, PPM 5.1.1, PPM 5.2.1
Comments:	Modified Question (721) (Emer & Abn - Gp I)
LO:	8017

QUESTION: 74 (1.00)

The plant is in a condition requiring the Control Room Supervisor (CRS) to execute PPM 5.1.1, RPV Level Control, and PPM 5.2.1, Primary Containment Control, concurrently. The CRS has directed a pressure reduction which exceeds the normal, allowable RPV cooldown rate of 100°F/Hr.

Which one (1) of the following describes a condition that would allow the CRS to take this action?

a. Prevent RPV level from going LT Top of Active Fuel (TAF).

b. Prevent exceeding Drywell Spray Initiation Limit (DSIL).

c. Prevent exceeding Heat Capacity Temperature Limit (HCTL).

d. Prevent exceeding Maximum Primary Containment Water Level Limit (MPCWLL).

ANSWER: c.

KA:	295025A2.03
RO/SRO:	4.1
Reference:	PPM 5.0.10
Comments:	Modified Question (Emer & Abn - Gp I)
LO:	8048 (PPM 5.1.1)

QUESTION: 75 (1.00)

In PPM 5.1.4, RPV Flooding, achieving FLOODING COMPLETION TIME ensures that RPV level is GE to...

a. the Top of Active Fuel (TAF).

b. the Main Steam Line (MSL) openings.

c. 2/3 core height.

d. the reactor head vents.

ANSWER: a.

KA:	295031K1.01
RO/SRO:	4.7
Reference:	PPM 5.0.10, pg 137
Comments:	Modified Question (659) (Emer & Abn - Gp I)
LO:	8219 (PPM 5.1.4-14)

QUESTION: 76 (1.00)

When using the Reactor Core Isolation Cooling (RCIC) system for alternate boron injection, the contents of the Standby Liquid Control (SLC) storage tank are gravity fed to the RCIC pump suction by a temporary hose connection originating at...

a. any drain off the SLC suction piping.

b. the drain off of the SLC storage tank.

c. a drain on the common SLC discharge header, downstream of SLC-V-4A & SLC-V-4B (squib valves).

d. the tank side of either the "A" or "B" SLC system relief valve piping.

ANSWER: d.

KA:	295037K2.13
RO/SRO:	4.1
Reference:	PPM 5.5.8 and RCIC System Text
Comments:	Modified Question (3728) (Emer & Abn - Gp I)
LO:	5929

QUESTION: 77 (1.00)

Which one (1) of the following describes two (2) methods that can be used for positive confirmation that all rods are fully inserted?

a. Average Power Range Monitors (APRMs) LT 5% power and Reactor Engineering calculation showing adequate shutdown margin.

b. Graphic Display System (GDS) and Plant Process Computer Replacement System (PPCRS).

c. Plant Process Computer Replacement System (PPCRS) and Quick Emergency Dose Projection System (QEDPS)

d. Graphic Display System (GDS) and Average Power Range Monitors (APRM)s LT 5% power.

ANSWER: b.

KA:	295037A2.01
RO/SRO:	4.3
Reference:	PPM 5.0.10, page 222
Comments:	New Question (Emer & Abn - Gp II)
LO:	8182 (5.1.1-37 & 5.1.2-58)

QUESTION: 78 (1.00)

The plant is operating at 75% power and 70% core flow when an electrical malfunction in the main turbine trip circuitry causes both reactor recirculation pumps to trip off.

Which one (1) of the following IMMEDIATE ACTIONS should be taken?

a. The recirculation pump trips will cause a RPV high pressure scram. Perform the immediate scram actions per PPM 3.3.1..

b. Refer to the single loop operating procedure in PPM 2.2.1 to restart one of the reactor recirculation pumps.

c. Confirm the loss of <u>both</u> reactor recirculation pumps and then manually scram the reactor.

d. Use the fast shutdown sequence control rods to exit Region "C" within 15 minutes.

ANSWER: c.

KA:	295001G.10
RO/SRO:	3.7
Reference:	PPM 4.12.4.7
Comments:	Question (503) (Emer & Abn - Gp II)
LO:	5023c

QUESTION: 79 (1.00)

The reactor is operating at 93% power when a loss of all circulating water pumps occurs. Assuming NO OPERATOR ACTION, as vacuum degrades to 14" Hg, what will be the effect on RPV water level?

RPV water level will...

a. increase to +54" and then cycle between -50" and +54".

b. decrease to LT 0" and then stabilize at +18".

c. be maintained at setpoint.

d. decrease to +13" and then stabilize at +36".

ANSWER: b.

KA:	295002K3.01
RO/SRO:	3.8
Reference:	FWLC System Text
Comments:	Modified Question (6270) (Emer & Abn - Gp II)
LO:	5400f

QUESTION: 80 (1.00)

During a "Station Blackout" plant parameters are as follows:

- RPV water level	-52" and up slow
- RPV pressure	850 psig and down slow
- Wetwell pressure	19 psig and up slow
- Drywell temperature	243°F and up slow
- Wetwell temperature	112°F
- Wetwell level	+ 3"

Which one (1) of the following interlocks must be defeated to allow continued Reactor Core Isolation Cooling (RCIC) system operation under these conditions?

a. High exhaust pressure turbine trip.

b. RCIC exhaust diaphragm rupture isolation.

c. Level 2 RCIC turbine trip.

d. Drywell high temperature RCIC system isolation.

ANSWER: a.

KA:	295003A1.03
RO/SRO:	4.4
Reference:	PPM 5.6.1
Comments:	Modified Question (4402) (Emer & Abn - Gp I)
LO:	5722

QUESTION: 81 (1.00)

Due to a fault, MC-7A has been deenergized and will be out of service for a minimum of eight (8) hours.

Which one (1) of the following will be affected by this condition?

a. Uninterruptable Power Supply (UPS) static inverter IN-1

b. Critical instrument inverter IN-2.

c. ATWS/ARI Division 2 logic power.

d. DG-1 control circuit power

ANSWER: a.

KA:	295004K2.03
RO/SRO:	3.3
Reference:	DC Power System Text
Comments:	New question (Emer & Abn - Gp II)
LO:	5263

QUESTION: 82 (1.00)

A plant startup is in progress with reactor pressure ≈500 psig. RFW-FCV-10A and RFW-FCV-10B (feedwater startup valves to the reactor) both fail full open. RPV level is 55" and rising.

What IMMEDIATE ACTIONS should be taken to preclude flooding the main steam lines?

a. Prior to reaching an RPV level of +80", scram the reactor, and close the Main Steam Isolation Valves (MSIVs).

b. Stop the condensate booster pumps before RPV water level exceeds +80".

c. Prior to reaching an RPV level of +108", close RFW-V-118 (feedwater startup valve isolation) and leave it closed until RPV level is LT +54".

d. Stop all condensate and condensate booster pumps before RPV water level exceeds +60".

ANSWER: b.

