

FINAL SUBMITTAL

**H. B. ROBINSON EXAM
50-261/2001-301
MARCH 26 - 30, 2001
(OPERATING)
APRIL 2, 2001 (WRITTEN)**

FINAL RO WRITTEN EXAMINATION

AS-GIVEN WITH ANSWER KEY

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

Applicant Information

Name:	Region: II
Date:	Facility/Unit: H.B. Robinson
License Level: RO	Reactor Type: Westinghouse
Start Time:	Finish Time:

Instructions

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

Applicant Certification

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

Applicant's Signature

Results

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

SUPPLIED REFERENCE MATERIALS FOR RNP NRC REACTOR OPERATOR EXAMINATION

<u>REFERENCE NUMBER</u>	<u>REFERENCE TITLE</u>
NA	Steam Tables
EPP-15, Attachment 1	Required Flow Rate Versus Time After Reactor Trip
GP-005, Attachment 10.1	Reactor Power Ascension Indicator Log
Plant Curve 5.3	Boron Addition – Coolant Hot - Gallons
Plant Curve 5.4	Boron Addition – Coolant Cold - Gallons
Plant Curve 5.7	Dilution – Coolant Hot - Gallons
Plant Curve 5.8	Dilution – Coolant Cold - Gallons
Plant Curve 7.6	System Resistance Curve, Post Accident Containment Venting System
Plant Curve 7.16	Total Hydrogen Generation Rate from All Sources
Plant Curve 7.19	Loss of Residual Heat Removal Cooling Water Level Between 0" to –10" Below Vessel Flange
Plant Curve 7.20	Loss of Residual Heat Removal Cooling Water Level Between –10" to –36" Below Vessel Flange
Plant Curve 7.21	Loss of Residual Heat Removal Cooling Water Level Between –36" to –72" Below Vessel Flange

Question: 1

Given the following conditions:

- The unit is operating at 100% power.
- Annunciators APP-008-E7, S. SW HDR STRAINER PIT HI LEVEL, and APP-008-F7, SOUTH SW HDR LO PRESS, come in simultaneously.

Which ONE (1) of the following actions is required as an immediate action?

- a. Stop 'A' and 'B' service water pumps
- b. Close SW supply to south header valve V6-12A
- c. Close SW supply to north header valve V6-12D
- d. Close SW cross-connect valves V6-12B and V6-12C

Question: 2

Four Operators worked the following schedule at the RTGB position over the past six days:

HOURS WORKED (Shift turnover time not included. Do **NOT** assume any hours worked before or after this period.)

OPERATOR	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
1	10	14	off	12	12	12
2	14	12	14	10	off	11
3	off	off	off	13	11	14
4	11	13	14	off	11	12

Which ONE (1) of the operators would be permitted to work a 12 hour shift on Day 7 **WITHOUT** requiring permission to exceed normal overtime limits?

- a. 1
- b. 2
- c. 3
- d. 4

Question: 3

Given the following conditions:

- The unit was operating at 100% power when a pipe break occurred inside containment.
- Containment pressure is rising.
- RCS temperature is lowering.

Which ONE (1) of the following differentiates between a non-isolable main feed line break inside containment and a non-isolable main steam line break inside the containment of the same size?

- a. RCS heat removal would be greater for the steam line break
- b. Containment pressure would be greater for the feed line break
- c. Containment sump level would be greater for the steam line break
- d. RCS depressurization would be greater for the feed line break

Question: 4

Given the following plant conditions:

- The RCP Seal Injection filter has just been changed out.
- HP placed the filter in a lead container.
- Prior to placement of the container, R-4, Charging Pump Room Monitor, read 2 mr/hr.
- The container is on a pallet outside of the Charging Pump Room.
- The activity source in the filter is primarily Cobalt-60.
- The container is 5 feet away from R-4 detector, and R-4 reads 10 mr/hr.

If the container is moved to 10 feet away from the R-4 detector, R-4 will indicate ...

- a. 4.0 mR/hr.
- b. 4.5 mR/hr.
- c. 6.0 mR/hr.
- d. 7.0 mR/hr.

Question: 5

Given the following conditions:

- At 0110, a Reactor Trip and Safety Injection occurred following an accident.
- At 0112, an Alert was declared due to RCS leakage.
- At 0116, a Site Area Emergency was declared.
- At 0120, a General Emergency was declared.

Which ONE (1) of the following identifies the **LATEST** time that the **INITIAL** notification to State/County officials and the NRC must be completed?

	STATE / COUNTY	NRC
a.	0125	0210
b.	0127	0212
c.	0131	0216
d.	0135	0220

Question: 6

Given the following plant conditions:

- An emergency boration is in progress through MOV-350, BA to Charging Pmp Suct, per FRP-S.1, "Response to Nuclear Power Generation / ATWS."
- FI-110, Boric Acid Bypass Flow, indicates 33 gpm.
- FI-122, Charging Line Flow, indicates 75 gpm.
- VCT level is 23 inches.
- VCT Makeup is aligned for automatic operation.
- Normal letdown has been isolated.

VCT level will ...

- a. remain essentially unaffected.
- b. decrease to the auto makeup setpoint and stabilize.
- c. decrease to the low-level setpoint and cause the charging pump suction to switch to the RWST.
- d. decrease to the auto makeup setpoint and cycle between the makeup start and stop setpoints.

Question: 7

Given the following conditions:

- The unit is operating at 100% power.
- APP-003-C3, PRT HI PRESS and APP-003-D3, PRT HI/LO LVL have alarmed.
- PRT level and pressure are slowly increasing, but there is **NO** appreciable increase in PRT temperature.
- **NO** other annunciators are in alarm.

The PRT response is likely being caused by leakage past ...

- a. PCV-455C, PZR PORV.
- b. RC-551A, PZR Safety.
- c. CVC-203A, High Pressure Letdown Line Relief.
- d. CVC-382, Seal Water Return Line Relief.

Question: 8

Which ONE (1) of the following conditions would result in a reactor trip?

- a. PT-447, First Stage Turbine Pressure, fails low with power level at 22%
- b. NI-43, PR Channel N43, fails low with power level at 49%
- c. PT-446, First Stage Turbine Pressure, fails high with power level at 1×10^{-8} amps
- d. NI-44, PR Channel N44, fails high with power level at 1×10^{-8} amps

Question: 9

Which ONE (1) of the following describes the reason for RCP restart in FRP-P.1, "Response To Imminent Pressurized Thermal Shock", if the SI termination criteria **CANNOT** be satisfied?

- a. Restores PZR spray to allow RCS depressurization in subsequent steps
- b. Equalizes S/G pressures to allow simultaneous cooldown of all three loops in subsequent steps
- c. Mixes Safety Injection water and RCS water to raise the fluid temperature entering the Reactor Vessel downcomer
- d. Transfer core cooling to forced flow allowing the operators to terminate Safety Injection when the criteria are **NOT** satisfied

Question: 10

Given the following conditions:

- The plant has experienced a reactor trip.
- The CRSS directs the RO to manually initiate Safety Injection.
- The RO inadvertently depresses **BOTH** Containment Spray pushbuttons.

In addition to Containment Spray, which ONE (1) of the following are **ALL** expected to automatically occur?

- a.
 - Phase A
 - Phase B
- b.
 - Phase A
 - Containment Ventilation Isolation
- c.
 - Phase B
 - Containment Ventilation Isolation
- d.
 - Phase A
 - Phase B
 - Containment Ventilation Isolation

Question: 11

Given the following conditions:

- A power reduction is in progress from 22% due to degrading condenser vacuum.
- The unit is currently at 8% power.
- REACTOR TRIP FROM TURB BLOCK P-7 permissive is illuminated.
- Condenser backpressure is 5.7 inches Hg Absolute and degrading slowly.
- **NO** cause has yet been identified.

Which ONE (1) of the following actions should be taken in accordance with AOP-012, "Partial Loss of Condenser Vacuum or Circulating Water Pump Trip"?

- a. Trip the reactor and go to PATH-1
- b. Trip the turbine and go to AOP-007, "Turbine Trip Without Reactor Trip Below P-7"
- c. Trip the turbine and go to GP-006, "Normal Plant Shutdown From Power Operations to Hot Shutdown"
- d. Begin a plant shutdown in accordance with GP-006, "Normal Plant Shutdown From Power Operations to Hot Shutdown"

Question: 12

Given the following conditions:

- The plant is shutdown following a reactor trip.
- RCPs are all secured.
- The Inadequate Core Cooling Monitor is **NOT** capable of providing subcooling margin.
- Primary Plant parameters indicate the following:

INSTRUMENT	PARAMETER	VALUE
PT-455	PZR Press	1485 psig
PT-456	PZR Press	1465 psig
PT-457	PZR Press	1515 psig
PT-402	RCS Press	1500 psig
PT-405	RCS Press	1525 psig
TI-453	PZR Temp (Surge Line)	524 °F
TI-454	PZR Temp (Vapor)	630 °F
TI-413	RCS Hot Leg WR Temp	538 °F
TI-423	RCS Hot Leg WR Temp	536 °F
TI-433	RCS Hot Leg WR Temp	534 °F
--	Highest Five (5) CETs	548 °F
		544 °F
		542 °F
		542 °F
		541 °F

The margin to saturation is ...

- a. 46 °F.
- b. 51 °F.
- c. 56 °F.
- d. 58 °F.

Question: 13

Given the following conditions:

- A 25 year old male started working for the Operations department at H.B. Robinson on March 3rd of this year.
- He previously worked this year at Shearon Harris as part of the Maintenance department.
- His exposure for this year at the Harris plant was 1200 mRem.
- He has received **NO** CP&L management exposure extensions and **NO** emergencies exist.

Which ONE (1) of the following is the **TOTAL ADDITIONAL** effective dose equivalent that the individual can receive **WITHOUT** management concurrence at Robinson this year?

- a. 300 mRem
- b. 800 mRem
- c. 2000 mRem
- d. 2800 mRem

Question: 14

Given the following conditions:

- A clearance is in effect with two (2) Maintenance department clearance holders (Clearance Holders A and B).
- Clearance Holder A has requested a temporary lift of a portion of the clearance to test equipment for one of the tasks.
- Clearance Holder B is **NOT** available on site and is **NOT** expected back for two (2) days.

Which ONE (1) of the following describes the process to temporarily lift the required portion of the clearance?

- a. Obtain permission of Clearance Holder A and the Control Room Shift Supervisor, remove the tags as necessary, and reinstall the tags when complete
- b. Obtain permission of Clearance Holder A and Clearance Holder B's supervisor, remove the tags as necessary, and reinstall the tags when complete
- c. Obtain permission of Clearance Holder A and the Control Room Shift Supervisor, remove and cancel the entire clearance, and reissue a new clearance with different boundaries
- d. Obtain permission of Clearance Holder A and Clearance Holder B's supervisor, remove and cancel the entire clearance, and reissue a new clearance with the same boundaries when complete

Question: 15

Given the following conditions:

- Fuel is in the vessel.
- RCS temperature is 120°F.
- It is 10 days after the shutdown.
- RCS Level is 8" below the vessel flange.
- RHR cooling is lost.

Using the supplied references, which ONE (1) of the following identifies how much time remains before boiling begins occurring in the RCS?

- a. 15.5 minutes
- b. 22 minutes
- c. 29 minutes
- d. 40.5 minutes

Question: 16

Which ONE (1) of the following conditions would be **REQUIRED** to be entered by the Reactor Operator in the Control Operator's Log?

- a. Test data for an unsatisfactory Operations Surveillance Test
- b. Entry into a Technical Specification LCO Action Statement
- c. Name of on-shift person relieving an Auxiliary Operator who went home sick
- d. Change in Secondary Chemistry Action Level

Question: 17

Given the following conditions:

- RCS temperature is 362 °F.
- RCS pressure is 900 psig.
- RCP pump bearing temperatures are increasing.
- RCP seal injection and seal leakoff flows are:

RCP	SEAL INJECTION	SEAL LEAKOFF
'A'	5.8 gpm	1.2 gpm
'B'	6.7 gpm	0.9 gpm
'C'	6.5 gpm	1.3 gpm

Which ONE (1) of the following actions must be taken to permit opening CVC-307, PRI SEAL BYP ISO?

- a. Increase RCS pressure more than 100 psig
- b. Lower RCS temperature more than 12 °F
- c. Increase RCP 'A' seal injection more than 0.2 gpm
- d. Increase RCP 'B' seal leakoff more than 0.1 gpm

Question: 18

Given the following conditions:

- A Reactor Trip and SI has occurred from an unisolable main steam line break on SG 'A'.
- Diagnostic actions are in progress.
- SG 'A' has been isolated per EPP-11, "Faulted SG Isolation", and is dry.
- RCS temperature has been stabilized by dumping steam from the intact SGs following the dryout of the SG 'A'.

Which ONE (1) of the following would be the **FIRST** indication to the operators that a 250 gpm tube leak has subsequently developed in SG 'A'?

- a. R-31A, Main Steamline Monitor, alarming
- b. SG 'A' pressure equalizing with RCS pressure
- c. Pressurizer level decreasing
- d. SG 'A' level increasing

Question: 19

While performing OST-012, "Power Range Calorimetric During Power Operation (Manual) Daily," which ONE (1) of the following will result in **ACTUAL** power being **HIGHER THAN INDICATED** power?

- a. SG Blowdown is secured prior to starting the data collection
- b. MDAFW Pump 'A' is operating with flow being delivered to a SG
- c. Indicated feedwater temperature used is lower than actual
- d. Indicated feedwater flow used is higher than actual

Question: 20

Given the following conditions:

- Refueling Operations are schedule to commence.
- RCS Boron Concentration is currently 1825 ppm.

Which ONE (1) of the following describes the required RCS boron concentration for refueling operations?

- a. Boron concentration is adequate
- b. Boron concentration must be increased by a minimum of 75 ppm
- c. Boron concentration must be increased by a minimum of 125 ppm
- d. Boron concentration must be increased by a minimum of 175 ppm

Question: 21

Given the following conditions:

- A reactor shutdown is in progress.
- APP-005-B2, N-35 LOSS OF COMP VOLT, is received.
- N-35 indicates 6.0×10^{-10} amps.
- N-36 indicates 7.0×10^{-11} amps.
- N-51 indicates 80 counts.
- N-52 indicates 90 counts.

Which ONE (1) of the following describes the **MINIMUM** action(s) required to obtain Source Range N-31 and N-32 indication?

- a. Push **ONLY** the "Train A Source Range Logic Trip Defeat" button
- b. Push **ONLY** the "Train A Permissive P-6 Defeat" button
- c. Push **BOTH** the "Train A Source Range Logic Trip Defeat" AND the "Train B Source Range Logic Trip Defeat" buttons
- d. Push **BOTH** the "Train A Permissive P-6 Defeat" AND the "Train B Permissive P-6 Defeat" buttons

Question: 22

Given the following conditions:

- The unit is operating at 100% power.
- **NO** scheduled releases are in progress.
- A small leak develops from the bottom of Waste Condensate Tank "A".
- All ventilation systems are in a normal configuration.

An indication that would alert the operators of the accidental liquid release in progress is an increase in the level of monitor ...

- a. R-3, PASS Panel Area Monitor.
- b. R-4, Charging Pump Room Area Monitor.
- c. R-9, Letdown Line Area Monitor.
- d. R-14C, Plant Effluent Noble Gas, Low Range Monitor.

Question: 23

Given the following conditions:

- The Control Room has filled with dense smoke from a fire on Unit 1.
- The reactor has been tripped manually by operators.
- The Control Room has been evacuated due to the dense smoke.

Which ONE (1) of the following identifies the procedure(s) that will be **INITIALLY** used to stabilize the plant?

- a. EOP Path-1 and EPP-004, Reactor Trip Reponse
- b. DSP-002, Hot Shutdown Using the Dedicated/Alternate Shutdown System
- c. AOP-004, Control Room Inaccessibility
- d. GP-006, Normal Plant Shutdown from Power Operation to Hot Shutdown

Question: 24

Given the following conditions:

- The unit is operating at 40% power.
- OST-011, "Rod Cluster Control Exercise & Rod Position Indication Monthly Interval," is being performed.
- Annunciator APP-005-E2, ROD CONT SYSTEM URGENT FAILURE, alarms just as Control Bank 'C' rods are being withdrawn.

Which ONE (1) of the following describes this condition and / or the actions that should be taken?

- a.
 - This is an expected alarm.
 - Continue withdrawing Control Bank 'C' rods.
- b.
 - This makes more than one rod inoperable.
 - Trip the reactor and go to PATH-1.
- c.
 - Place the ROD BANK SELECTOR switch in Manual.
 - Restore Tavg to Tref by raising turbine load.
- d.
 - Place the ROD BANK SELECTOR switch in Manual.
 - Restore Tavg to Tref by dilution.

Question: 25

Given the following conditions:

- The unit was operating at 100% power.
- A turbine runback is in progress.
- Power is currently at 93% and lowering as the turbine runback occurs.
- APP-005-D5, OT Δ T/OP Δ T TURBINE RUNBACK ROD STOP, is illuminated.
- APP-004-E3, OVERTEMP Δ T TRIP, is illuminated.
- All loop Δ T's indicate less than the OT Δ T and OP Δ T setpoints.
- All OT Δ T and OP Δ T bistables are extinguished.

Which ONE (1) of the following describes the actions to be taken?

- a. Verify the turbine runback stops when power lowers to 90%
- b. Verify the turbine runback stops when power lowers to 70%
- c. Place the turbine in MANUAL due to a runback circuitry failure
- d. Trip the reactor and go to PATH-1

Question: 26

Given the following conditions:

- A valid alarm has been acknowledged for R-1, Control Room Area Monitor.
- The CRSS has entered AOP-005, Radiation Monitoring System.
- Step 3 of Attachment 1 has the operator stop the HVS-1 Auxiliary Building Supply Fan by opening the supply breaker on MCC-5.

Which ONE (1) of the following is the basis for this step?