KA:	295008A1.08
RO/SRO:	3.5
Reference:	PPM 4.2.1.2
Comments:	Modified Question (504) (Emer & Abn - Gp II)
LO:	5400

QUESTION: 83 (1.00)

The plant has experienced a transient, Emergency Operating Procedures (EOPs) have been entered and conditions are as follows:

RPV water level	-150"and down slow
RPV pressure	180 psig and down slow
Wetwell temperature	110°F and up slow

RHR loop "A" injecting to the RPV
RHR loop "B" in suppression pool cooling
All other injection sources are unavailable

Which one (1) of the following statements best describes actions that need to be taken given the above information?

a. Open seven (7) Automatic Depressurization System (ADS) Safety Relief Valves (SRVs) to emergency depressurize.

b. RHR loop "B" should be removed from suppression pool cooling and injected into the RPV.

c. RHR loop "A" should be removed from injection and placed into suppression pool cooling.

d. No actions are required until RPV level lowers to LE -192".

ANSWER: b.

KA:	295013K2.01
RO/SRO:	3.6
Reference:	PPM 5.2.1
Comments:	New question (Emer & Abn - Gp I)
LO:	8304

QUESTION: 84 (1.00)

A "Most Immediate" control room evacuation is required due to heavy smoke intrusion.

Which one (1) of the following statements lists only IMMEDIATE ACTIONS that should be taken prior to exiting the control room?

a. Manually scram the reactor, lock the reactor mode switch in SHUTDOWN and close the Main Steam Isolation Valves (MSIVs).

b. Manually scram the reactor, initiate Reactor Core Isolation Cooling (RCIC) and make a plant announcement.

c. Manually scram the reactor, close the MSIVs and transfer RPV level control to RFW-FCV-10A and RFW-FCV-10B (feedwater startup valev to the reactor).

d. Manually scram the reactor, lock the reactor mode switch in SHUTDOWN and start diesel generator #2

ANSWER: a.

KA:	295016K3.01
RO/SRO:	4.1
Reference:	PPM 4.12.1.1
Comments:	Modified Question (256) (Emer & Abn - Gp I)
LO:	None

QUESTION: 85 (1.00)

The plant has experienced a transient, PPM 5.1.2 has been entered, plant parameters are as follows:

- RPV water level -145" and steady
- Drywell pressure 10 psig and down slow
- Wetwell temperature 110°F and up very slow
- Main Steam Isolation Valves (MSIVs) are closed
- Both Standby Liquid Control (SLC) pumps are injecting

Which one (1) of the following identifies a valid annunciator that would preclude/prevent reopening the MSIVs?

a. LPCS/RHR A INIT RPV LEVEL LOW -129".

b. DRYWELL PRESS HIGH TRIP.

c. NSSSS ISOL MSL FLOW HIGH.

d. RC-1 HALF TRIP.

ANSWER: c.

KA:	295017K3.01
RO/SRO:	3.6
Reference:	PPM 5.1.2 and NS4 System Text
Comments:	Modified Question (677) (Emer & Abn - Gp I)
LO:	None

QUESTION: 86 (1.00)

The plant is operating at rated conditions with Reactor Closed Cooling Water (RCC) loads being supplied by RCC-P-1A and RCC-P-1C ("A" & "C" reactor closed cooling water pumps) when a fuse in the 125VDC power supply to the RCC-P-1A breaker close logic blows.

Which one (1) of the following is an action that should be taken?

a. Start CRD-P-1B ("B" control rod drive pump) and trip CRD-P-1A ("A" control rod drive pump).

b. Monitor drywell temperature and pressure, enter PPM 5.2.1, Primary Containment Control when entry conditions are met.

c. Scram the reactor and trip RRC-P-1A and RRC-P-1B ("A" and "B" reactor recirculation pumps).

d. Trip RWCU-P-1A & RWCU-P-1B ("A" & "B" reactor water cleanup pumps) and close RWCU-V-4 (reactor water cleanup outboard isolation valve).

ANSWER: d.

KA:	295018K2.02
RO/SRO:	3.6
Reference:	TSW Systems, Rev. 7, PPM 4.8.3.2, EWDs 11E001, 11E017
Comments:	New Question (Emer & Abn - Gp II)
LO:	5706d

QUESTION: 87 (1.00)

Which one (1) of the following is expected to occur at a control air header pressure of 80 psig?

a. SA-PCV-2 (control/service air crosstie valve) closes.

b. Standby control air compressor(s) automatically start.

c. CAS-PCV-1 (desiccant dryer bypass valve) opens.

d. Control air header low pressure alarm is received.

ANSWER: a.

KA:	295019A2.01
RO/SRO:	3.6
Reference:	CAS System Text
Comments:	New Question (Emer & Abn - Gp II)
LO:	5878

QUESTION: 88 (1.00)

Given the following control air compressor parameters:

1.	High discharge air temperature	4.	High cooling water temperature
2.	Low cooling water pressure	5.	High discharge air pressure
3.	Low oil pressure	6.	High discharge flow

Which one (1) of the following identifes the parameters, which if exceeded, would cause a trip of the control air compressor?

a. 2, 4 and 6

b. 1, 2 and 3

c. 1, 3 and 5

d. 4, 5 and 6

ANSWER: b.

KA:	295019GK.05
RO/SRO:	3.3
Reference:	CAS System Text
Comments:	Modified Question (4078) (Emer & Abn - Gp II)
LO:	5872

QUESTION: 89 (1.00)

The plant is operating at 100% reactor power when an inadvertent Group 7 Nuclear Steam Supply Shutoff System (NS4) isolation occurs.

Which one (1) of the following describes the expected plant response?

a. Reactor Closed Cooling (RCC) system supply and return containment isolation valves close.

b. Reactor Water Cleanup (RWCU) system containment isolation valves close.

c. Residual Heat Removal (RHR) system reactor water sample isolation valves close.

d. Primary containment recirculation fans trip.

ANSWER: b.

KA:	295020K2.04
RO/SRO:	3.1
Reference:	NS4 System Text
Comments:	Question (259) (Emer & Abn - Gp II)
LO:	5598

QUESTION: 90 (1.00)

The plant is operating at ≈97% when the following annunciators are received:

H13-P603.A7-6.7	ROD ACCUMULATOR TROUBLE *- (The full core display indicates this alarm is for a fully withdrawn rod)*
H13-P603.A7-3.8	CRD CHARGE WATER PRESS LOW

The control room operator (CRO) observes that CRD-P-1A ("A" control rod drive pump) motor current indicates zero (0) amps with the red light on.

Which one (1) of the following describes the IMMEDIATE ACTIONS required for this situation?

a. Place the reactor mode switch to SHUTDOWN and carry out the scram recovery per PPM 3.3.1, Reactor Scram.

b. Place the Control Rod Drive (CRD) flow controller in MANUAL and raise controller output while monitoring CRD-P-1A motor current.

c. Place the standby CRD suction filter in service locally and start CRD-P-1B.

d. Place the CRD flow controller in MANUAL, set the controller output at zero (0) and start CRD-P-1B.

ANSWER: d.

KA:	295022A1.01
RO/SRO:	3.4
Reference:	PPM 4.1.1.2
Comments:	Modified Question (360) (Emer & Abn - Gp II)
LO:	5192

QUESTION: 91 (1.00)

A plant transient has caused a reactor scram. Plant conditions are as follows:

- Reactor power	≈15%
- RPV pressure	1000 psig and steady
- RPV level	-125" and down
- Wetwell temperature	165 °F and up slow
- Wetwell level	32.5' and up very slow

Which one (1) of the following describes the operation of the Safety Relief Valves (SRVs) with the above conditions?

a. Heat Capacity Level Limit (HCLL) has been exceeded, emergency depressurization is required.

b. Safety Relief Valve Tailpipe Level Limit (SRVTPLL) has been exceeded, emergency depressurization is required.

c. Heat Capacity Temperature Limit (HCTL) has been exceeded, emergency depressurization is required.

d. No limits have been exceeded, cycle SRVs to maintain RPV pressure between 800 and 1000 psig.

ANSWER: c.

KA:	295026K3.01
RO/SRO:	3.8
Reference:	PPM 5.2.1, ADS System Text
Comments:	New question (Emer & Abn - Gp I)
LO:	8379 (PPM 5.2.1-77)

QUESTION: 92 (1.00)

Following a small steam line break inside primary containment, average drywell temperature has increased by about 100 °F.

Assuming that actual RPV water level remains constant, indicated vessel level could be...

a. higher, as heating of the reference leg decreases differential pressure.

b. lower, as heating of the reference leg increases differential pressure.

c. higher, as heating of the reference leg increases differential pressure.

d. lower, as heating of the reference leg decreases differential pressure.

ANSWER: a.

KA:	295028K1.01
RO/SRO:	3.7
Reference:	PPM 5.0.10
Comments:	Question (567) (Emer & Abn - Gp II)
LO:	8448 (PPM 5.1.1-55)

QUESTION: 93 (1.00)

Given plant conditions as follows:

- Wetwell level 36'
- Wetwell pressure 10 psig
- RPV pressure 1000 psig

Using the attached curves, identify the possible results of Safety Relief Valve (SRV) actuation.

Actuation of an SRV...

a. is allowed and desired given the above conditions.

b. at this elevated wetwell level could result in damage to SRV internals.

c. will result in exceeding the suppression pool boundary design load.

d. could result in damage to the SRV tail pipe, quenchers, or supports.

ANSWER: d.

KA:	295029K2.06
RO/SRO:	3.5
Reference:	PPM 5.0.10, Section 7.16
Comments:	New Question (Emer & Abn - Gp II)
LO:	8381 (PPM 5.2.1-83)

QUESTION: 94 (1.00)

Primary containment water level cannot be maintained below the Maximum Primary Containment Water Level Limit (MPCWLL), 552'2". Injection from sources external to the primary containment must be terminated in order to prevent...

a. failure of low pressure Emergency Core Cooling System (ECCS) suction piping due to the static head of water.

b. loss of the ability to determine off-site radiation release rates.

c. loss of the ability to vent the primary containment.

d. overloading Emergency Core Cooling System (ECCS) pump motors due to the additional flow resulting from the higher suction head.

ANSWER: c.

KA:	295030GK.07
RO/SRO:	3.6
Reference:	PPM 5.0.10
Comments:	Similar Question (2497) (Emer & Abn - Gp II)
LO:	8405 (PPM 5.2.1)

QUESTION: 95 (1.00)

Which one of the following lists actions that can be used to mitigate off-site doses for an accident which releases radioactivity inside secondary containment?

a. Isolate primary systems leaking into the area
Shutdown Reactor Building Ventilation (RBHVAC)
Isolate the Standby Gas Treatment (SGT) system

b. Isolate the Standby Gas Treatment (SGT) system
Shut down the reactor
Emergency depressurize the reactor

c. Isolate primary systems leaking into the area
Shutdown Reactor Building Ventilation (RBHVAC)
Shut down the reactor

d. Isolate primary systems leaking into the area
Shut down the reactor
Emergency depressurize the reactor

ANSWER: d.

KA: 295033K203
RO/SRO: 3.9
Reference: PPM 5.3.1 and 5.0.10
Comments: New Question (Emer & Abn - Gp II)
LO: 8460 (PPM 5.1.3-18)

QUESTION: 96 (1.00)

A transport cask filled with Control Rod Drive (CRD) "spud end" filters has tipped over on the 501' elevation of the Reactor Building (RB). ARM-RIS-33 (RB 501' area radiation monitor) is alarming on control room panel H13-P614. Reactor building exhaust plenum radiation levels are at ≈15 mr/hr and up fast.

Which one (1) of the following is an "expected" response to the above conditions?

a. CW-P-1B & CW-P-1C ("B" & "C" circulating water pumps) trip.

b. Any traversing in-core probe (TIP) inserted into the core will automatically withdraw and isolate.

c. Drywell Equipment Drain (EDR) and Floor Drain (FDR) sumps isolate.

d. Containment Nitrogen (CN) makeup isolates.

ANSWER: d.

KA:	295034K2.02
RO/SRO:	3.9
Reference:	PPM 4.12.4.6, page 2
Comments:	New Question (Emer & Abn - Gp II)
LO:	5597

QUESTION: 97 (1.00)

A reactor shutdown to cold conditions is in progress. Plant conditions are as follows:

- Reactor mode switch positioned in SHUTDOWN
- RPV pressure is 45 psig
- Residual Heat Removal (RHR) "B" is being warmed up for shutdown cooling mode
- Residual Heat Removal (RHR) "A" has been removed from service for ten (10) days

Which one (1) of the following statements describes action(s) which must be taken for these conditions?

a. Immediately place RHR Loop "B" in shutdown cooling and be in at least cold shutdown within one (1) hour.

b. Perform a physical walkdown of the Reactor Water Cleanup (RWCU) system and then place the system in service to maintain reactor coolant temperature as low as possible.

c. Demonstrate operability of at least one (1) alternate method of decay heat removal.

d. Maintain both reactor recirculation pumps in operation until RHR-P-2A ("A" residual heat removal pump) is repaired and returned to service.

ANSWER: c.

KA:	295021GK.08
RO/SRO:	3.2
Reference:	Tech Spec 3.4.9.1
Comments:	Question (577) (Emer & Abn - Gp II)
LO:	None

QUESTION: 98 (1.00)

A spent fuel assembly is dropped during transport in the spent fuel pool. The bridge operator observes bubbles rising from the dropped assembly.

Which one (1) of the following is an IMMEDIATE ACTION for this situation?

a. Place all assemblies in a safe location, leave the area, and call the control room.

b. Immediately evacuate the refuel floor of all personnel.

c. Contact Health Physics and ask for an area survey, then inform the Control Room Supervisor (CRS).

d. Contact the refuel floor supervisor and the system engineer, then attempt to recover the dropped assembly.

ANSWER: b.