- a. Ensures that any air-flow will be from the Control Room to the Auxiliary Building
- b. Ensures that the air-borne contaminants in the Control Room will be exhausted to the Auxiliary Building for cleanup
- c. Ensures that personnel in the Auxiliary Building will **NOT** be exposed to high airborne activity for a prolonged period
- d. Ensures that personnel in the Control Room will **NOT** be exposed to high radiation condition for a prolonged period of time

Question: 27

Given the following conditions:

- A large break (DBA) LOCA has occurred.
- EPP-15, Loss of Emergency Coolant Recirculation, is being implemented.
- One SI Pump and one RHR pump are running.
- Time after trip and SI is 20 minutes.
- SI **CANNOT** be terminated due to insufficient subcooling.

Using the supplied references, which ONE (1) of the following states the **MINIMUM** SI flow for these conditions?

- a. One RHR pump injecting, with flow manually throttled to approximately 260 gpm
- b. One RHR pump injecting, with flow manually throttled to approximately 130 gpm
- c. One SI pump injecting, with flow manually throttled to approximately 260 gpm
- d. One SI pump injecting, with flow manually throttled to approximately 130 gpm

Question: 28

Given the following conditions:

- The unit is operating at 24% power during a plant startup.
- Rods are being withdrawn to raise RCS temperature.
- When the IN-HOLD-OUT lever is released, rods continue to step outward.

Which ONE (1) of the following actions should be taken?

- a. Place the ROD BANK SELECTOR switch in Automatic and verify rod motion stops
- b. Place the ROD BANK SELECTOR switch in Manual and verify rod motion stops
- c. Manually trip the reactor in anticipation of an Intermediate Range High Flux Trip and go to PATH-1
- d. Manually trip the reactor in anticipation of a Power Range High Flux (Low Setpoint) Trip and go to PATH-1

Question: 29

A Containment Purge is in progress.

Which ONE (1) of the following will automatically terminate the purge on a high radiation signal?

- a. R-2, Containment Area
- b. R-11, Containment Air and Plant Vent Particulate
- c. R-14A, Plant Effluent Particulate
- d. R-16, Containment HVH Cooling Water Radioactive Liquid

Question: 30

Given the following conditions:

- Reactor power is 35%.
- All control systems are in automatic.
- Pressurizer level transmitter LT-459 is selected for control.
- A small leak develops across the differential pressure bellows for LT-459, resulting in pressure equalizing across the bellows.

Assuming **NO** operator actions, which ONE (1) of the following describes the instrumentation and plant response to this leak?

	LI-459 PZR LVL	LI-460 PZR LVL
a.	Increases	Increases
b.	Increases	Decreases
c.	Decreases	Increases
d.	Decreases	Decreases

Question: 31

Given the following conditions:

- The plant is being shutdown because of high vibrations on Condensate Pump "A".
- The plant is currently at 65% power.
- Two Main Feedwater Pumps, two Condensate Pumps and a Heater Drain Tank Pump are in service.
- Condensate Pump "A" trips.

Which ONE (1) of the following actions should be taken?

- a. Attempt to stabilize the plant at the current power level
- b. Attempt to lower turbine load at a rate between 1% minute and 5% per minute and stabilize the plant at or below 60% power
- c. Attempt to lower turbine load at a rate between 1% minute and 5% per minute and stabilize the plant at or below 50% power
- d. Trip the reactor and go to PATH-1

Question: 32

Given the following excerpt from OP-922, "Post Accident Containment, Hydrogen Reduction/Venting System", and the following conditions:

- A design basis LOCA occurred 90 days ago.
- Hydrogen Concentration (Hydrogen Monitor Reading) is 2.5%.
- The H₂ Recombiner System is unavailable for Containment Hydrogen Reduction.

From OP-922:

"5.2.8 Determine the following data:

1. H₂ generation rate from Curve Book, Curve 7.16, Total Hydrogen Generation Rate From All Sources.
 - Time following DBA _____ Days
 - H₂ Generation Rate _____ SCFM (Curve 7.16)
2. H₂ Concentration from Containment Hydrogen Monitor located in the Control Room or from analysis of Containment samples:
 - H₂ Concentration _____ %

5.2.9 Calculate the required exhaust flow:

1. $Q_e = 2400 \frac{G}{C}$
 - Q_e is exhaust flow in SCFM
 - G is H₂ Generation rate
 - C is H₂ Concentration

Required exhaust flow _____ SCFM

NOTE: The Containment Air Exhaust Line (PACV "B") should be used in preference to the Pressure Relief Line (PACV "A").

Using the supplied references, in order to provide required exhaust flow through preferred exhaust path (Containment Air Exhaust), Containment pressure should be raised to approximately ...

- a. 0.9 psig.
- b. 1.1 psig.
- c. 3.7 psig.
- d. 4.6 psig.

Question: 33

Which ONE (1) of the following Fire Brigade qualified personnel would normally serve as the Fire Brigade Team Leader in the event of a fire in the Auxiliary Building of Unit 2?

- a. Fire Protection Auxiliary Operator
- b. WCC Senior Reactor Operator
- c. Unit 1 Superintendent Shift Operations
- d. Environmental & Radiation Control Supervisor

Question: 34

Given the following conditions:

- The unit is operating at 100% power.
- APP-001-F7, INST AIR HDR LO PRESS, has illuminated.
- AOP-017, "Loss of Instrument Air", is being implemented.
- Instrument air pressure currently reads 79 psig and slowly decreasing.
- The Station Air Compressor is running.

SA to IA cross connect ...

- a. valve, SA-5 will automatically OPEN to pass SA through the IA aftercoolers and separators to remove contaminants prior to passing into the IA header.
- b. bypass filter isolation valves, SA-220 & SA-221, will automatically OPEN to pass SA through a filter to remove contaminants prior to passing into the IA header.
- c. valve, SA-5 will be manually OPENED to pass SA through the IA aftercoolers and separators to remove contaminants prior to passing into the IA header.
- d. bypass filter isolation valves, SA-220 & SA-221, will be manually OPENED to pass SA through a filter to remove contaminants prior to passing into the IA header.

Question: 35

Given the following conditions:

- The unit was operating at 100% with bank D rods at 218 steps when a failure of 'B' inverter occurred.
- **NO** reactor trip occurred.
- Rods **CANNOT** be withdrawn.

Which ONE (1) of the following is preventing rod motion?

- a. Power range flux rod stop
- b. Intermediate range flux rod stop
- c. Overtemperature ΔT rod stop
- d. Overpower ΔT rod stop

Question: 36

Given the following conditions:

- A reactor trip and SI have occurred.
- Containment pressure is 2 psig.
- All RCPs have been secured.
- EPP-007, "SI Termination," is being implemented.
- RVLIS Upper Range is 84%.
- Pressurizer Level is 56%.
- RCS Subcooling is 68 °F.
- SI, Phase A, and Phase B have been reset.
- OP-101 conditions have been met for starting an RCP.

Which ONE (1) of the following describes the conditions for starting an RCP?

- a. All conditions have been met and an RCP may be started
- b. Charging flow must be increased to raise RVLIS Upper Range at least an additional 6% before an RCP can be started
- c. Charging flow must be increased to raise Pressurizer Level at least an additional 19% before an RCP can be started
- d. Pressure must be increased and / or the RCS must be cooled down to raise RCS Subcooling at least an additional 6 °F before an RCP can be started

Question: 37

Given the following conditions:

- Unit 2 is in mid loop operation to repair a S/G primary manway leak.
- The RCS is vented by two hot leg vents.
- RCS level is -71" and rising very slowly.
- RHR pump 'A' is in service at 3000 gpm.
- The operator notices that RHR flow and pressure is oscillating.

Which ONE (1) of the following actions would tend to stabilize RHR flow and pressure?

- a. Start the RHR pump 'B' at 3000 gpm
- b. Lower charging flow to stabilize RCS level
- c. Lower RHR pump 'A' flow
- d. Open the RV head vents

Question: 38

Given the following conditions:

- The unit is operating at 100% power.
- 'B' EDG is under clearance to repair a leaky oil fitting.
- A tornado touches down in the switchyard.
- The transient resulting from the destruction causes a Phase Differential on the Main Generator.
- The Startup Transformer (SUT) is destroyed by the tornado.
- 'A' EDG is unable to start due to a faulty air lineup.
- After the initial transient, it is noted that **BOTH** of the Reactor Trip breaker indications are RED.

Which ONE (1) of the following describes the required operator action(s)?

- a. Enter FRP-S.1, "Response to Nuclear Power Generation / ATWS," due to the ATWS
- b. Enter PATH-1 due to the turbine trip and then FRP-S.1 due to the ATWS
- c. Enter EPP-001, "Loss of All AC Power," due to the electrical conditions
- d. Enter FRP-S.1 due to the ATWS, then EPP-001 due to the electrical conditions

Question: 39

Given the following conditions:

- A makeup to the Component Cooling Water (CCW) Surge Tank is being performed.
- CC-832, CC SURGE TANK MAKE-UP VALVE, is stroked full open.
- When tank level is 50%, the operator momentarily places the switch for CC-832 to close.

Assuming **NO** other operator actions are taken, which **ONE** (1) of the following describes the response of the CCW Surge Tank level?

- a. CCW Surge Tank level will continue to rise to approximately 55% due to the stroke time of the valve
- b. CCW Surge Tank level will stabilize at approximately 50%
- c. CCW Surge Tank level will continue to rise to approximately 55% when the high level alarm will automatically close the valve
- d. CCW Surge Tank level will eventually overflow out the vent valve

Question: 40

Given the following conditions:

- RCS pressure is 1805 psig and decreasing.
- RCS temperature is 525 °F and decreasing.
- Tavg is 537°F and decreasing
- Steam Generator pressures and Steam Flows are:

SG	PRESSURE	STEAM FLOW
'A'	626 psig and decreasing	1.7×10^6 lbm/hr
'B'	745 psig and stable	0.05×10^6 lbm/hr
'C'	740 psig and stable	0.05×10^6 lbm/hr

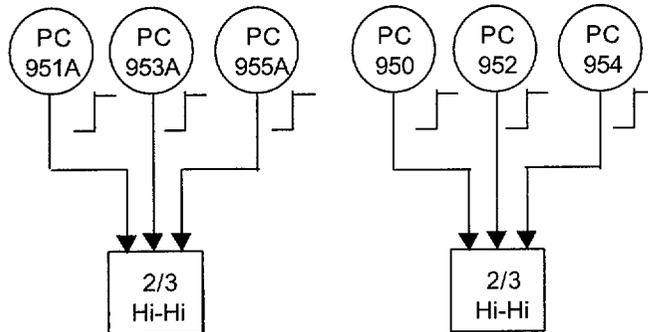
Which ONE (1) of the following Safety Injection signals would be actuated?

- a. High Steamline ΔP
- b. Low Pressurizer Pressure
- c. High Steam Line Flow with Low Tavg
- d. High Steam Line Flow with Low Steam Line Pressure

Question: 41

Given the following conditions:

- Power has been lost to Containment Pressure channel 954.
- Containment Pressure transmitter PT-950 has failed low.
- **NO** actions in OWP-032, "Containment Pressure," have been performed.
- A large break LOCA occurs and actual Containment Pressure reaches 21 psig.



Which ONE (1) of the following describes the response of the Containment Spray system?

- NEITHER** train of Containment Spray will automatically actuate
- ONLY** Train 'A' of Containment Spray will automatically actuate
- ONLY** Train 'B' of Containment Spray will automatically actuate
- BOTH** trains of Containment Spray will automatically actuate

Question: 42

Given the following conditions:

- The unit is operating at 100% power.
- Normal letdown is in service.
- Pressurizer level control is in automatic
- Leakage passed the hydrogen pressure regulator to the VCT causes pressure in VCT to increase.

Which ONE (1) of the following describes the effect of this on RCP seal flow?

	No. 1 SEAL LEAKOFF FLOW	No. 2 SEAL LEAKOFF FLOW
a.	Increases	Increases
b.	Decreases	Decreases
c.	Decreases	Increases
d.	Increases	Decreases

Question: 43

Given the following conditions:

- A reactor trip occurred from 20% power.
- Coincident with the reactor trip, 480V Bus E-1 deenergized and was subsequently energized by the EDG.
- Twenty (20) seconds following the trip, SG levels are:

SG	LEVEL
'A'	12%
'B'	28%
'C'	26%

Which ONE (1) of the following describes the expected condition of the Auxiliary Feed Water pumps 20 seconds following the trip?

	MDAFW PUMP 'A'	MDAFW PUMP 'B'	SDAFW PUMP
a.	Running	Running	Off
b.	Off	Running	Running
c.	Off	Running	Off
d.	Off	Off	Running

Question: 44

Given the following conditions:

- The plant is operating at 50% power.
- All control systems are operating in automatic.
- The First Stage Pressure Channel Selector switch is aligned to the PT-447 position.
- First Stage Pressure Transmitter PT-446 fails low.

Which ONE (1) of the following plant responses is expected?

- a. Feedwater Regulating Valves throttle closed
- b. Control Rods step inward
- c. Automatic rod control is blocked
- d. Steam Dumps have a demand signal

Question: 45

Given the following conditions:

- Due to low heat loads and extremely cold outside temperatures, Spent Fuel Pool (SFP) water temperature is 65°F.
- CC-775, CC FROM SPENT FUEL PIT HX BUTTERFLY Valve, has been throttled to the maximum allowed closed position.

Which ONE (1) of the following actions should be taken to raise Spent Fuel Pool water temperature?

- a. Place the SFP on recirc to the RWST
- b. Throttle the discharge valve of the in-service SFP Cooling pump
- c. Shutdown the in-service SFP Cooling pump
- d. Start an additional SFP Cooling pump

Question: 46

Given the following conditions:

- The plant is operating at 68% power.
- Power Range channel N-43 is out of service for repairs.
- N-43 has been removed from service in accordance with the OWP.
- While working on N-43, the technician causes the Control Power fuses to blow.

Which ONE (1) of the following describes the effect of this on the plant?

- a. **NO** effect since the OWP places the DROPPED ROD MODE switch in the "Bypass" position
- b. **NO** effect since the Dropped Rod Runback requires two-of-four (2/4) coincidence to actuate
- c. The turbine will runback for 9 seconds at 200% per minute
- d. The turbine will runback at a cyclic rate of 200% per minute

Question: 47

Given the following conditions:

- A LOCA has occurred inside containment.
- Due to electrical problems an entry was made to EPP-15, "Loss of Emergency Coolant Recirculation."
- One (1) Containment Spray pump was operating upon exiting EPP-15, with containment pressure at 16 psig.
- Subsequently, an entry was made to FRP-J.1, "Response to High Containment Pressure," due to containment pressure being at 14 psig and lowering slowly.

Which ONE (1) of the following describes the actions that are to be taken regarding the Containment Spray system?

- a. Return to EPP-15 to determine Containment Spray system requirements
- b. Stop the running Containment Spray pump
- c. Maintain the current Containment Spray system configuration
- d. Start the second Containment Spray pump

Question: 48

Given the following conditions:

- A recovery from a small break LOCA is in progress.
- **NO** RCPs are running.
- EPP-008, "Post-LOCA Cooldown and Depressurization," is being implemented.
- Depressurization of the RCS has commenced.
- Pressurizer level has just risen rapidly from off-scale low to 50%.

The depressurization of the RCS has ...

- a. increased RHR and SI flow, which is rapidly refilling the pressurizer.
- b. caused voiding to occur in the reactor vessel head, which is rapidly refilling the pressurizer.
- c. increased auxiliary spray flow, which is rapidly refilling the pressurizer.
- d. caused voiding in the pressurizer level reference leg, which is providing an indication of rapidly increasing pressurizer level.

Question: 49

Given the following conditions:

- The unit is operating at 100% power.
- Rod Control is in Manual.
- A safety valve fails open on SG 'B'.

Which ONE (1) of the following describes the **INITIAL** effect on indicated power and RCS Tavg?

	INDICATED NIS POWER	RCS T-AVG
a.	Increases	Remains Relatively Constant
b.	Increases	Decreases
c.	Remains Relatively Constant	Remains Relatively Constant
d.	Remains Relatively Constant	Decreases

Question: 50

Given the following conditions:

- The unit is operating at 85% power.
- Control Rod Bank 'D' Demand is at 195 steps.
- IRPI indication for Bank D Control Rods are as follows:

ROD	POSITION
D-8	123"
M-8	121"
H-4	120"
H-8	110"
H-12	122"

Design power peaking and Shutdown Margin Limits ...

- a. are met under these conditions.
- b. will be met if Control Rod H-8 is withdrawn to 115".
- c. will be met if power is reduced below 80%.
- d. will be met if Control Rod D-8 is inserted to 120".

Question: 51

Given the following conditions:

- A reactor trip and safety injection have occurred.
- Due to multiple failures, an entry has been made to EPP-16, "Uncontrolled Depressurization of All Steam Generators."
- Containment pressure is 8 psig.
- The RCS cooldown rate is 130 °F/hour.
- SG levels are:

SG	LEVEL
'A'	1%
'B'	3%
'C'	14%

Which ONE (1) of the following actions should be taken?

- a. Secure all AFW to 'A' and 'B' SGs, while feeding 'C' SG at a rate between 80 gpm and 90 gpm using a MDAFW pump
- b. Secure all AFW to 'A' and 'B' SGs, while feeding 'C' SG at a rate between 80 gpm and 90 gpm using the SDAFW pump
- c. Feed 'A' and 'B' SGs at a rate between 80 gpm and 90 gpm, while feeding 'C' SG only as needed to maintain the RCS cooldown rate below 100 °F/hour
- d. Feed all SGs at a rate between 80 gpm and 90 gpm

Question: 52

Given the following conditions:

- The unit is operating at 100% power.
- Testing is being performed on Reactor Trip Breaker 'B' and it is currently open.
- A loss of the 'A' 125 VDC Distribution Panel occurs.
- Reactor Trip Breaker 'A' fails to open.

Which ONE (1) of the following describes the expected response of the plant due to this sequence of events, assuming **NO** operator action?