KA:	295023K1.01
RO/SRO:	3.6
Reference:	PPM 4.12.3.1, Rev and Fuel Handling System Text
Comments:	Modified Question (508) (Emer & Abn - Gp I)
LO:	7713

QUESTION: 99 (1.00)

PPM 5.3.1, Secondary Containment Control, was entered due to confirmed high temperatures and steam in the 1A Reactor Water Cleanup (RWCU) pump room. RWCU-V-1 & RWCU-V-4 (RWCU suction isolation valves) cannot be isolated from the control room. Maximum Safe Operating Values for the RWCU system have NOT been exceeded.

Which one (1) of the following describes the actions to be taken for this situation?

a. Emergency depressurize.

b. Shutdown the reactor per PPM 3.2.1.

c. Continue efforts to isolate RWCU and enter PPM 5.1.1, RPV Level Control.

d. Isolate Reactor Building Ventilation (RBHVAC) and initiate the Standby Gas Treaetment (SGT) system.

ANSWER: c.

KA:	295032K3.03
RO/SRO:	3.8
Reference:	PPM 5.3.1
Comments:	Question (737) (Emer & Abn - Gp II)
LO:	8457 (PPM 5.3.1-10)

QUESTION: 100 (1.00)

A failure of the reactor building ventilation system (RBHVAC) has occurred. The control room operator (CRO) has started Standby Gas Treatment (SGT) train "A".

Which one (1) of the following is the SGT train "A" differential <u>controller tape setpoint</u> which should be set to ensure that the required negative pressure will be maintained in secondary containment?

a. -1.7" Wg

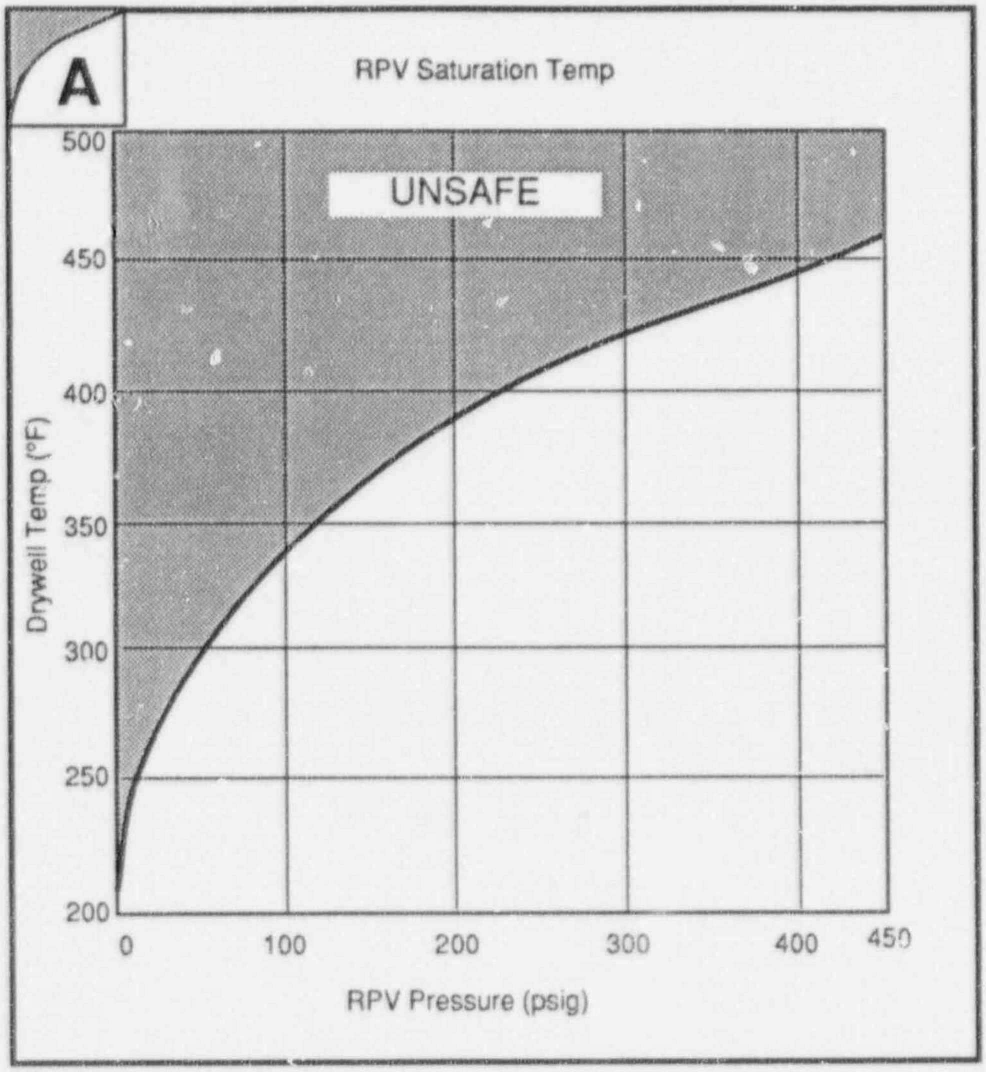
b. -0.6" Wg

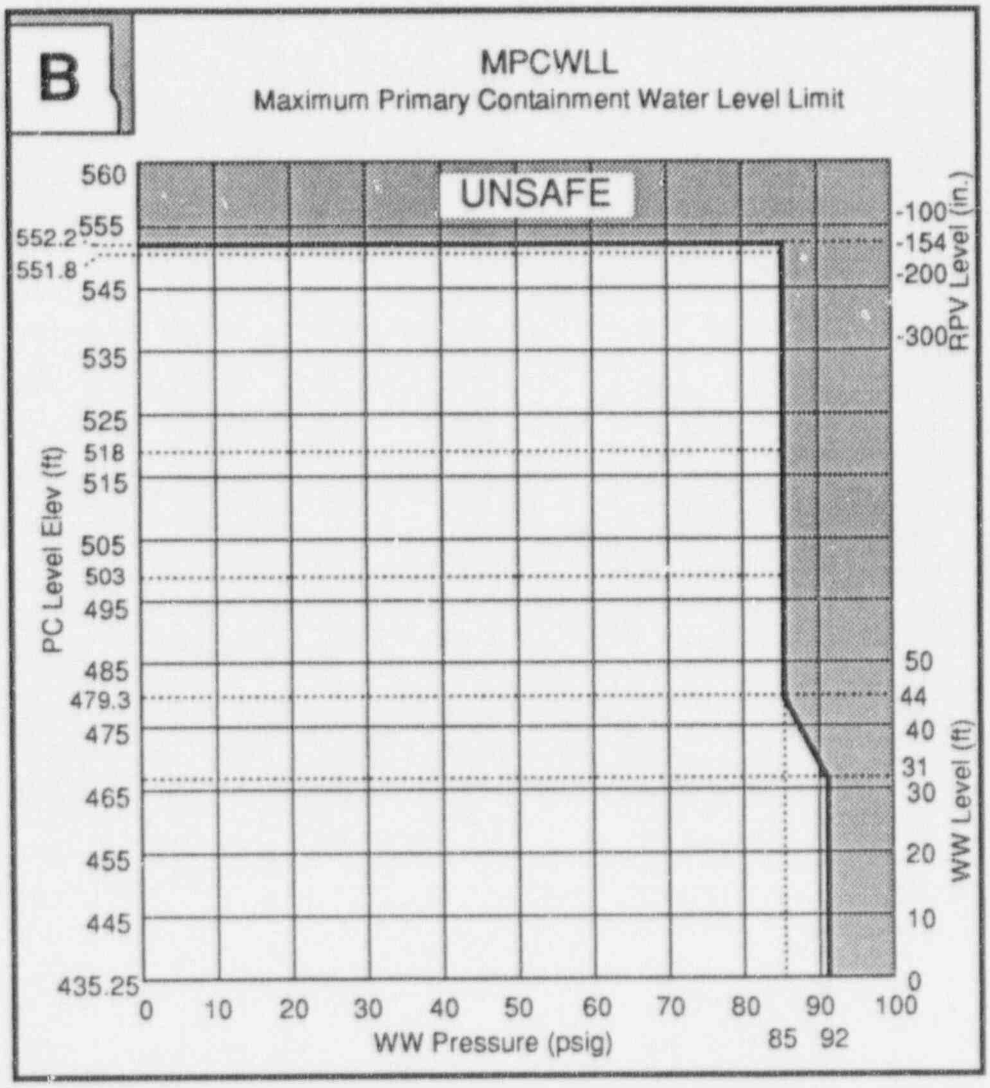
c. -2.5" Wg

d. -0.25" Wg

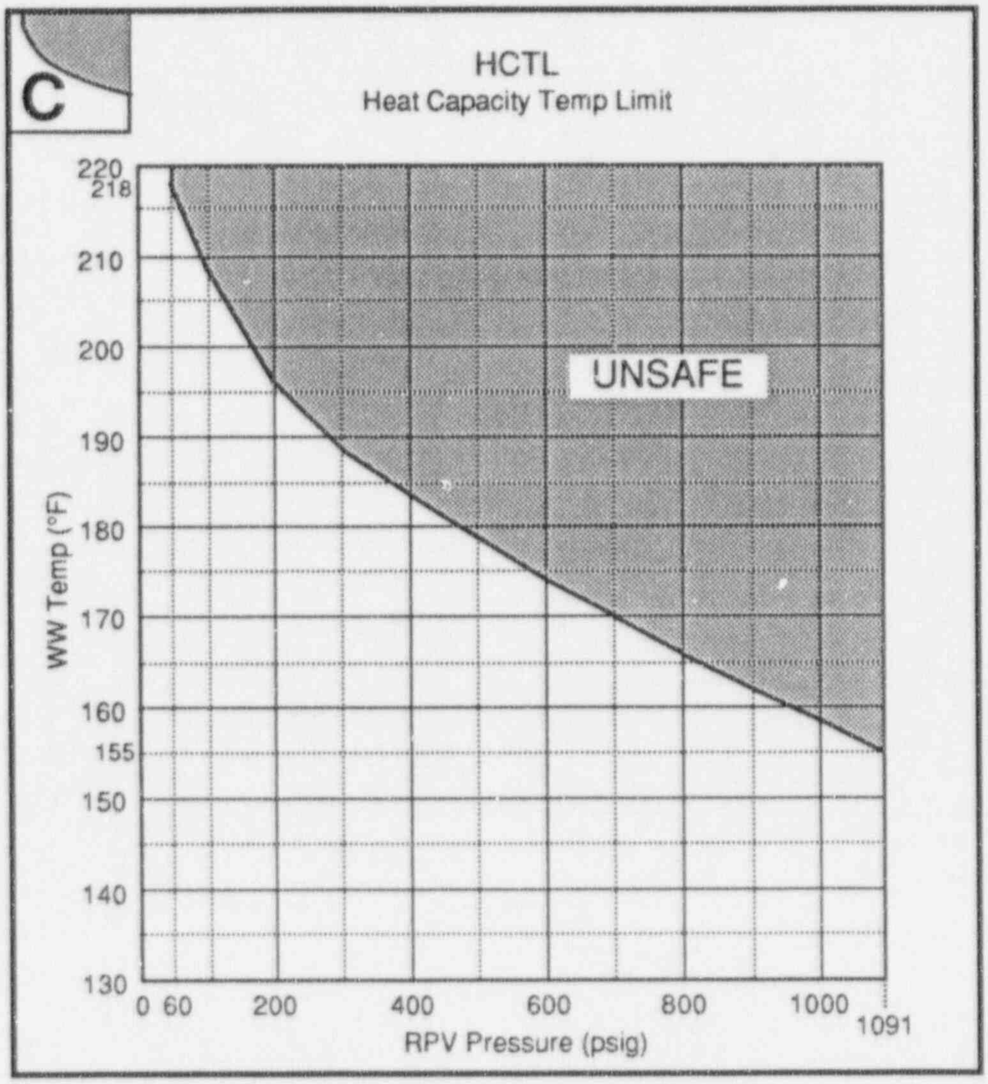
ANSWER: a.

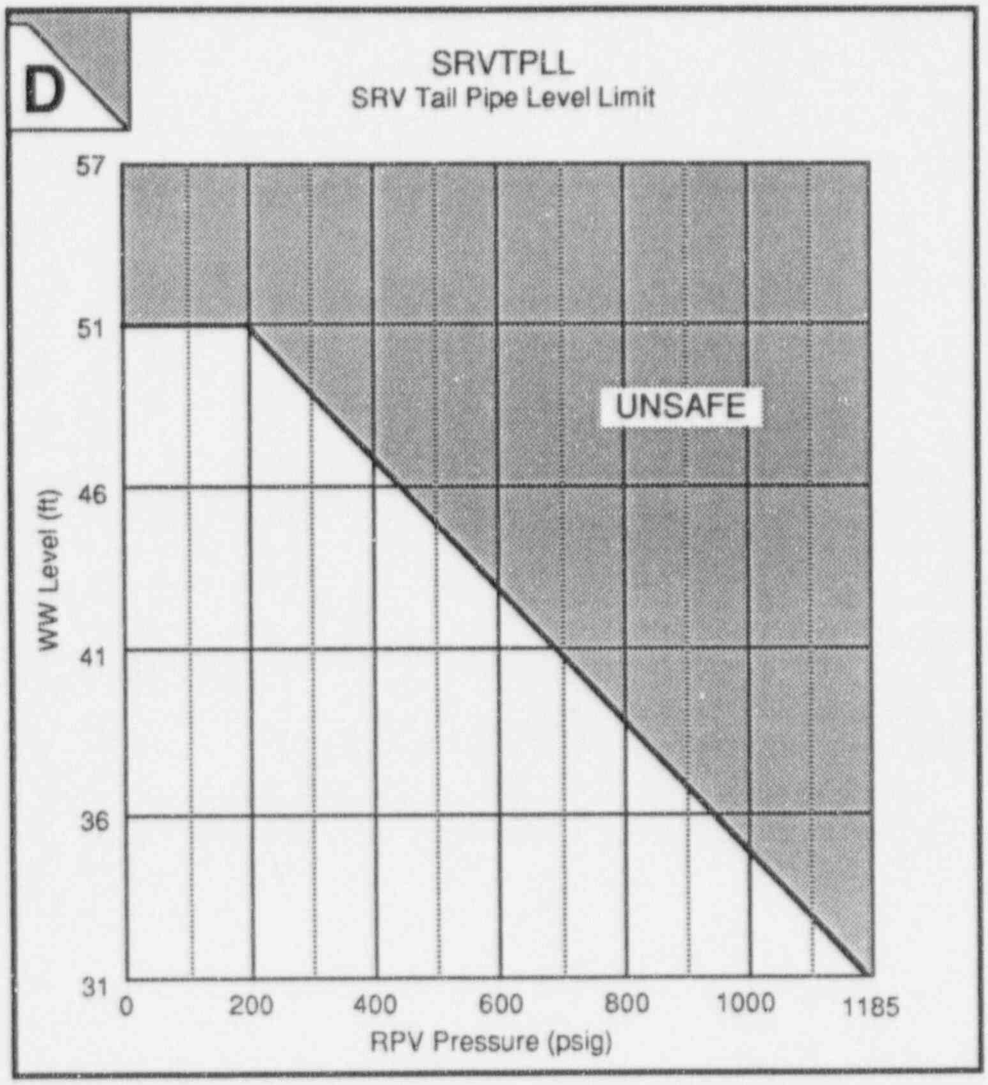
KA:	295035A1.02
RO/SRO:	3.6
Reference:	PPM 4.10.1.1, SGT System Text
Comments:	Similar Question (530) (Emer & Abn - Gp III)
LO:	5828