- a. **NO** reactor trip occurs
- b. Reactor Trip Bypass Breaker 'B' opens on an Undervoltage trip **ONLY**, resulting in a reactor trip
- c. Reactor Trip Bypass Breaker 'B' opens on a Shunt trip **ONLY**, resulting in a reactor trip
- d. Reactor Trip Bypass Breaker 'B' opens on **BOTH** an Undervoltage trip and a Shunt trip, resulting in a reactor trip

Question: 53

Given the following conditions:

- The unit is in Hot Standby.
- A change in boron concentration from 500 ppm to 470 ppm is required.

Using the supplied references, which ONE (1) of the following identifies approximately how many gallons of primary water must be added to make this change?

- a. 70 gallons
- b. 90 gallons
- c. 3000 gallons
- d. 4500 gallons

Question: 54

Given the following conditions:

- Unit 2 is being ramped to 100% following a refueling outage.
- The following Plant Parameters are noted:

PARAMETER	VALUE
Loop 'A' Tavg	576°F
Loop 'B' Tavg	575°F
Loop 'C' Tavg	576°F
NI-41	100.0%
NI-42	99.0%
NI-43	99.0%
NI-44	100.0%
Loop 'A' ΔT	58.2°F
Loop 'B' ΔT	57.8°F
Loop 'C' ΔT	58.2°F
Loop 'A' Steam Flow	3.40×10^6 lbm/hr
Loop 'B' Steam Flow	3.40×10^6 lbm/hr
Loop 'C' Steam Flow	3.45×10^6 lbm/hr
Loop 'A' Feed Flow	3.40×10^6 lbm/hr
Loop 'B' Feed Flow	3.40×10^6 lbm/hr
Loop 'C' Feed Flow	3.50×10^6 lbm/hr
1 st Stage Press (446)	545 psig
1 st Stage Press (447)	546 psig
Generator Output	730 Mwe

Using the supplied references, reactor power is ...

- 99.5%. The power ramp may continue until the plant is at 100%.
- 99.5%. Power should be held constant to perform a calorimetric.
- greater than 100%. Power should be held constant to perform a calorimetric.
- greater than 100%. Power should be immediately lowered.

Question: 55

Given the following conditions:

- A Temporary Change (TC) to Revision 44 of OP-305, Boron Recycle Process, was issued on March 1, 2001.
- Revision 45 of OP-305 was issued on March 6, 2001.
- The Temporary Change was **NOT** incorporated into Revision 45, but was cancelled and subsequently reissued (using a new TC number) with the issuance of Revision 45.

The Temporary Change now expires on ...

- a. March 15, 2001.
- b. March 20, 2001.
- c. March 22, 2001.
- d. March 27, 2001.

Question: 56

Given the following conditions:

- The plant is operating at 43% power.
- An electrical transient causes a momentary underfrequency condition on 4 KV Bus 1.
- Moments later, an undervoltage condition is also sensed on 4 KV Bus 1.
- The RCP powered from 4 KV Bus 1 trips.
- The other two RCPs remain running.

Which ONE (1) of the following identifies the signal which **DIRECTLY** generated the reactor trip?

- a. Bus underfrequency
- b. Bus undervoltage
- c. Low flow
- d. Pump breaker trip

Question: 57

Given the following conditions:

- An inadvertent reactor trip and safety injection have occurred.
- The SI and Phase A signals have just been reset.

Which ONE (1) of the following describes the expected position of the Normal and Emergency Inlet Dampers for the Containment Air Recirculation Fans (HVH-1 through 4) following resetting of these signals?

	NORMAL INLET DAMPERS	EMERGENCY INLET DAMPERS
a.	Open	Open
b.	Open	Closed
c.	Closed	Open
d.	Closed	Closed

Question: 58

Given the following conditions:

- The unit has experienced a loss of off-site power.
- The reactor trip and turbine trip have been verified.
- EPP-1, "Loss of ALL AC Power," was implemented until the inside AO restored power to 480V Bus E-2 per Attachment 6 of EPP-1.
- A transition has been made back to PATH-1.
- SI has **NOT** occurred and is **NOT** required.

Which ONE (1) of the following describes how power will be supplied to the Charging Pumps?

	FROM 'B' EDG	FROM DSDG
a.	Charging Pump 'B'	Charging Pump 'A'
b.	Charging Pump 'C'	Charging Pump 'B'
c.	Charging Pump 'B'	Charging Pump 'C'
d.	Charging Pump 'C'	Charging Pump 'A'

Question: 59

Given the following conditions:

- The unit is experiencing a loss of all feedwater event and FRP-H.1, "Response to Loss of Secondary Heat Sink," has been entered.
- **NO** AFW flow is available.
- Containment pressure is 0.4 psig.

Which ONE (1) of the following describes when the operator is required to trip the RCPs and immediately initiate feed and bleed?

- a. Five highest core exit TC temperatures are 658 °F, 656 °F, 649 °F, 648 °F, and 645 °F and are all rising
- b. RCS hot leg temperatures are 652 °F, 646 °F, and 648 °F and are all rising
- c. Pressurizer levels are indicating 93%, 97%, and 94% and are all stable
- d. SG wide range levels are 18%, 22%, and 36% and are all stable

Question: 60

Given the following conditions:

- A unit trip and safety injection have occurred due to a SGTR on 'A' SG.
- EPP-012, "Post-SGTR Cooldown using Backfill," is being implemented.
- RCS pressure is 940 psig.
- It has been determined that the accumulators should be isolated.
- The breakers for the accumulator discharge valves (SI-865A, B, C) have been closed.
- The 'A' accumulator discharge valve (SI-865A) loses light indication after it is given a closed signal.
- 'B' and 'C' accumulator valves stroke closed as expected.

Which ONE (1) of the following actions should be taken regarding 'A' accumulator?

- a. Slow the rate at which the RCS is being depressurized to allow a controlled injection of the accumulator
- b. Drain the accumulator to the Reactor Coolant Drain Tank
- c. Vent the accumulator to Containment atmosphere
- d. Maintain RCS pressure above 800 psig until a Containment entry can be made to locally close the discharge valve

Question: 61

Given the following conditions:

- A licensed operator who has an inactive license has been performing administrative duties in the Training Section for twelve (12) months.
- He is returning to Operations and is to be placed back on shift.
- All licensed operator continuing training and fire brigade qualifications are current.

Which **ONE** (1) of the following are the additional **MINIMUM** requirements for returning his license to an active status?

- a. Complete **FOUR** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and review all the procedure changes for the past three (3) months
- b. Complete **FOUR** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and conduct a complete plant tour
- c. Complete **FIVE** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and review all the procedure changes for the past three (3) months
- d. Complete **FIVE** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and conduct a complete plant tour

Question: 62

Given the following conditions:

- The unit is operating at 100% power.
- RCS Tavg is 575.4°F.
- PZR level is 53%
- VCT level is 23" and stable.
- Letdown flow is 45 gpm (FI-150).
- RCP seal injection flows are:

RCP	SEAL INJ
'A'	8.3 gpm
'B'	7.9 gpm
'C'	7.8 gpm

Which ONE (1) of the following would be the expected flow indication on FI-122A, Charging Header Flow, assuming **NO** RCS leakage?

- a. 21 gpm
- b. 30 gpm
- c. 36 gpm
- d. 54 gpm

Question: 63

The following personnel are entering the RCA to perform plant related activities:

1. Two operators doing a valve lineup in the RCA expect to receive a dose of about 125 mrem each.
2. Operators doing routine radwaste processing.
3. Electrical maintenance workers cleaning and inspecting an MCC breaker in the RCA.

Which ONE (1) of the following identifies ALL of the above activities which can be performed using a General RWP in accordance with HPP-006, "Radiation Work Permits"?

- a. 1 and 2 **ONLY**
- b. 1 and 3 **ONLY**
- c. 2 and 3 **ONLY**
- d. 1, 2, and 3

Question: 64

Given the following conditions:

- The unit was operating at 100% power.
- All IRPI indication fails to zero with **NO** rod bottom bistable lights.
- A Turbine Runback to 70% has occurred.
- APP-005-A3, PR DROP ROD ROD STOP, is illuminated.

Which ONE (1) of the following procedures should be used to mitigate this plant transient?

- a. AOP-001, Malfunction of Reactor Control System
- b. AOP-015, Secondary Load Rejection or Turbine Runback
- c. AOP-024, Loss of Instrument Buses
- d. AOP-025, RTGB Instrument Failures

Question: 65

Given the following conditions:

- A line break caused the Fire Header pressure to drop.
- Fire Header pressure eventually stabilized at 83 psig.

Which ONE (1) of the following expected fire system responses would have resulted in this condition?

- a. The Electric Fire Pump automatically started, then the Diesel Fire Pump automatically started.
- b. The Electric Fire Pump automatically started and the Diesel Fire Pump remained in standby.
- c. The Diesel Fire Pump automatically started, then the Electric Fire Pump automatically started.
- d. The Diesel Fire Pump automatically started and the Electric Fire Pump remained in standby.

Question: 66

Given the following conditions:

- Emergency Diesel Generator 'A' is in the process of being started on Unit 2 to parallel it to the E-1 Bus.
- A "Remote Manual Slow Speed Start" is being performed in accordance with OP-604, "Diesel Generators A and B."

Which ONE (1) of the following describes the operation of the diesel generator voltage control during this evolution?

- a. The Voltage Regulator will automatically control voltage between 470 VAC and 490 VAC during the entire start after the field is automatically flashed at 200 RPM.
- b. The Voltage Regulator must be manually shutdown after the field is automatically flashed at 200 RPM, and will be automatically reinstated when engine speed is above 900 RPM to control voltage between 470 VAC and 490 VAC.
- c. The Voltage Regulator will be automatically shutdown 5 seconds after the field is flashed at 200 RPM if engine speed does **NOT** reach 900 RPM, and must be manually reinstated when engine speed is above 900 RPM to control voltage between 470 VAC and 490 VAC.
- d. The Voltage Regulator must be manually shutdown after the field is automatically flashed at 200 RPM, and must be manually reinstated when engine speed is above 900 RPM to control voltage between 470 VAC and 490 VAC.

Question: 67

Given the following conditions:

- The unit is in Hot Standby.
- All systems are operating normally.
- SG "A" PORV is closed.
- SG "A" PORV automatic potentiometer is adjusted from "3.10" to "1.50".

Which ONE (1) of the following describes the effect adjusting the potentiometer will have on the PORV?

	SETPOINT	PORV
a.	Increases	Opens
b.	Decreases	Opens
c.	Increases	Remains Closed
d.	Decreases	Remains Closed

Question: 68

Given the following conditions:

- A small break LOCA has occurred.
- Entry has been made into FRP-C.1, "Response to Inadequate Core Cooling."
- CETs are all indicating between 740 °F and 760 °F and rising slowly.
- RCS pressure has stabilized at 1605 psig.
- PZR level is off-scale low.
- RVLIS Full Range is indicating 39% and lowering slowly.
- Charging flow is **NOT** available.
- SG pressures are all between 360 psig and 400 psig.

Which ONE (1) of the following actions should be taken?

- a. Dump steam to cooldown and depressurize the RCS to provide Safety Injection flow
- b. Open the RCS Vent System valves to depressurize the RCS to provide Safety Injection flow
- c. Start an RCP immediately to provide forced cooling flow
- d. Open the PZR PORVs to depressurize the RCS to provide Safety Injection flow

Question: 69

Given the following conditions:

- The unit is at operating at 35% power in preparation for increasing power to 100%.
- Circulating Water Pump 'A' is under clearance for maintenance.
- A fault occurs on 4KV Bus #4 and all loads are lost.

Which ONE (1) of the following describes the effect on the turbine to the above conditions?

- a. The turbine will **NOT** automatically trip, but must be manually tripped when condenser back pressure increases to 5.5" HgA
- b. The turbine will automatically trip due to all 3 Circulating Water Pump breakers being open
- c. The turbine will automatically trip when condenser back pressure increases to 10" HgA unless load is lowered to within the capacity of the one remaining Circulating Water Pump
- d. The turbine will **NOT** automatically trip due to load already being within the capacity of the one remaining Circulating Water Pump

Question: 70

Given the following conditions:

- The unit is operating at 2% power.
- The following RCP indications are observed:

INDICATION	RCP 'A'	RCP 'B'	RCP 'C'
Motor Bearing Temperatures	210°F and ↑ slowly	180°F and stable	195°F and ↑ slowly
#1 Seal Leakoff Temperatures	150°F and stable	150°F and stable	165°F and ↑ slowly
#1 Seal Leakoff Flow	5.8 gpm and stable	4.2 gpm and stable	3.8 gpm and stable
Thermal Barrier ΔP	10" and stable	10" and stable	8" and stable
Frame Vibration	3.6 mils and ↑ at 0.1 mil per hr	2.8 mils and stable	4 mils and ↑ at 0.05 mil per hr
Shaft Vibration	12 mils and stable	7 mils and stable	9.5 mils and ↑ at 0.6 mils per hour

Which ONE (1) of the following describes the actions required for this condition?

- Stop 'A' RCP and enter Technical Specification 3.4.4, RCS Loops - Modes 1 & 2
- Trip the reactor, stop 'A' RCP, and go to PATH-1
- Stop 'C' RCP and enter Technical Specification 3.4.4, RCS Loops - Modes 1 & 2
- Trip the reactor, stop 'C' RCP, and go to PATH-1

Question: 71

Which ONE (1) of the following requires entry into DSP-001, "Alternate Shutdown Diagnostic"?

- a. A fire in the Main Turbine that has the potential to destroy the generator when the reactor is above 10% power
- b. A fire in the Containment Vessel that has the potential to destroy the pressurizer heater power cables when in hot standby
- c. A fire in the Control Room that has the potential to destroy RHR pump control cables when refueling
- d. A fire in the Auxiliary Building that has the potential to destroy the running Charging Pump when in cold shutdown

Question: 72

CC-707, Component Cooling Water Surge Tank relief valve, is sized to accommodate the ...

- a. maximum CCW insurge to the tank resulting from a loss of the Residual Heat Removal system.
- b. maximum flowrate associated with a rupture of a Reactor Coolant Pump Thermal Barrier Heat Exchanger.
- c. maximum CCW insurge to the tank resulting from a loss of the Service Water system.
- d. maximum flowrate associated with a rupture of a Residual Heat Removal pump cooler during the recirculation phase of an accident.

Question: 73

Which ONE (1) following procedures is used to provide instructions in the event of a cask drop when loaded with spent fuel in Dry Shielded Canister (DSC)?

- a. AOP-005, Radiation Monitoring System
- b. AOP-008, Accidental Release of Liquid Waste
- c. AOP-013, Fuel Handling Accident
- d. AOP-028, ISFSI Abnormal Events

Question: 74

Given the following conditions:

- The unit is in Mode 2.
- PZR level transmitter LT-460 failed low and was removed from service.
- The PZR high-high level and low level bistables associated with LT-460 were placed in the TRIPPED condition.
- PZR level channel selector switch LM-459 was selected to "461 REPL 460".

Which ONE (1) of the following describes the function provided by PZR level transmitter LT-461 under these conditions?

- a. Energizes the backup heaters on a high level deviation
- b. Decreases charging pump speed on an increasing level
- c. Deenergizes the proportional and backup heaters on a low level
- d. Trips the reactor on a high-high level

Question: 75

Given the following conditions:

- Reactor power was initially 100%.
- All CCW flow has been lost to the RCPs and a reactor trip has been initiated.

Which ONE (1) of the following nuclear instrument indications would warrant entry into FRP-S.1, "Response To Nuclear Power Generation/ATWS"?

- a. **BOTH** source range channels are energized and intermediate range startup rate is +0.1 dpm
- b. Power range indicates 3%
- c. Source range startup rate is +0.3 dpm
- d. **NEITHER** source range channel is energized and intermediate startup rate is -0.1 dpm

Question: 76

Given the following plant conditions:

- Following a refueling outage, the unit is being raised to 100% power.
- Reactor Engineering has **NOT** implemented any power ramp rate limitations other than those stated in GP-005, "Power Operation."

Which ONE (1) of the following power changes would violate the power ramp rate limitations identified in GP-005?

- a. Raising power from 7% to 14% over a 3-minute period
- b. Raising power from 31% to 36.6% over a 1-hour period
- c. Raising power from 62% to 65.8% over a 1-hour period
- d. Raising power from 93% to 96.2% over a 1-hour period

Question: 77

Given the following conditions:

- The reactor has tripped from 100% power due to a feed line break.
- SI has been actuated.
- AFW pumps are supplying feed to the SGs.
- Immediate operator actions are complete.
- Foldout A has been implemented.
- The Outside AO reports a large leak at the CST.

Which ONE (1) of the following describes the available backup sources to the AFW Pump Suction?

	PREFERRED BACKUP	ALTERNATE BACKUP
a.	Service Water	Deepwell Water
b.	Service Water	Fire Water
c.	Deepwell Water	Fire Water
d.	Fire Water	Service Water

Question: 78

Given the following conditions:

- A turbine runback has occurred from 100% to 70% power.
- RCS Tavg is 567 °F.
- PZR Pressure is 2265 psig.
- PZR Level is 51%.

Which ONE (1) of the following describes the expected condition of the proportional heaters and pressurizer spray valves?

	PROPORTIONAL HEATERS	SPRAY VALVES
a.	On	Open
b.	On	Closed
c.	Off	Open
d.	Off	Closed

Question: 79

Following an accident, FRP-C.2, "Response to Degraded Core Cooling," is being implemented.

After the performance of several steps in FRP-C.2, the following Critical Safety Function Status Tree (CSFST) conditions are noted:

- Integrity - RED
- Core Cooling - RED
- Containment - ORANGE
- Heat Sink - YELLOW
- Subcriticality - YELLOW
- Inventory - YELLOW

Which ONE (1) of the following describes which action should be taken by the CRSS?

- a. Remain in FRP-C.2, "Response to Degraded Core Cooling," until completion and then recheck the CSFSTs
- b. Transition to FRP-C.1, "Response to Inadequate Core Cooling" due to the RED condition on Core Cooling
- c. Transition to FRP-P.1, "Response to Imminent Pressurized Thermal Shock," due to the RED condition on Integrity
- d. Transition to FRP-J.1, "Response to High Containment Pressure," due to the ORANGE condition on Containment

Question: 80

Given the following conditions:

- A reactor trip has occurred from 100% power.
- All SGs levels indicate 6%.

Upon initiation of AFW, which ONE (1) of the following correctly describes the automatic response of the AFW system to these conditions?

- a. The normally closed MDAFW pump discharge flow control valves (FCV 1424 and 1425) fully open
- b. The normally open SDAFW pump discharge flow control valve (FCV 6416) throttles closed
- c. The normally closed SDAFW pump discharge flow control valve (FCV 6416) throttles open
- d. The normally open MDAFW pump discharge flow control valves (FCV 1424 and 1425) throttle closed

Question: 81

Given the following conditions:

- The unit is operating at 100% power.
- Channel III PZR Pressure PT-457 is failed, with all bistables in the TRIPPED condition.
- An electrical fault occurs which results in a loss of Instrument Bus 2.

Which ONE (1) of the following describes the impact that the loss of Instrument Bus 2 has on the plant?

- a. A reactor trip and SI occur and **BOTH** trains of Engineered Safeguards loads are automatically started by the sequencers
- b. A reactor trip and SI occur, but **ONLY** Train 'A' Engineered Safeguards loads are automatically started by the sequencers
- c. A reactor trip and SI occur, but **ONLY** Train 'B' Engineered Safeguards loads are automatically started by the sequencers
- d. A reactor trip occurs, but **NO** SI occurs.

Question: 82

Given the following conditions:

- The plant is in Hot Shutdown.
- A loss of 4KV Bus 2 occurs.

Which ONE (1) of the following identifies plant equipment that is affected by the power loss?

- a.
 - Reactor Coolant Pump 'B'
 - Station Service Transformer 2B
- b.
 - Reactor Coolant Pump 'C'
 - Station Service Transformer 2A and 2F
- c.
 - Main Feedwater Pump 'B'
 - Station Service Transformer 2D
- d.
 - Main Feedwater Pump 'B'
 - Reactor Coolant Pump 'C'

Question: 83

In accordance with AOP-032, "Response To Flooding From The Fire Protection System," the concern for a fire water break in containment is ...

- a. the adverse affects on safeguards equipment.
- b. the thermal stress effects of water coming in contact with the reactor vessel.
- c. the adverse impact on the instrumentation associated with systems in containment.
- d. the unanalyzed dilution caused by the water in the event of a LOCA.

Question: 84

Given the following conditions:

- Inverter 'C', is being shut down in accordance with OP-601, "DC Supply System."
- The N-43 DROPPED ROD MODE switch is placed in the BYPASS position prior to aligning PP-26 to its alternate supply (IB-3).

Which ONE (1) of the following describes the consequences of failing to place the switch in the BYPASS position?

- a. A turbine runback may occur due to an Instrument Bus transient
- b. A reactor trip and safety injection may occur due to an Instrument Bus transient
- c. The inverter power supply breaker may trip open
- d. The backup power supply breaker may trip open when attempting to close

Question: 85

Given the following conditions:

- A batch release of Waste Condensate Tank 'E' is scheduled to be performed.
- The Waste Condensate Recirc Pump is out-of-service.

Waste Condensate Tank 'E' ...

- a. can be recirculated after transferring to Waste Condensate Tank 'C'.
- b. **CANNOT** be recirculated unless transferred to Waste Condensate Tank 'D'.
- c. can be recirculated using Waste Condensate Pump 'B'.
- d. **CANNOT** be recirculated until the Waste Condensate Recirc Pump is repaired.

Question: 86

Given the following conditions:

- The plant is being started up with the Feed Water Regulating Valves and Feed Water Regulating Bypass Valves all open.
- A Reactor Trip occurs.
- RCS Tavg stabilizes at no load Tavg.
- The Feed Water Regulating Valves automatically close.

Which ONE (1) of the following identifies the expected position of the Feed Water Regulating Bypass Valves (FRBVs) and the Feed Water Block Valves (FBVs)?

	FRBVs	FBVs
a.	Open	Open
b.	Open	Closed
c.	Closed	Open
d.	Closed	Closed

Question: 87

Given the following conditions:

- A small break LOCA has occurred.
- Due to problems with the Containment Cooling system, containment pressure increased to 6.1 psig.
- After establishing proper operation of the Containment Cooling system, containment pressure has been lowered to 3.2 psig.
- A step in one of the EPPs states:

"Depressurize RCS To Minimize RCS Leakage:

- c. Check EITHER of the following:**

PZR LEVEL - GREATER THAN 71% [60%]

OR

RCS SUBCOOLING – LESS THAN 45 °F [65 °F]

- d. Stop RCS depressurization"**

- As the RCS is being depressurized, PZR level is noted to be 62% and RCS Subcooling is 76 °F.

The RCS depressurization should ...

- a. be stopped immediately.
- b. continue until PZR level exceeds 71%.
- c. continue until RCS subcooling drops below 65 °F.
- d. continue until RCS subcooling drops below 45 °F.

Question: 88

Given the following conditions:

- The unit is in Hot Shutdown.
- The Startup Transformer (SUT) is supplying all 4KV buses.
- A severe short has resulted in a loss of the 'B' DC Bus.

Which ONE (1) of the following describes the response of the emergency diesel generators (EDG's)?

	EDG 'A'	EDG 'B'
a.	Starts, but field fails to flash	Does NOT start
b.	Does NOT start	Starts, but field fails to flash
c.	Starts and loads	Starts, but does NOT load
d.	Starts, but does NOT load	Starts and loads

Question: 89

Given the following conditions:

- The plant is operating at 90% power.
- Control Bank "D" Step Counters indicate 198 steps.
- A check of the Rod Position indications for Control Bank "D" shows the following rod positions:

D8 at 124"
M8 at 116"
H4 at 120"
H8 at 121"
H12 at 131"

Which ONE (1) of the following describes the status of the rods in Control Bank 'D'?

- a. **BOTH** rods M8 and H12 are misaligned from the bank
- b. **ONLY** rod M8 is misaligned from the bank
- c. **ONLY** rod H12 is misaligned from the bank
- d. All rods are within rod alignment limits

Question: 90

Given the following conditions:

- Pressurizer pressure transmitter PT-457 has failed low and is being removed from service in accordance with the OWP.
- The OWP requires the low pressure bistables in the Hagan racks be placed in the TRIPPED condition.

Which ONE (1) of the following describes the verification required for this function?

- a. **NO** verification is required
- b. Independent verification
- c. Concurrent verification
- d. Functional verification

Question: 91

Given the following conditions:

- The unit has just experienced a reactor trip.
- **NO** SI equipment has actuated.
- One (1) turbine stop valves is shut.
- Three (3) turbine governor valves are shut.
- RCS pressure is 1860 psig.
- Tavg is 542°F.
- All MSIVs are open.
- SG Pressures and Steam Flows are:

SG	PRESSURE	STEAM FLOW
'A'	925 psig	0.1 x 10 ⁶ lbm/hr
'B'	935 psig	0.1 x 10 ⁶ lbm/hr
'C'	845 psig	1.3 x 10 ⁶ lbm/hr

The reactor is tripped, the turbine is ...

- a. tripped, and SI is **NOT** required.
- b. tripped, and SI is required.
- c. **NOT** tripped, and SI is **NOT** required.
- d. **NOT** tripped, and SI is required.

Question: 92

Given the following conditions:

- A reactor trip occurred due to a loss of offsite power.
- The plant is being cooled down on RHR per EPP-005, "Natural Circulation Cooldown."
- RVLIS upper range indicates greater than 100%.
- Both CRDM fans have been running during the entire cooldown.
- RCS cold leg temperatures are 190 °F.
- Steam generator pressures are 50 psig.

Steam should be dumped from all SGs to ensure ...

- a. boron concentration is equalized throughout the RCS prior to taking a sample to verify cold shutdown boron conditions.
- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.
- c. RCS and SG temperatures are equalized prior to any subsequent RCP restart.
- d. RCS temperatures do **NOT** increase during the required 29-hour vessel soak period.

Question: 93

Given the following conditions:

- The unit is operating at 100% power.
- A release is in progress from Waste Gas Decay Tank 'A'.
- A loss of Instrument Bus 3 occurs, requiring termination of the release.

Which ONE (1) of the following describes how the release is terminated as a result of the loss of the Instrument Bus?

- a. Automatically due to the loss of R-14, Plant Vent Monitor
- b. Manually due to the loss of R-14, Plant Vent Monitor
- c. Manually due to the loss of power to the Waste Disposal Boron Recycle Panel
- d. Automatically due to the loss of power to the Waste Disposal Boron Recycle Panel

Question: 94

Which ONE (1) of the following conditions related to the Pressurizer would require entry into a Technical Specification action or a Technical Requirement Manual compensatory action, as applicable?

- a. A pressurizer level control system fault results in level being at 68% with the plant operating at 2% power
- b. A pressurizer pressure control system fault results in pressure being at 2184 psig with the plant operating at 14% power
- c. SST-2A Disconnect, used to supply emergency power to the pressurizer heaters from EDG 'A', is removed from service for maintenance with the plant operating at 35% power
- d. Auxiliary Spray, at 400 °F, is used to depressurize the RCS from 2235 psig, resulting in a cooldown rate of the Pressurizer of 135 °F per hour

Question: 95

Given the following conditions:

- The unit is operating at 70%.
- Rod Control is in AUTO.
- Bank 'D' control rods are at 195 steps.
- Tref is 566.9 °F.
- Loop Tavgs are:

LOOP	T-AVG
'A'	569 °F
'B'	567 °F
'C'	566 °F

Which ONE (1) of the following failures will cause control rods to step inward?

- Loop 1 Thot fails high
- Loop 1 Tcold fails low
- Loop 2 Tcold fails high
- Loop 3 Thot fails low

Question: 96

Given the following conditions:

- The unit is operating at 30% power.
- A dropped control rod has just been re-aligned.
- While attempting to reset the Rod Control Urgent Failure alarm, the operator inadvertently pushes the Rod Control STARTUP button.

Which ONE (1) of the following describes the effect of operating the incorrect button?

- a. All Control Bank control rods drop into the core, causing an automatic reactor trip
- b. All rods, including Control Bank and Shutdown Bank rods, drop into the core, causing an automatic reactor trip
- c. All rods remain in their current position and there is **NO** effect on the Rod Control System circuitry
- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Question: 97

Service Water Pump "D" is capable of being powered from which ONE (1) of the following power sources?

- a. **ONLY** 480 VAC Bus E-1
- b. **ONLY** 480 VAC Bus E-2
- c. Either 480 VAC Bus E-1 OR 480 VAC DS Bus
- d. Either 480 VAC Bus E-2 OR 480 VAC DS Bus

Question: 98

Given the following conditions:

- A plant cooldown is in progress in accordance with GP-007, "Plant Cooldown From Hot Shutdown to Cold Shutdown."
- RCS Pressure is 1500 psig.
- RCS Tavg is 515°F.
- A RCS leak is identified inside containment.

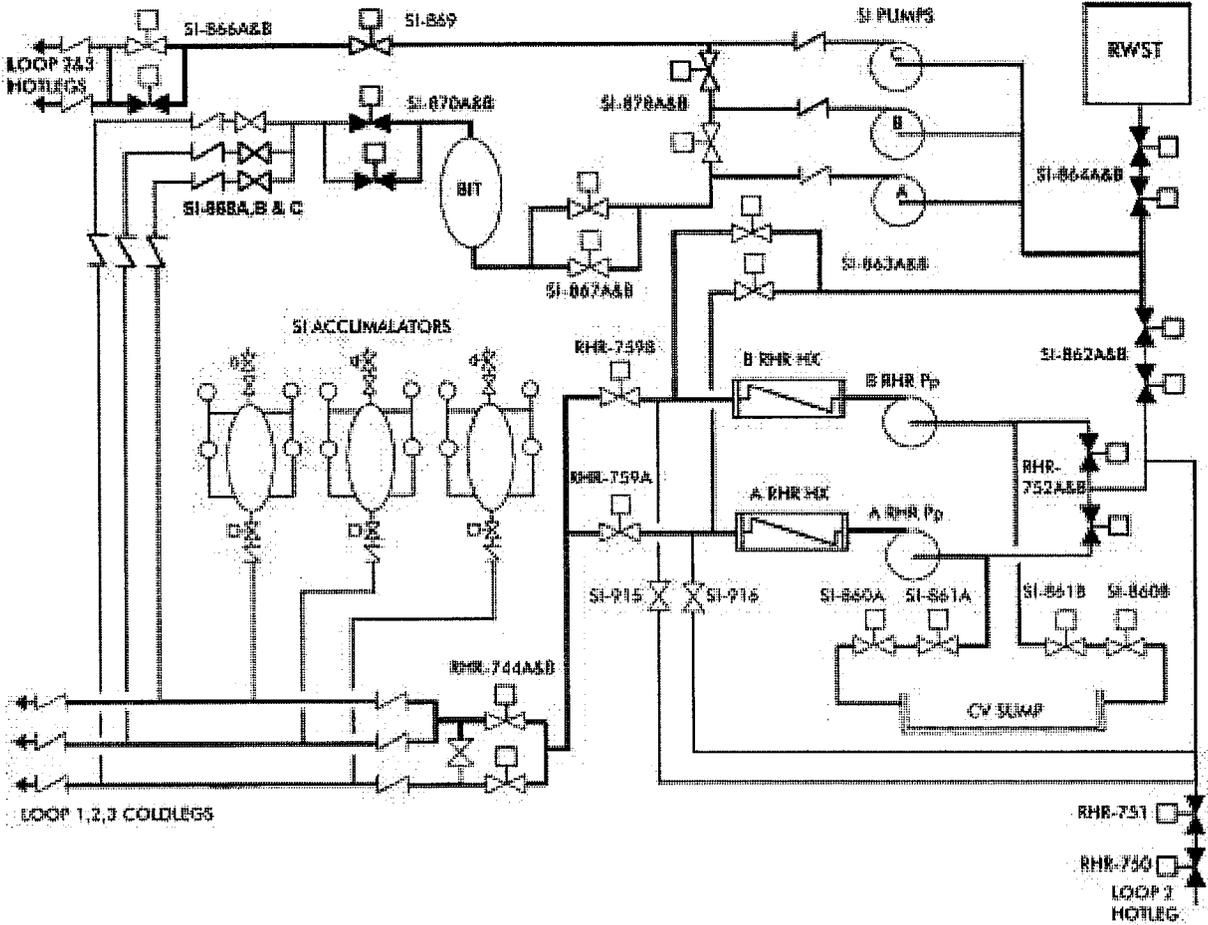
Which ONE (1) of the following identifies the valid signals that could result in a Containment Ventilation Isolation under these conditions?

- a.
 - Hi Steamline ΔP
 - Alarm on R-12, Containment Noble Gas Monitor
- b.
 - Low Pressurizer Pressure Safety Injection
 - Alarm on R-14C, Plant Effluent Noble Gas Monitor
- c.
 - Manual actuation of Containment Isolation Phase A
 - Alarm on R-12, Containment Noble Gas Monitor
- d.
 - Manual actuation of Containment Isolation Phase A
 - Alarm on R-14C, Plant Effluent Noble Gas Monitor

Question: 99

Given the drawing on the following page containing an ECCS alignment, which ONE (1) of the following describes the ECCS alignment?

- a. Cold leg injection
- b. Cold leg recirculation
- c. Hot leg injection
- d. Long term recirculation



RHR-759A throttled to 1200 gpm
RHR-759B throttled to 2300 gpm

Question: 100

Given the following conditions:

- A Large Break LOCA has occurred.
- PATH-1 is being implemented.
- The CRSS directs you to "Verify Supplement D components capable of recirc."

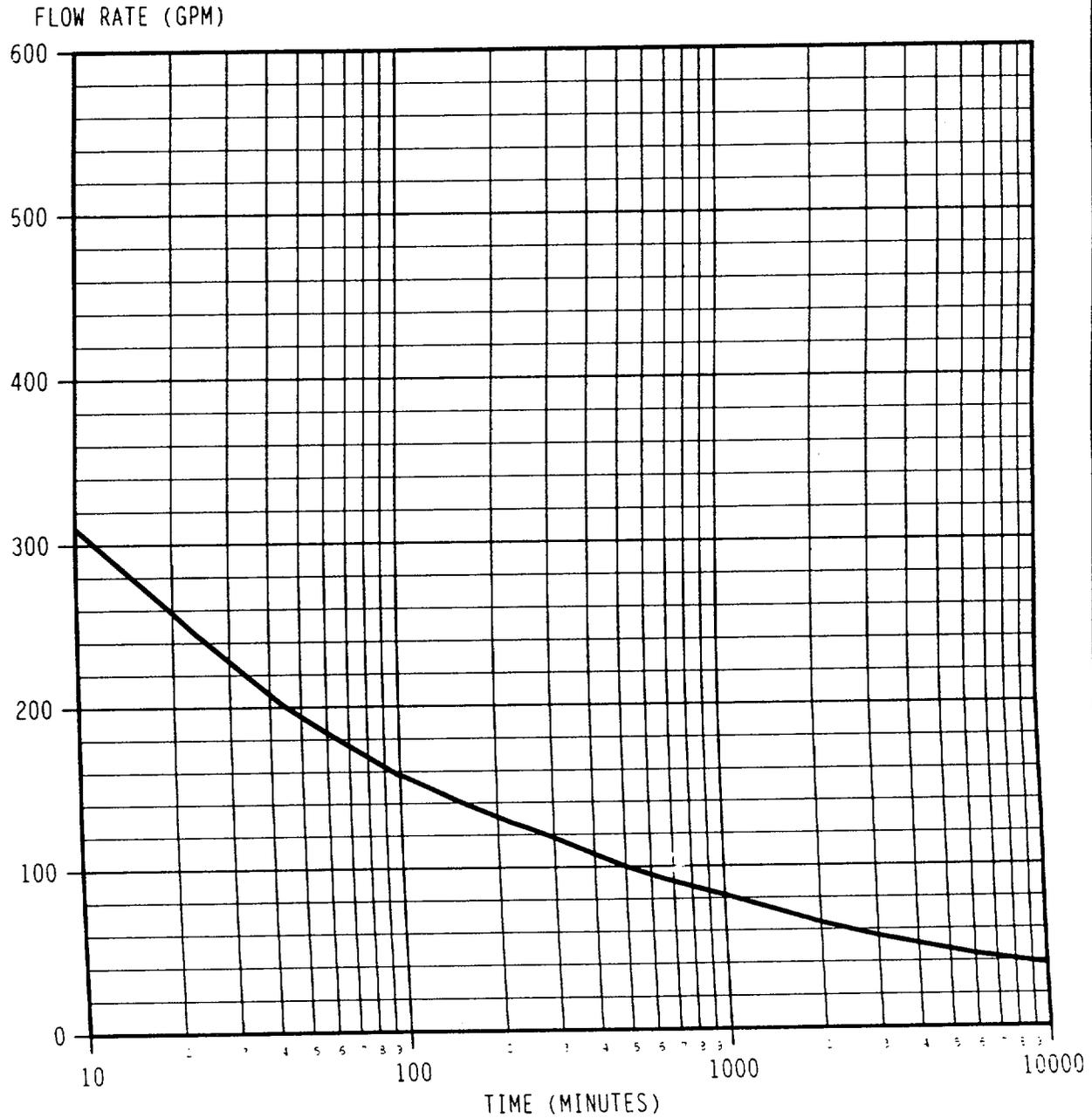
Which ONE (1) of the following describes the actions permitted during performance of Supplement D, "Emergency Recirculation Equipment"?