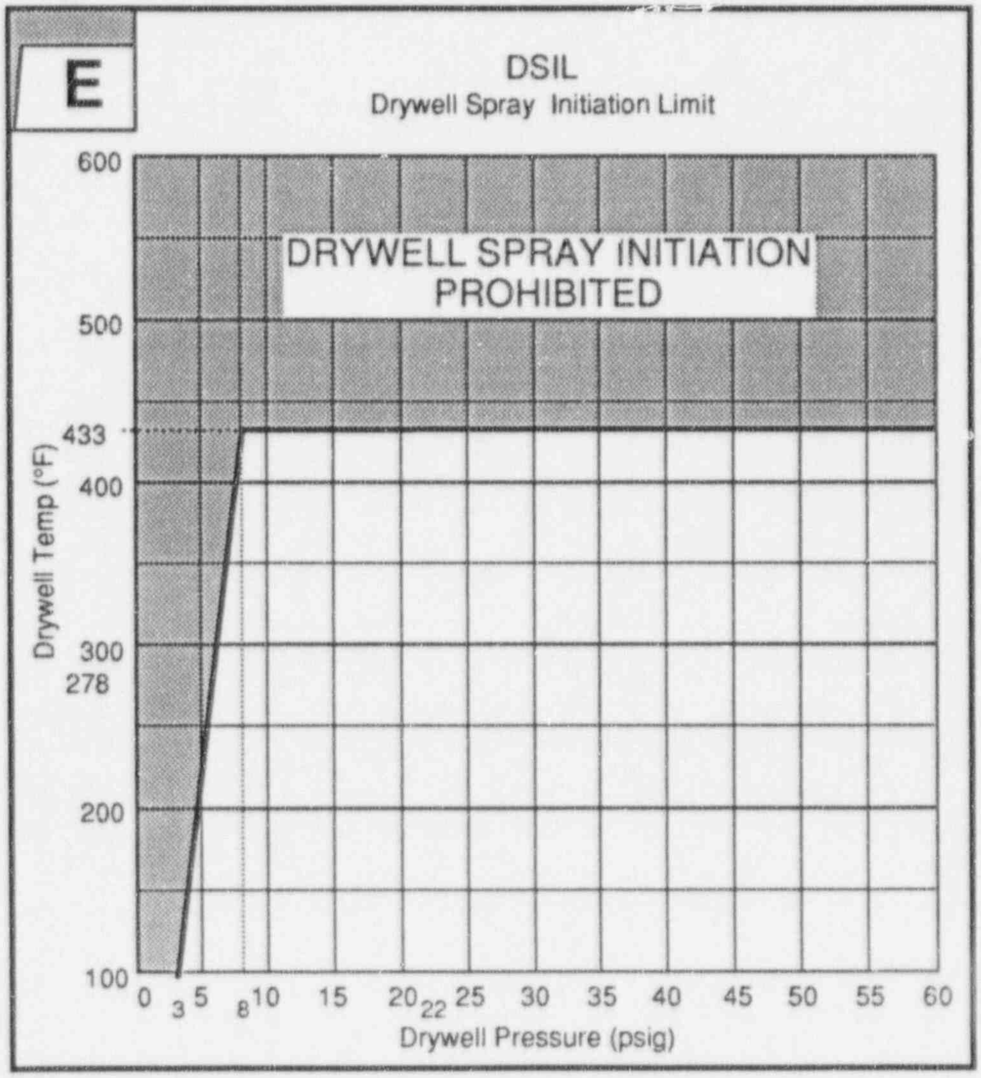

A
RPV Saturation Temp
UNSAFE
Drywell Temp (°F)
500
450
400
350
300
250
200
0
100
200
300
400
450
RPV Pressure (psig)



B
MPCWLL
Maximum Primary Containment Water Level Limit
UNSAFE
PC Level Elev (ft)
560
555
552.2
551.8
545
535
525
518
515
505
503
495
485
479.3
475
465
455
445
435.25
RPV Level (in.)
-100
-154
-200
-300
WW Level (ft)
50
44
40
31
30
20
10
0
WW Pressure (psig)
0 10 20 30 40 50 60 70 80 90 100
85 92