- a. Restoring flowpath from containment sump to RHR
- b. Aligning flowpath from RHR pumps to the SI pumps
- c. Restoring control power to SI valves controlled from the RTGB
- d. Aligning flowpath from SI pumps to the hot legs

SUPPLIED REFERENCE MATERIALS FOR RNP NRC REACTOR OPERATOR EXAMINATION

<u>REFERENCE NUMBER</u>	<u>REFERENCE TITLE</u>
NA	Steam Tables
EPP-15, Attachment 1	Required Flow Rate Versus Time After Reactor Trip
GP-005, Attachment 10.1	Reactor Power Ascension Indicator Log
Plant Curve 5.3	Boron Addition – Coolant Hot - Gallons
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Plant Curve 7.6	System Resistance Curve, Post Accident Containment Venting System
Plant Curve 7.16	Total Hydrogen Generation Rate from All Sources
Plant Curve 7.19	Loss of Residual Heat Removal Cooling Water Level Between 0" to -10" Below Vessel Flange
Plant Curve 7.20	Loss of Residual Heat Removal Cooling Water Level Between -10" to -36" Below Vessel Flange
Plant Curve 7.21	Loss of Residual Heat Removal Cooling Water Level Between -36" to -72" Below Vessel Flange

ATTACHMENT 1
REQUIRED FLOW RATE VERSUS TIME AFTER REACTOR TRIP
Page 1 of 1



ATTACHMENT 10.1

Page 1 of 1

REACTOR POWER ASCENSION INDICATOR LOG

AVG PWR % (1)	NI-35 amps	NI-36 amps	NI-41A %	NI-42A %	NI-43A %	NI-44A %	LOOP ΔT °F (1)	LOOP 1 ΔT °F	LOOP 2 ΔT °F	LOOP 3 ΔT °F	1 st STAGE PRESS psig (1)	PI-446 OR 447 psig (2)	NET MWe MAX (1)	NET MWe	CCP % PWR (3)	NR-45 (4)	SSO (1)
15-20							9-11.5				68-90		73				
25-30							14.5-17				113-135		153				
35-40							20-23				158-180		235				
45-50							26-28.5				207-230		316				
55-60							32-34.5				261-285		398				
65-70							37-40				320-345		480				
75-80							43-46				384-410		562				
85-90							49-51.5				449-475		643				
95-100							55-57.5				513-540		725				

- (1) Listed ranges and Net MWe maximums are predicted based on past plant performance. The maximum value of each indication is the maximum target value for each power increase. The SSO shall initial if plant management has determined that indications are acceptable to continue with the power escalation.
- (2) Use indicator that corresponds to the channel selected on the 1st STAGE PRESSURE selector switch.
- (3) Record Continuous Calorimetric Program % Power.
- (4) Verify NR-45 is selected to the highest reading channel.

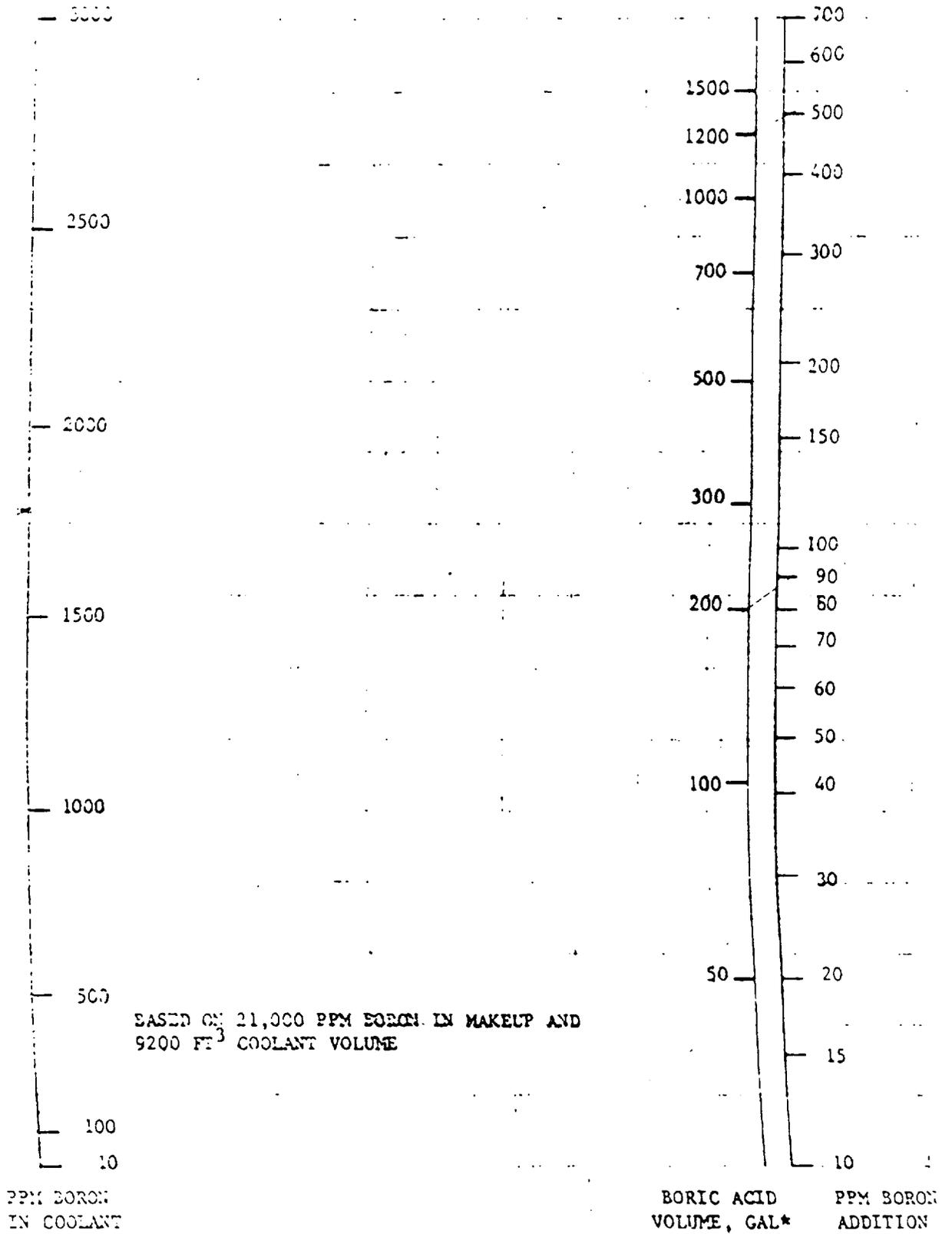


FIGURE S-3.1-3 BORON ADDITION - COOLANT HOT (-580°F)

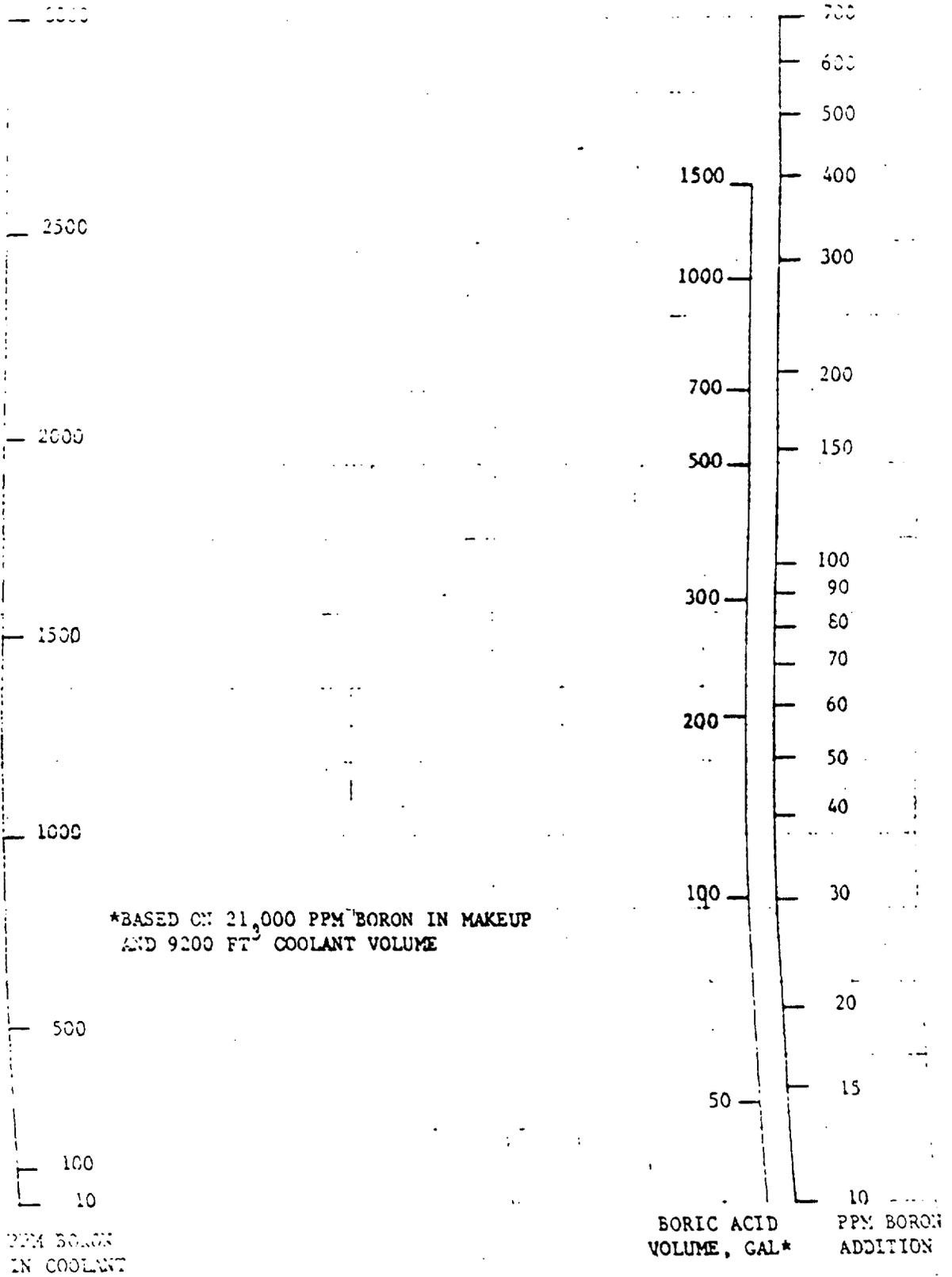


FIGURE S-3.1-4 BORON ADDITION - COOLANT COLD (-100°F)

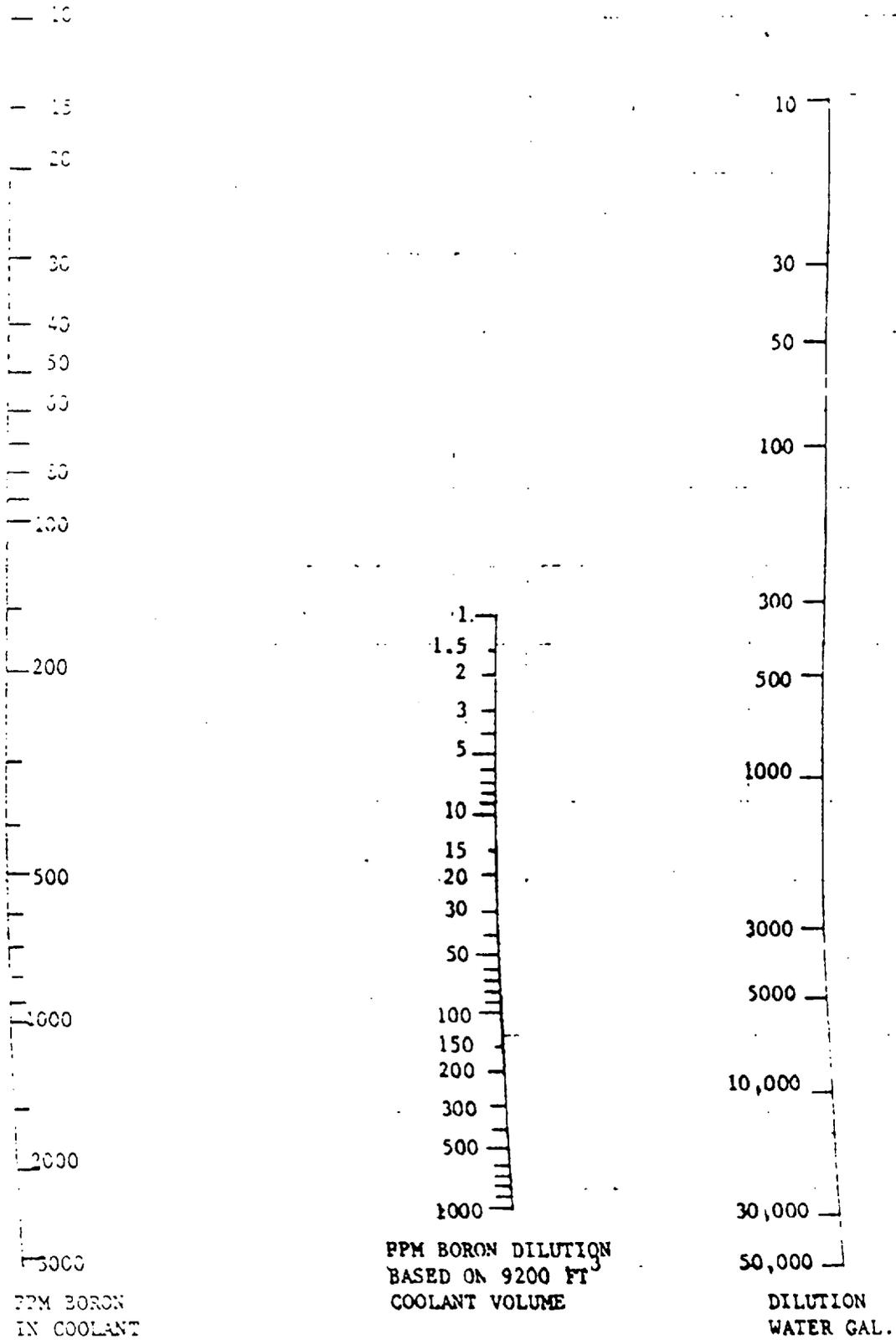


FIGURE S-3.1-7 DILUTION NOMOGRAPH - COOLANT HOT (-580°F)

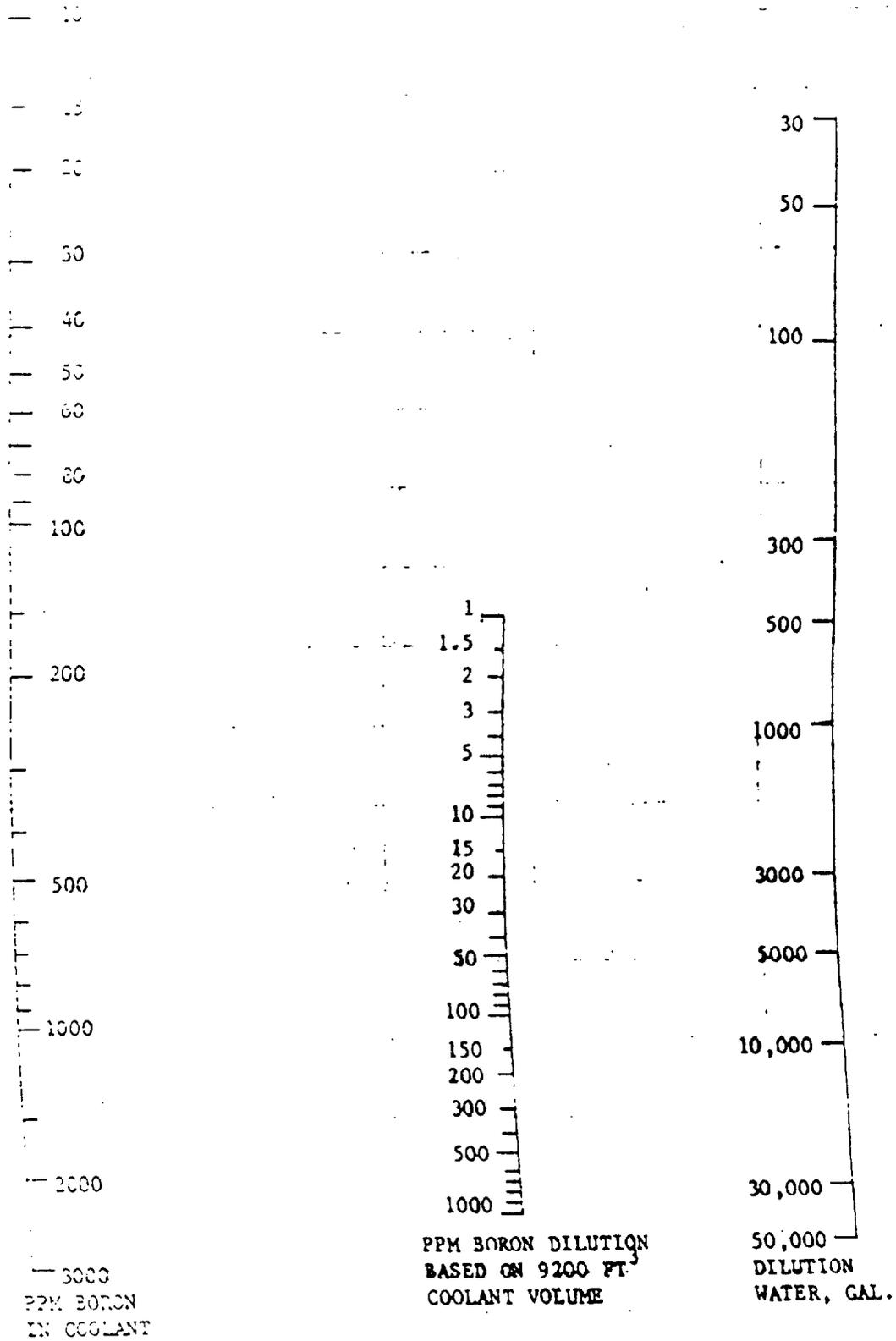


FIGURE S-3.1-8 DILUTION NOMOGRAPH - COOLANT COLD (-100°F)

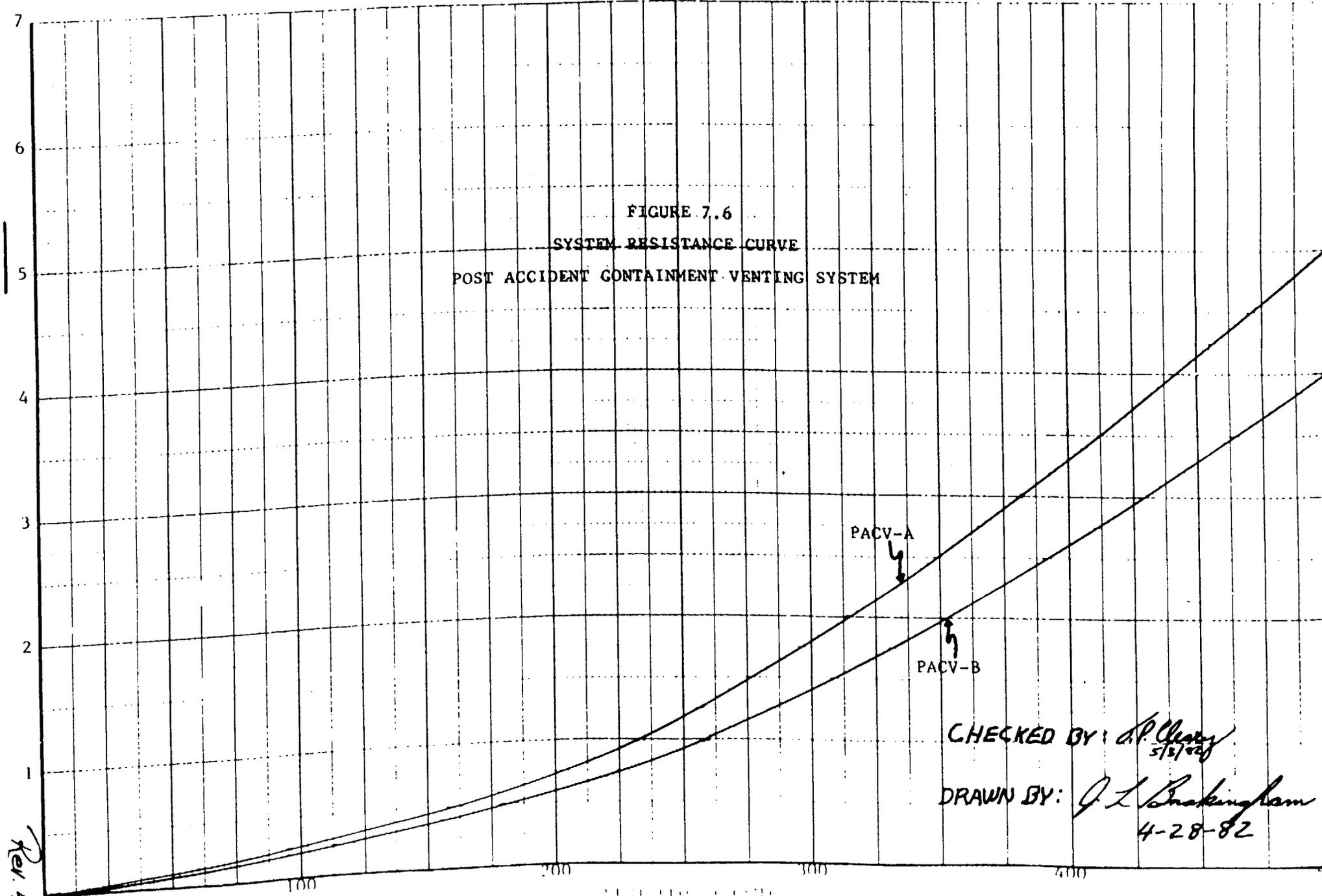


FIGURE 7.6
 SYSTEM RESISTANCE CURVE
 POST ACCIDENT CONTAINMENT VENTING SYSTEM

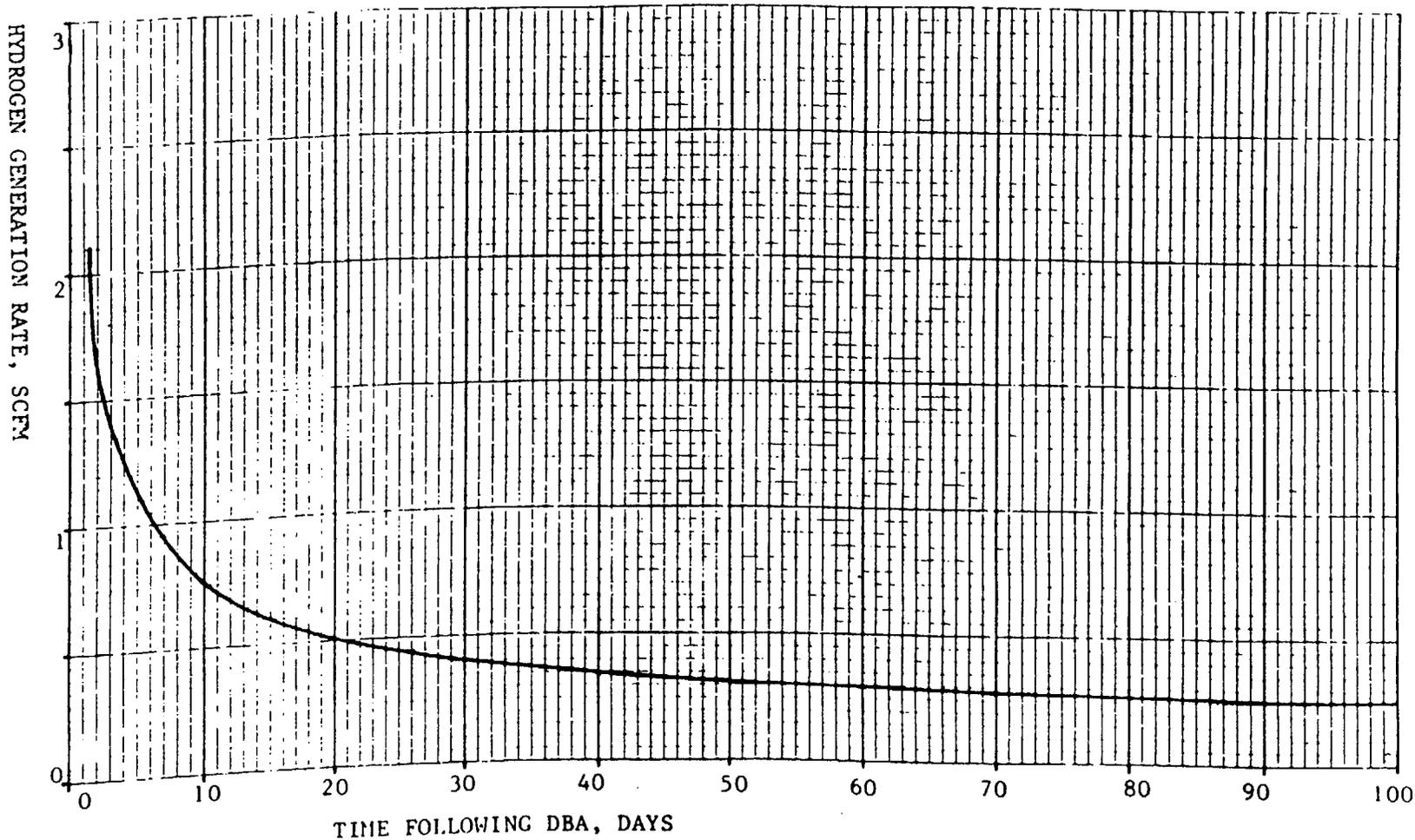
PACV-A

PACV-B

CHECKED BY: *A.P. Cleary*
 5/3/82

DRAWN BY: *J.L. Buckingham*
 4-28-82

Rev. 4.4



Drawn By: *James M. Nelson* 10-19-84

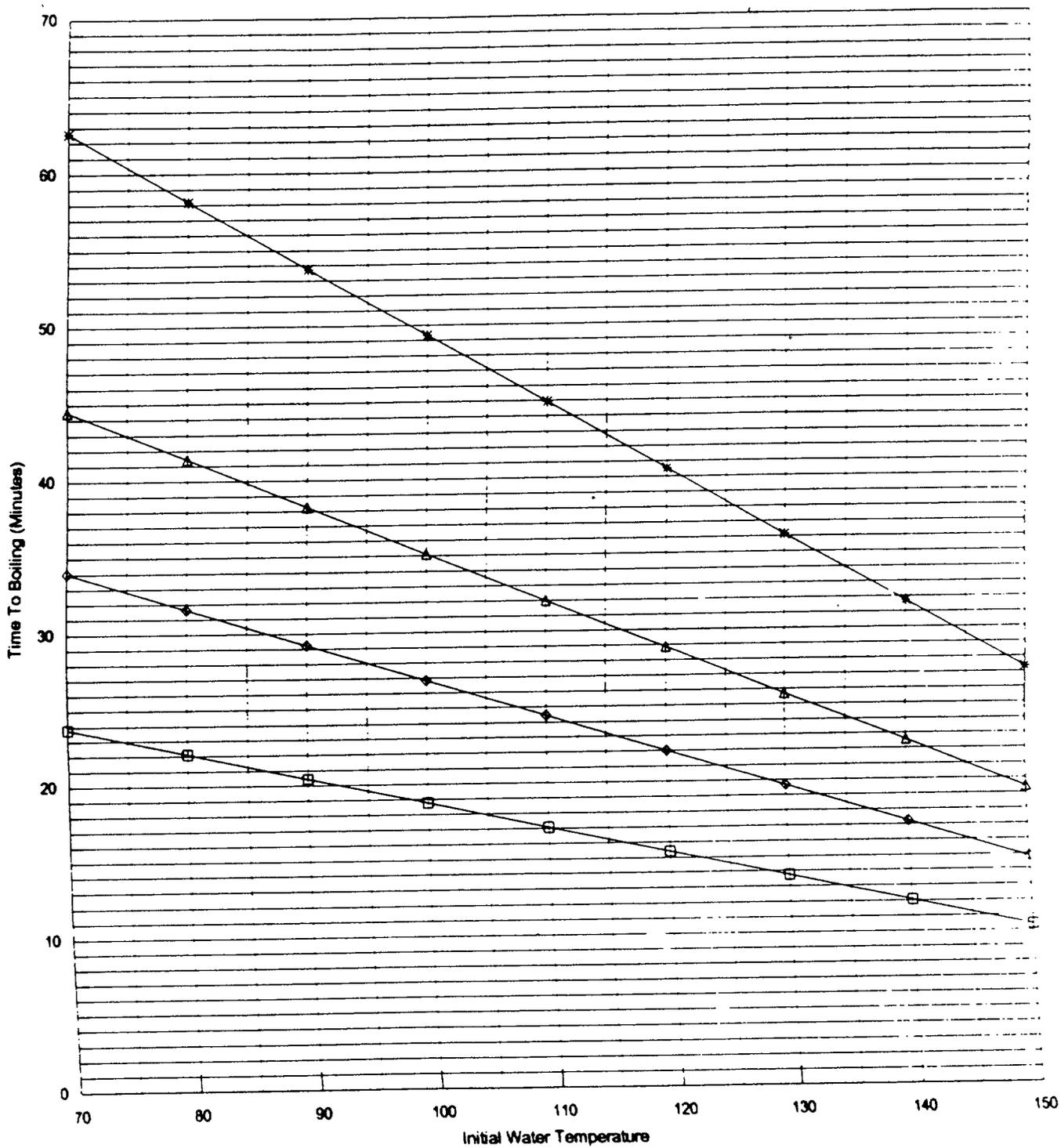
Checked By: *Greg M. Stover* 10/19/84

830 Day Full Power TID Core
DBA Conditions

Hydrogen Sources:

- Zirconium-Water Reaction
- Aluminum Corrosion
- Core Solution Radiolysis
- Sump Solution Radiolysis

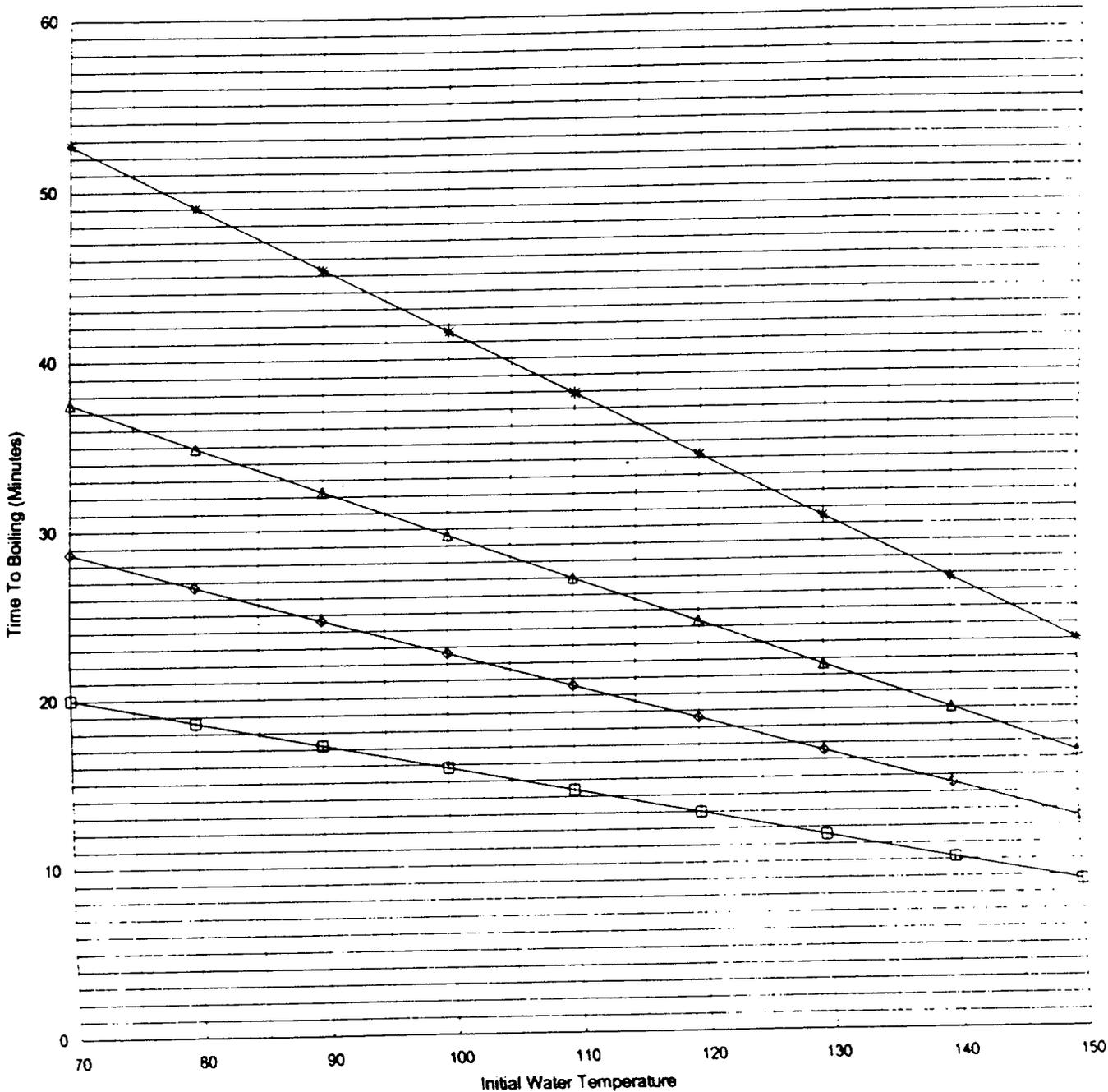
Curve 7.19 - Loss of Residual Heat Removal Cooling
 Water Level Between 0" to -10" Below Vessel Flange



□ 100 Hours After Shutdown
◊ 10 Days After Shutdown
△ 20 Days After Shutdown
✱ 40 Days After Shutdown