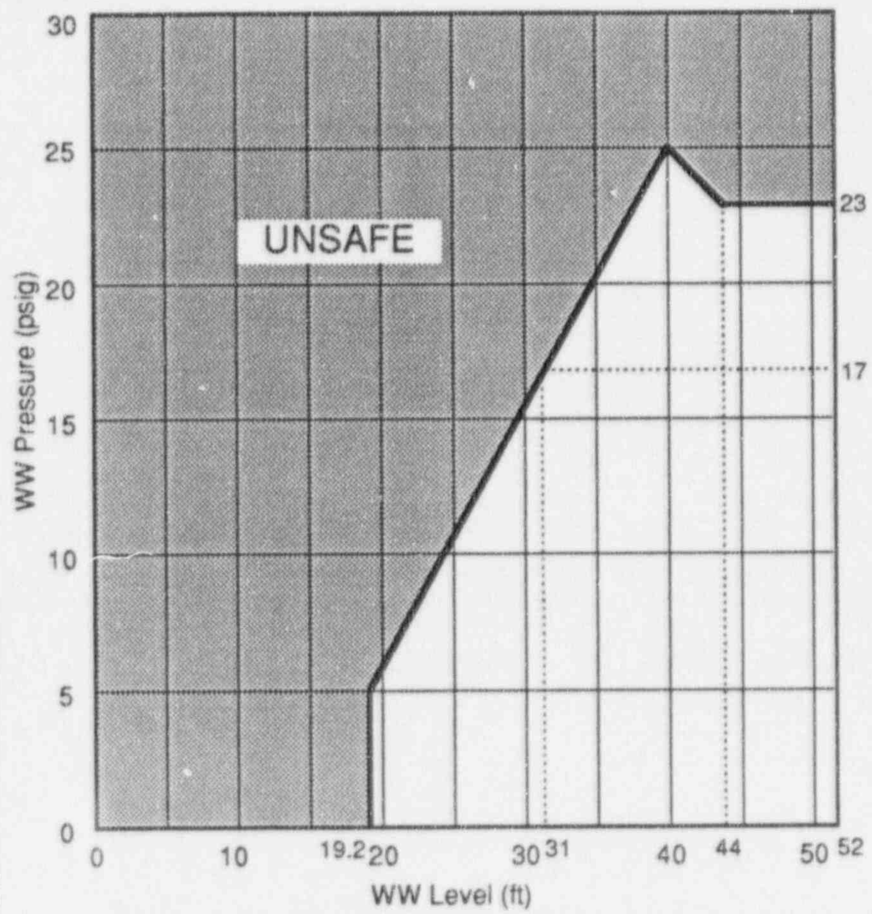

C
HCTL
Heat Capacity Temp Limit
UNSAFE
WW Temp (°F)
220
218
210
200
190
180
170
160
155
150
140
130
0
60
200
400
600
800
1000
1091
RPV Pressure (psig)

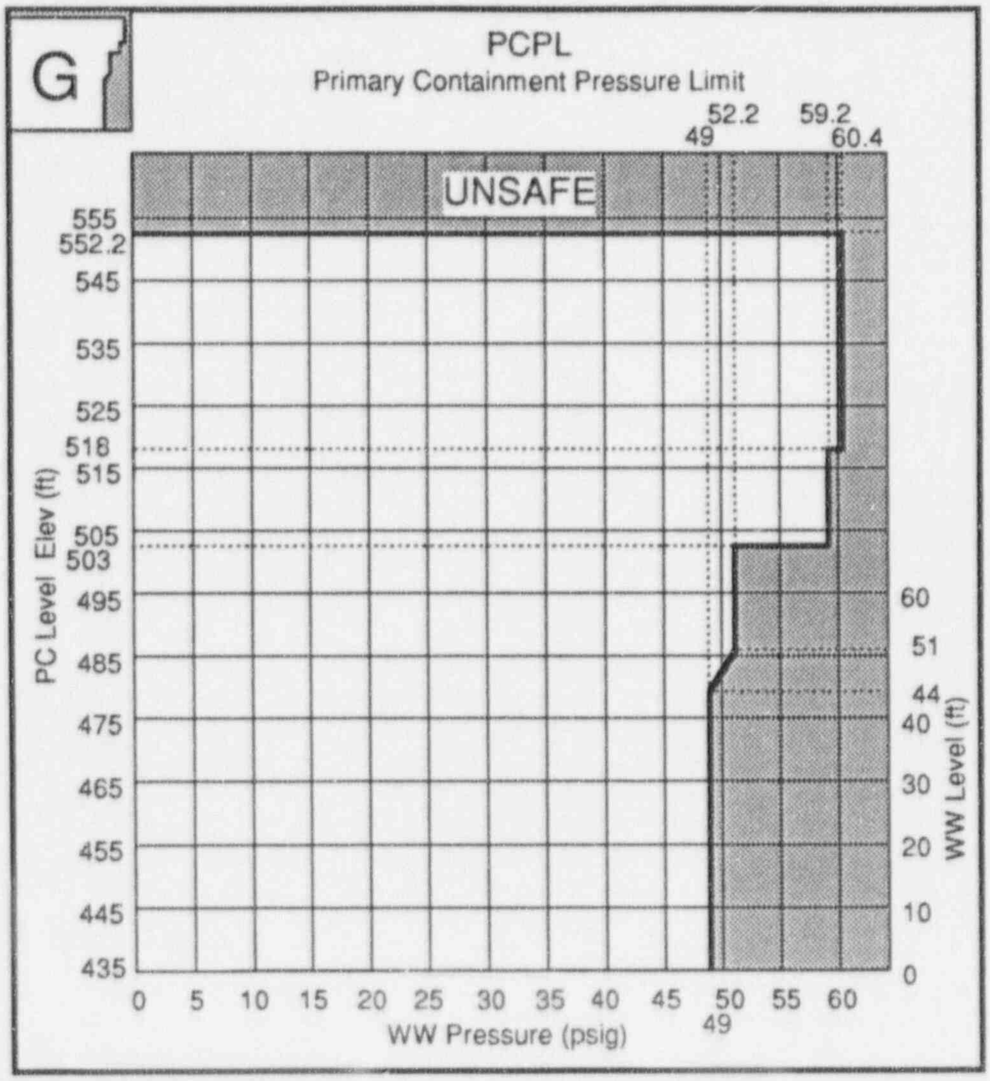

D
SRVTPLL
SRV Tail Pipe Level Limit
UNSAFE
WW Level (ft)
57
51
46
41
36
31
0
200
400
600
800
1000
1185
RPV Pressure (psig)