Based on calculation RNP-M/MECH-1590

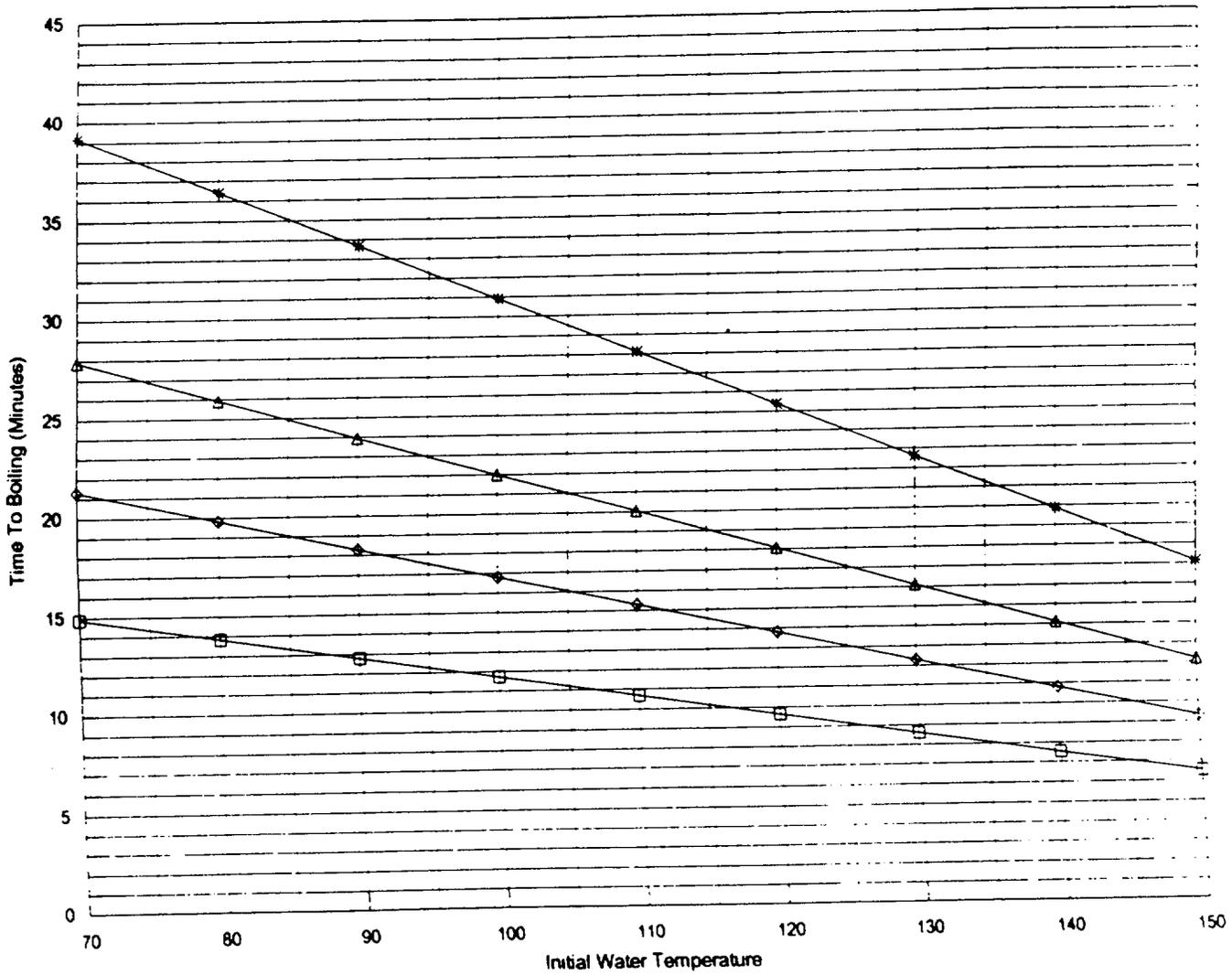
**Curve 7.20 - Loss of Residual Heat Removal Cooling
Water Level Between -10" to -36" Below Vessel Flange**



100 Hours After Shutdown
 10 Days After Shutdown
 20 Days After Shutdown
 40 Days After Shutdown

Based on calculation RNP-M/MECH-1590

**Curve 7.21 - Loss of Residual Heat Removal Cooling
Water Level Between -36" to -72" Below Vessel Flange**



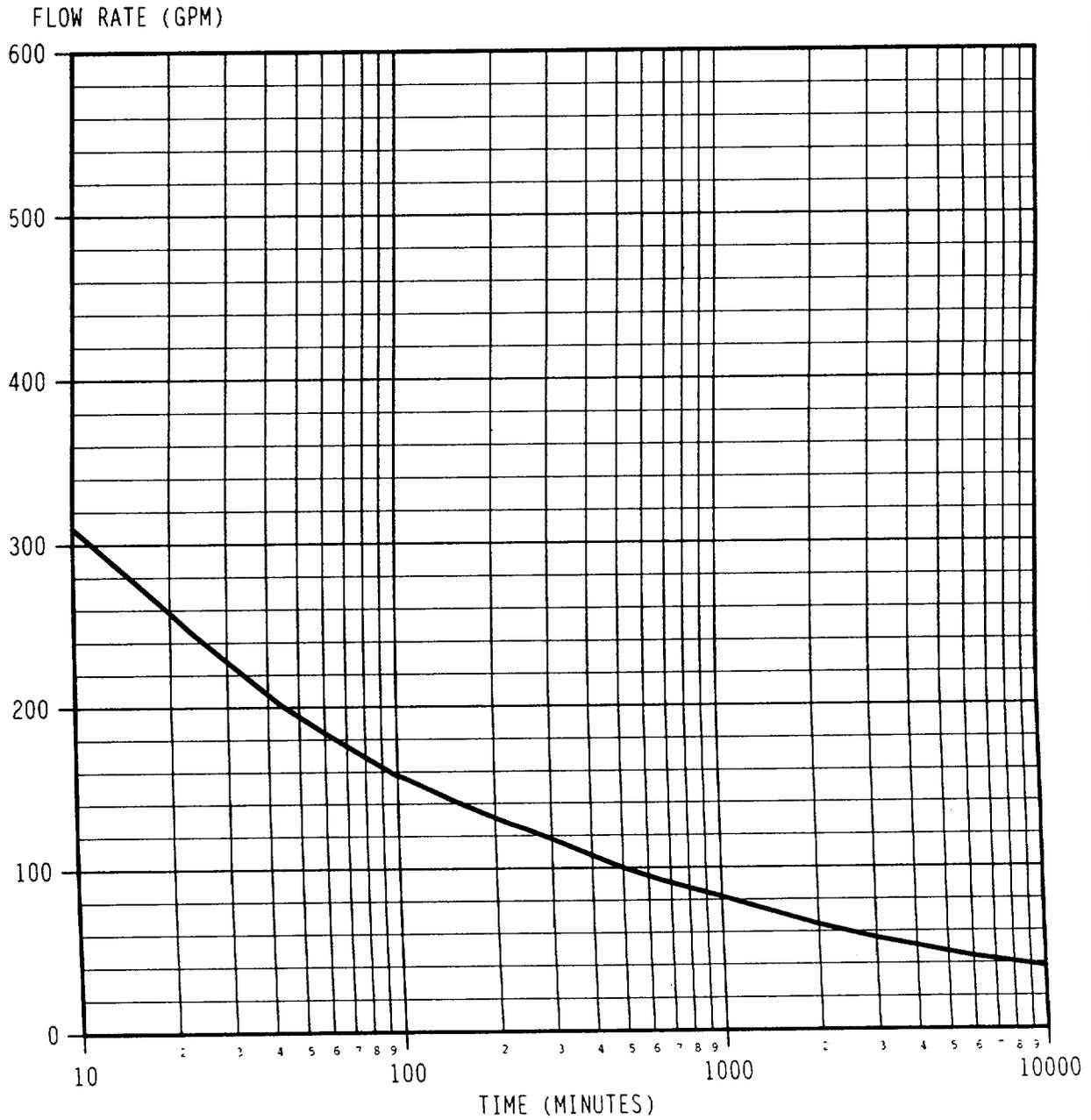
□ 100 Hours After Shutdown
◇ 10 Days After Shutdown
△ 20 Days After Shutdown
* 40 Days After Shutdown

Based on calculation RNP-MMECH-1590

SUPPLIED REFERENCE MATERIALS FOR RNP NRC REACTOR OPERATOR EXAMINATION

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NA	Steam Tables
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ATTACHMENT 1
REQUIRED FLOW RATE VERSUS TIME AFTER REACTOR TRIP
Page 1 of 1



ATTACHMENT 10.1

Page 1 of 1

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- (2) Use indicator that corresponds to the channel selected on the 1st STAGE PRESSURE selector switch.
- (3) Record Continuous Calorimetric Program % Power.
- (4) Verify NR-45 is selected to the highest reading channel.

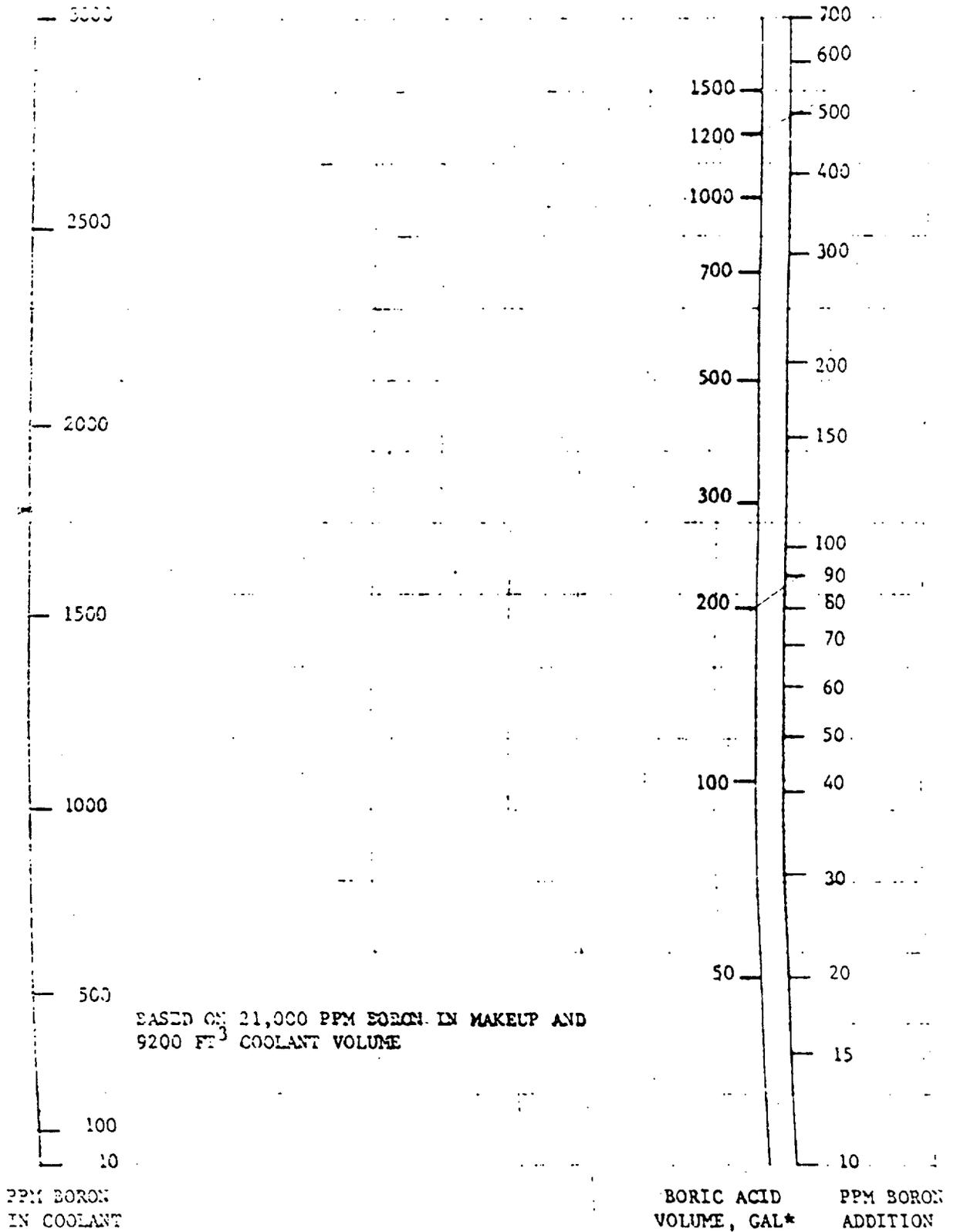


FIGURE S-3.1-3 BORON ADDITION - COOLANT HOT (-580°F)

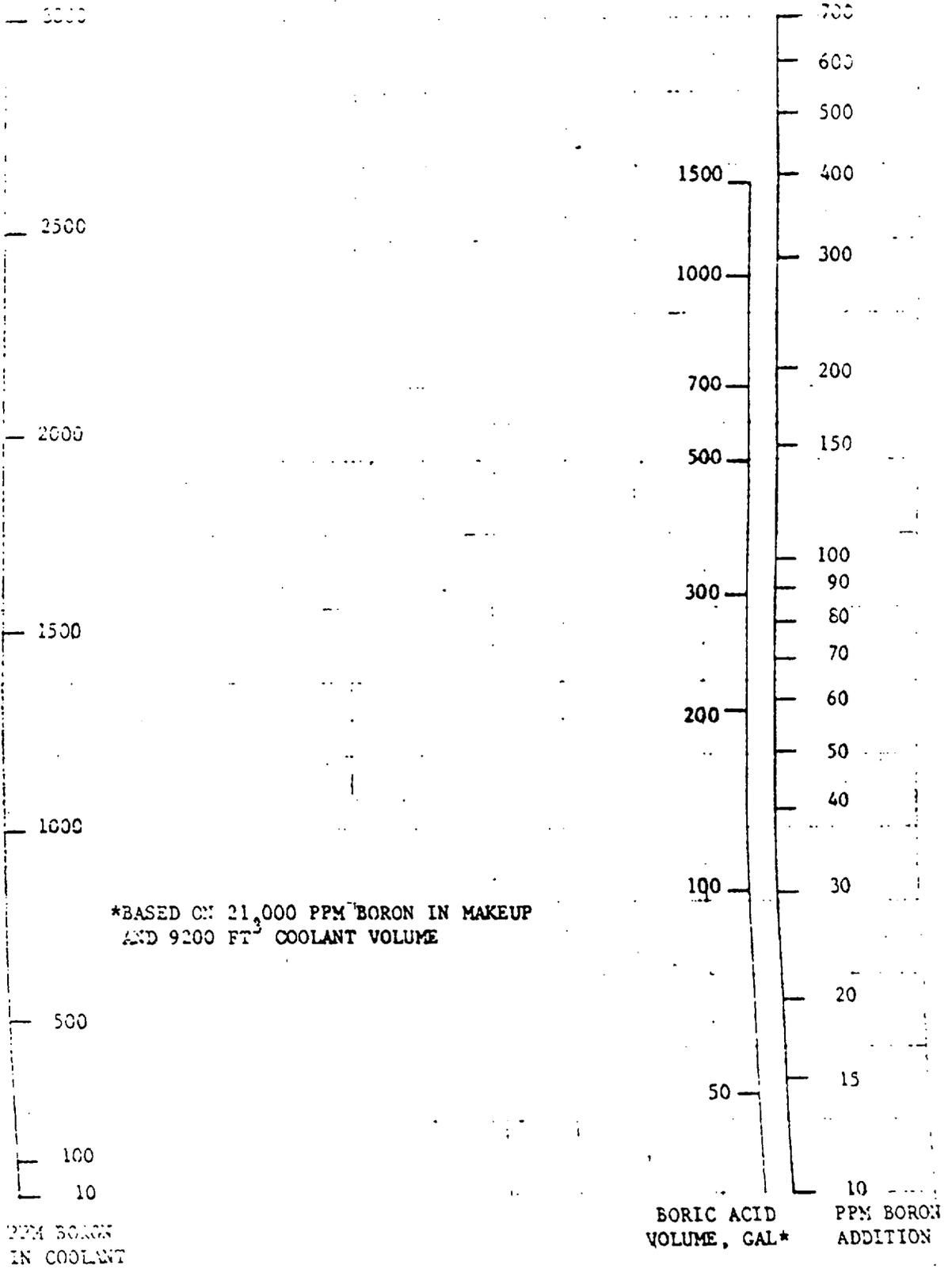


FIGURE S-3.1-4 BORON ADDITION - COOLANT COLD (-100°F)