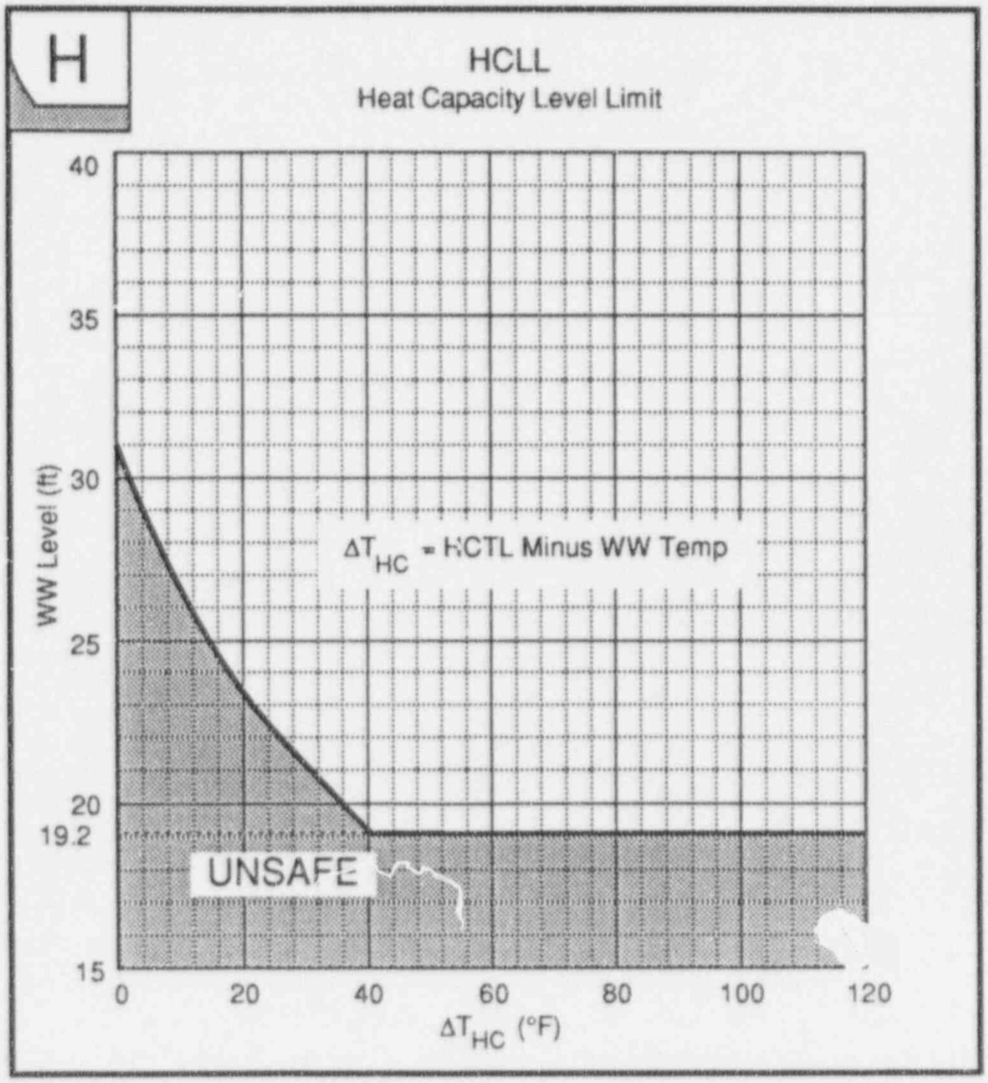

E
DSIL
Drywell Spray Initiation Limit
DRYWELL SPRAY INITIATION PROHIBITED
Drywell Temp (°F)
600
500
433
400
300
278
200
100
0
3
5
8
10
15
20
22
25
30
35
40
45
50
55
60
Drywell Pressure (psig)

F

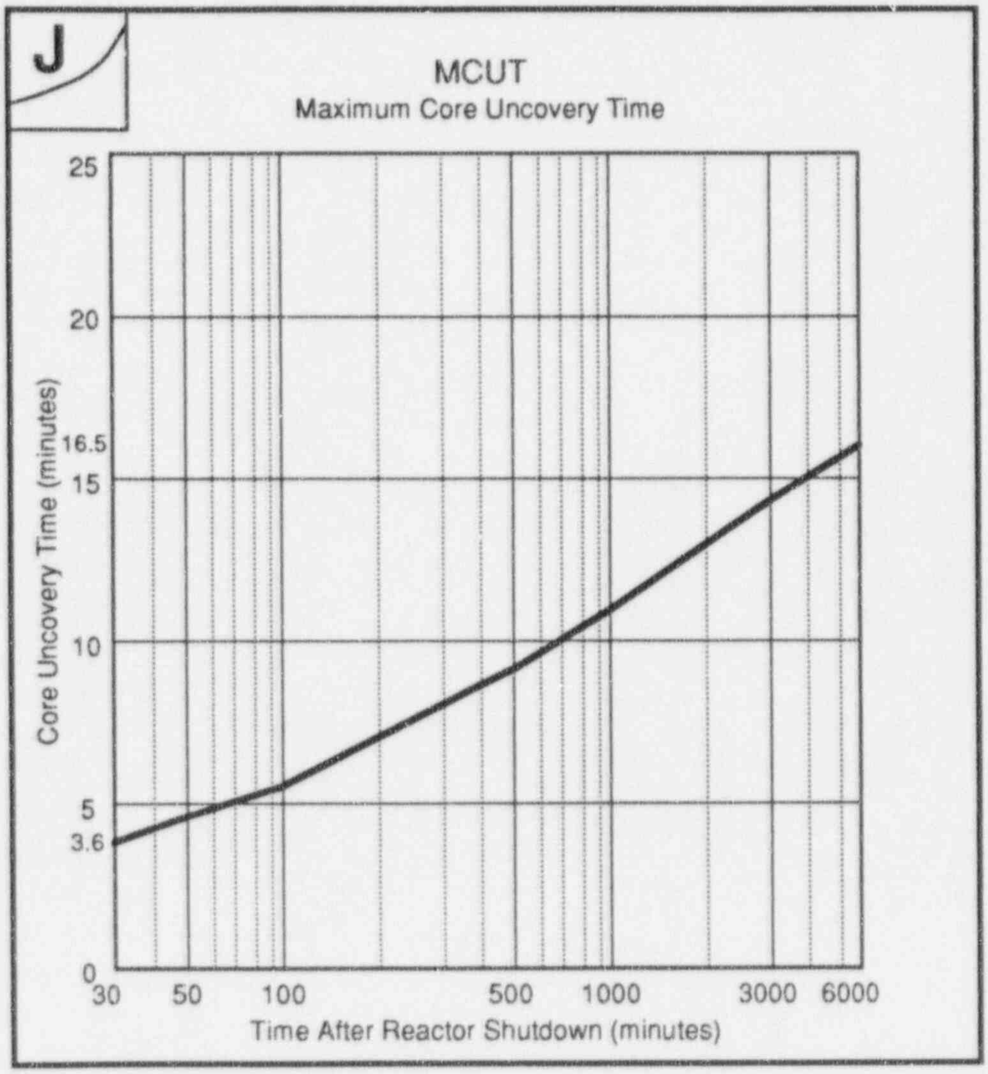
PSP
Pressure Suppression Pressure




G
PCPL
Primary Containment Pressure Limit
49
52.2
59.2
60.4
UNSAFE
555
552.2
545
535
525
518
515
505
503
495
485
475
465
455
445
435
PC Level Elev (ft)
60
51
44
40
30
20
10
0
WW Level (ft)
0 5 10 15 20 25 30 35 40 45 50 55 60
49
WW Pressure (psig)



H
HCLL
Heat Capacity Level Limit
40
35
30
25
20
19.2
15
WW Level (ft)
ΔT HC = HCTL Minus WW Temp
UNSAFE
0
20
40
60
80
100
120
ΔT HC (°F)


J
MCUT
Maximum Core Uncovery Time
Core Uncovery Time (minutes)
25
20
16.5
15
10
5
3.6
0
30
50
100
500
1000
3000
6000
Time After Reactor Shutdown (minutes)

NRC COMMENTS ON WNP-2 DRAFT WRITTEN EXAM - 10/7/96

RO/SRO #	COMMENT
Comments by H. Bundy	
41/39	Distractor "d" is not believable nor compatible with other choices.
	Resolution: Licensee agrees. Replaced distractor.
68/--	K/A 295009A1.03 refers to jet pump operation. Question refers to main steam.
	Resolution: Licensee agrees. Replaced with a question related to system.
Comments by Licensee during preparation week	
89/92	Question was inadvertently used on a practice examination.
	Resolution: Question was replaced on final exam.
94/--	Question was inadvertently used on a practice examination.
	Resolution: Question was replaced on final exam.