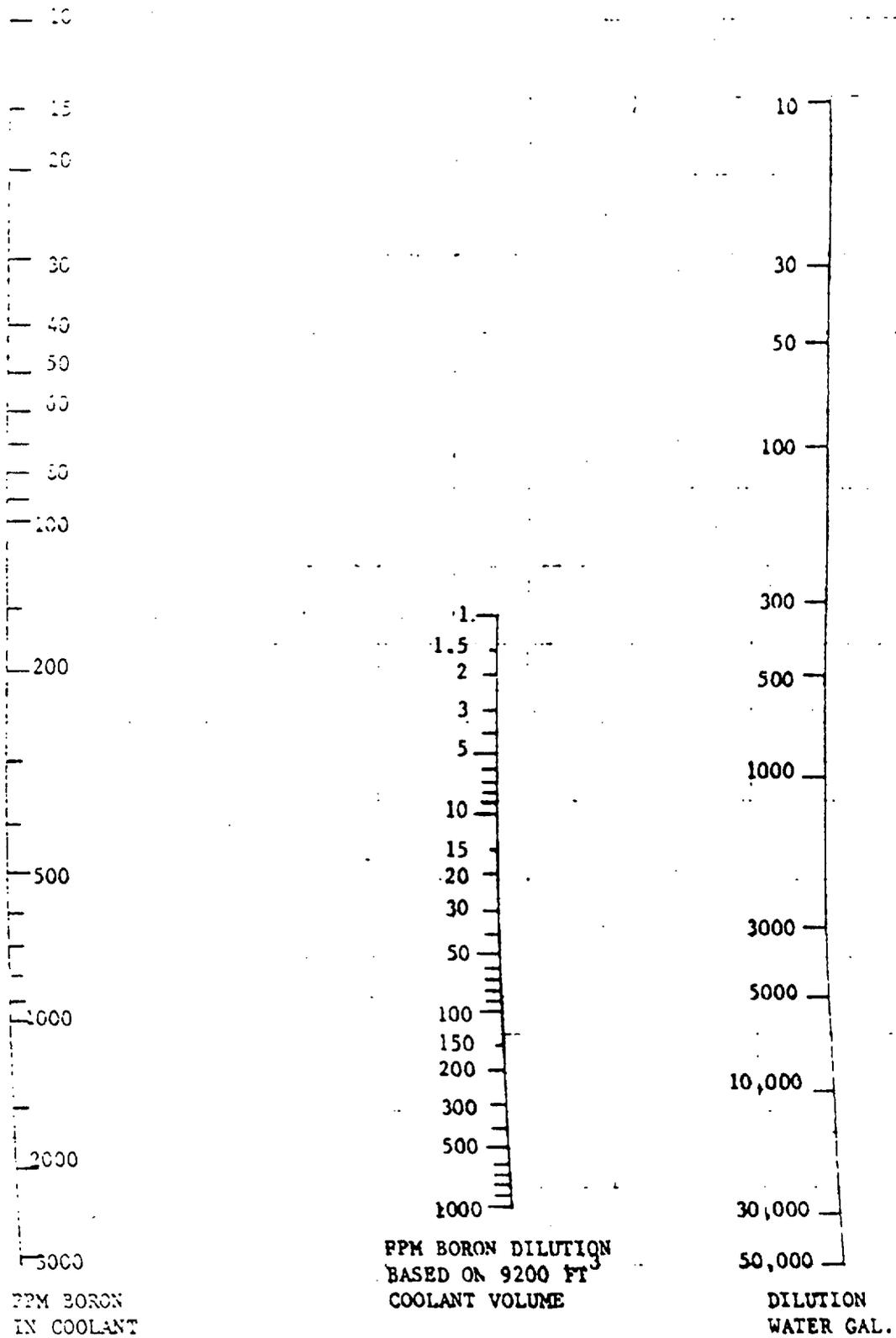


FIGURE S-3.1-7 DILUTION NOMOGRAPH - COOLANT HOT (-580°F)

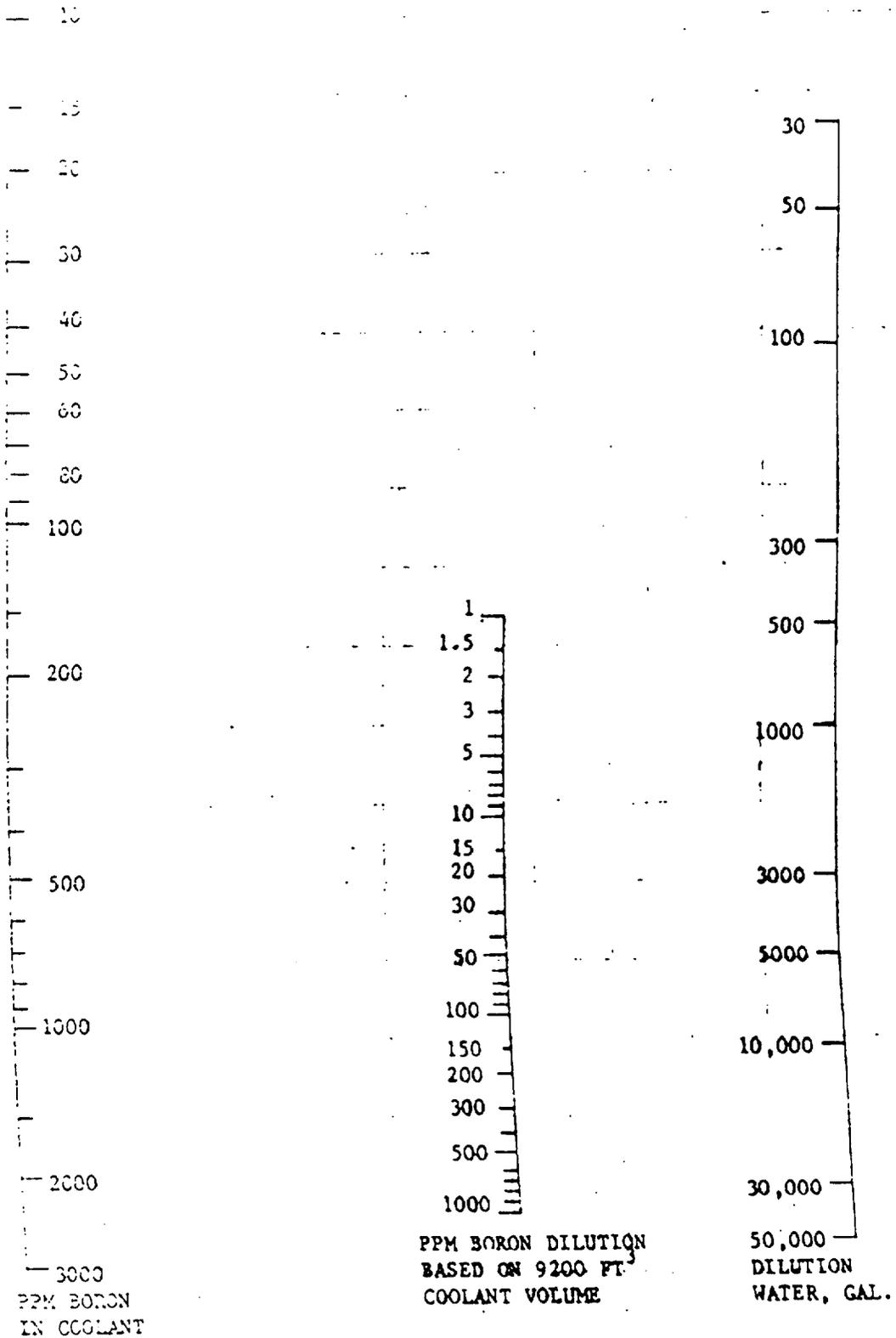
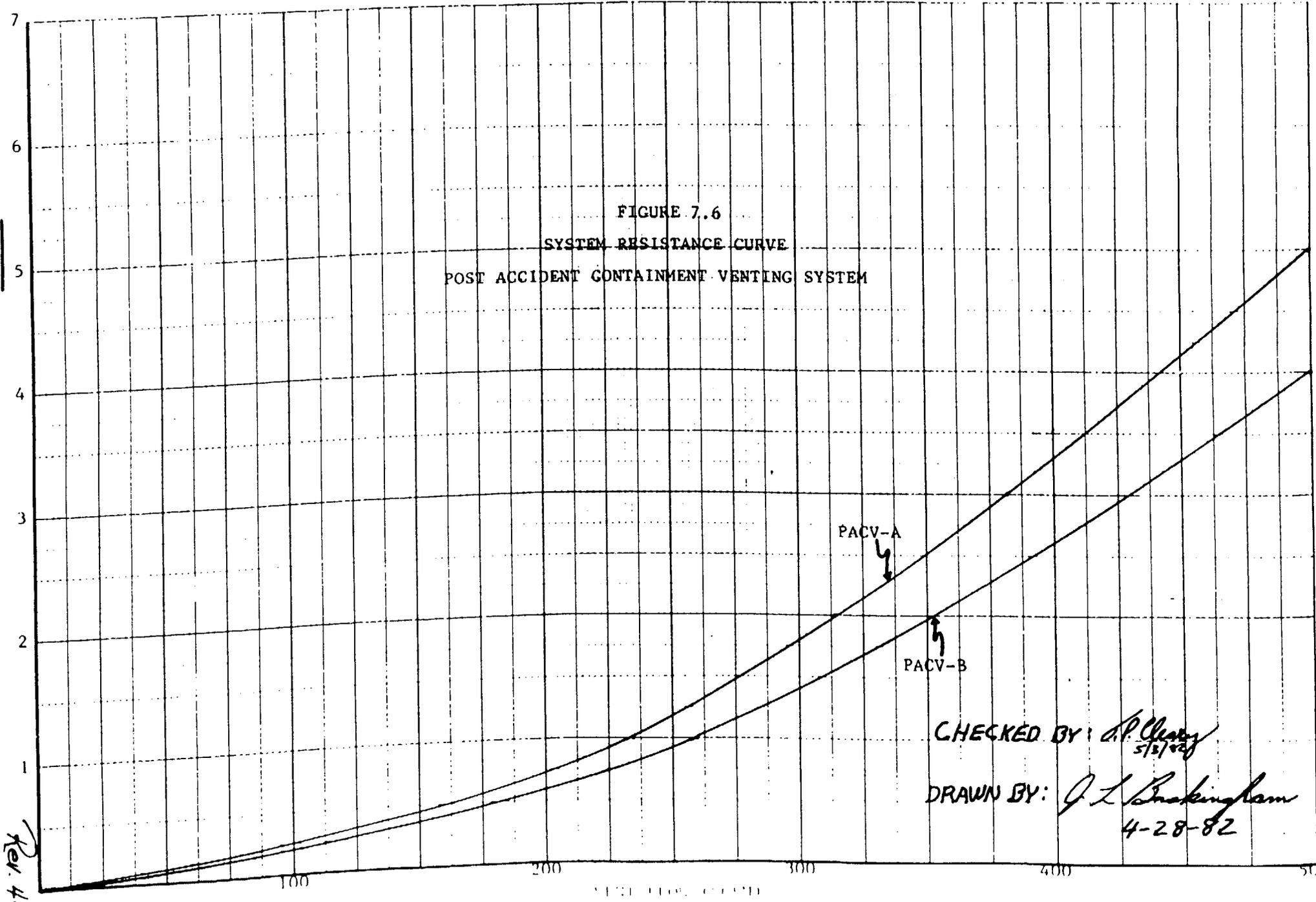


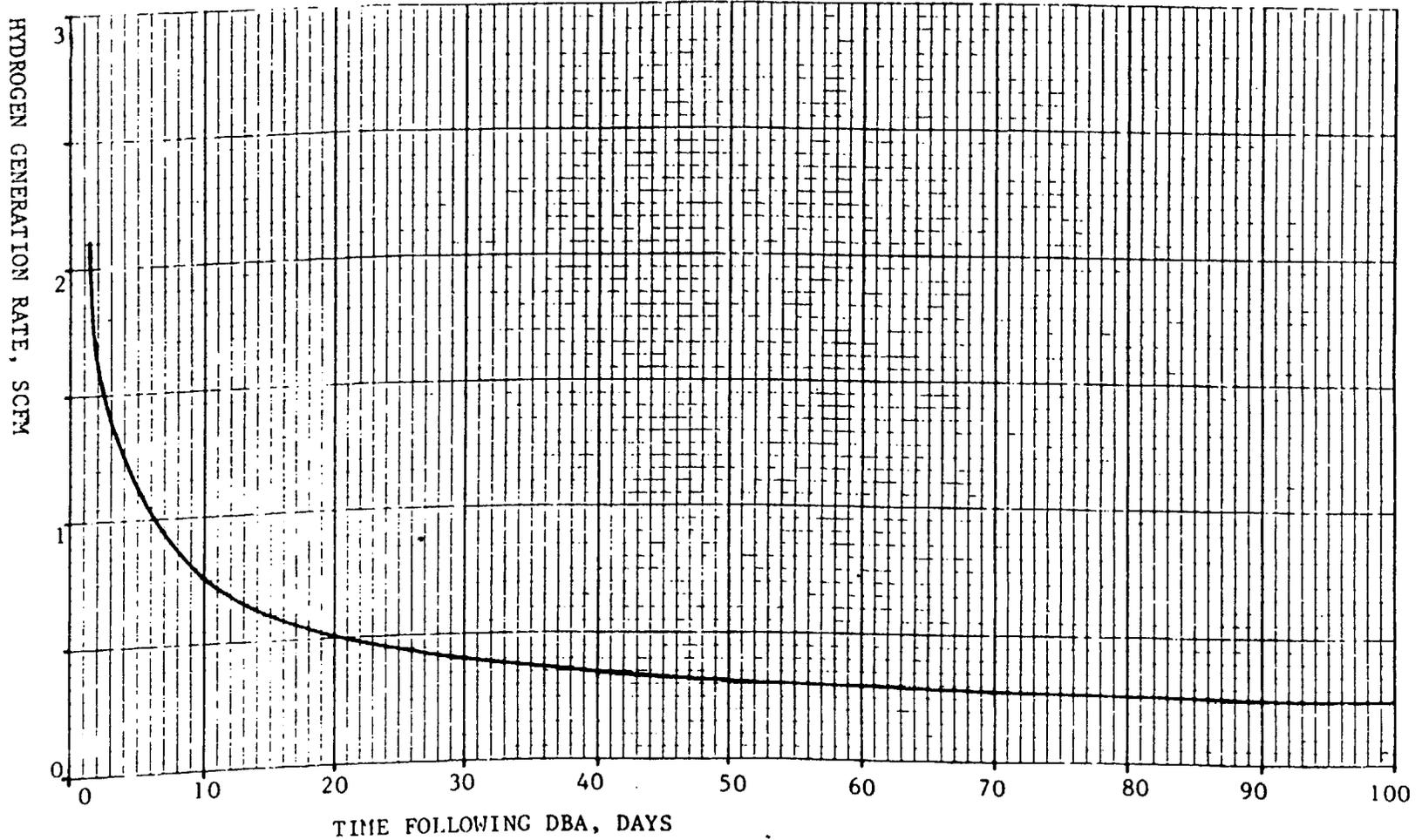
FIGURE S-3.1-S DILUTION NOMOGRAPH - COOLANT COLD (-100°F)



CHECKED BY: *A.P. Cleary*
5/13/82

DRAWN BY: *J.L. Buckingham*
4-28-82

Rev. 44



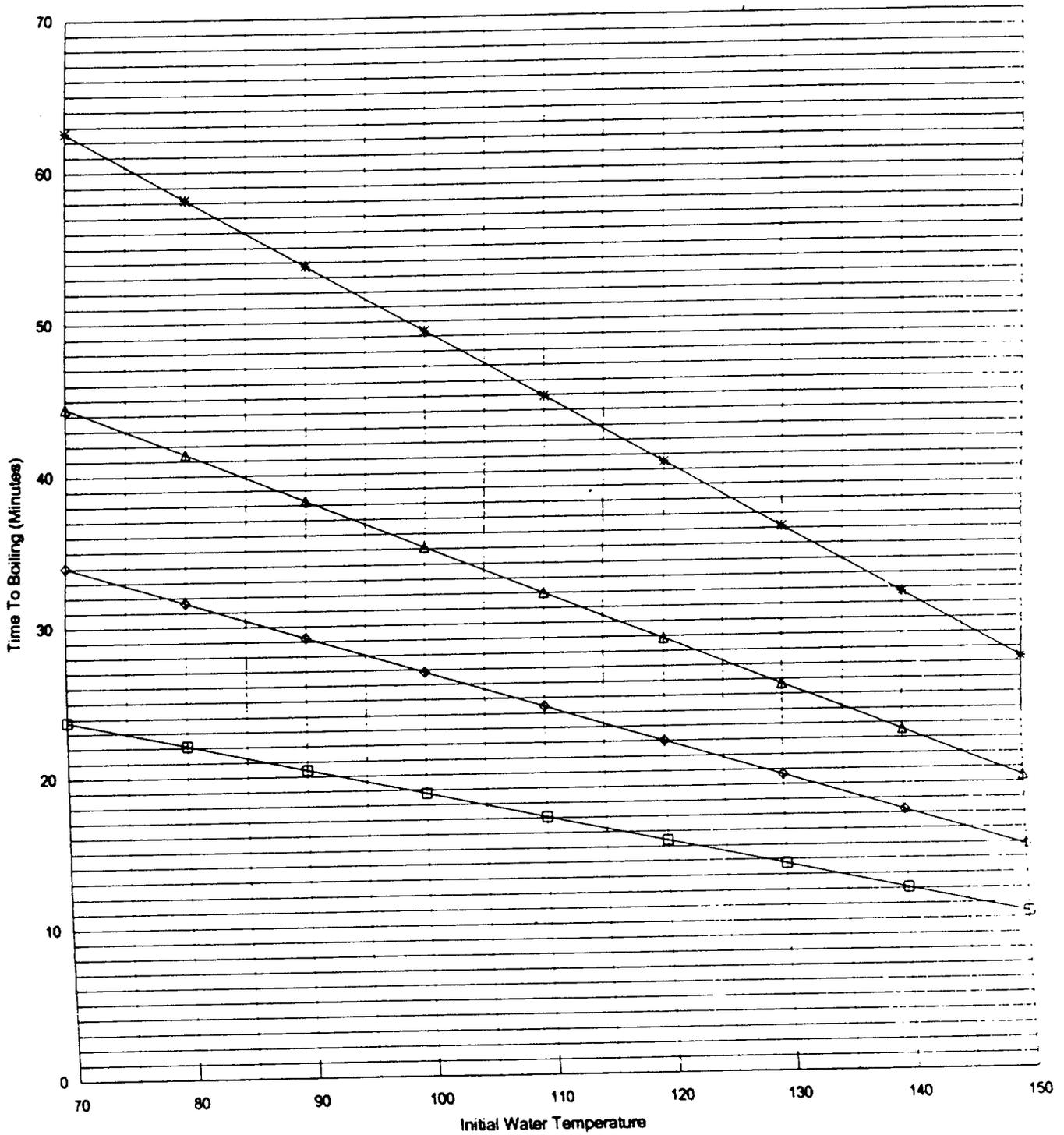
Drawn By: *James M. Nelson* 10-19-84
 Checked By: *Raymond Stouffer* 10/19/84

830 Day Full Power TID Core
 DBA Conditions
 Hydrogen Sources:

- Zirconium-Water Reaction
- Aluminum Corrosion
- Core Solution Radiolysis
- Sump Solution Radiolysis

CURVE 7.16 TOTAL HYDROGEN GENERATION RATE FROM ALL SOURCES.

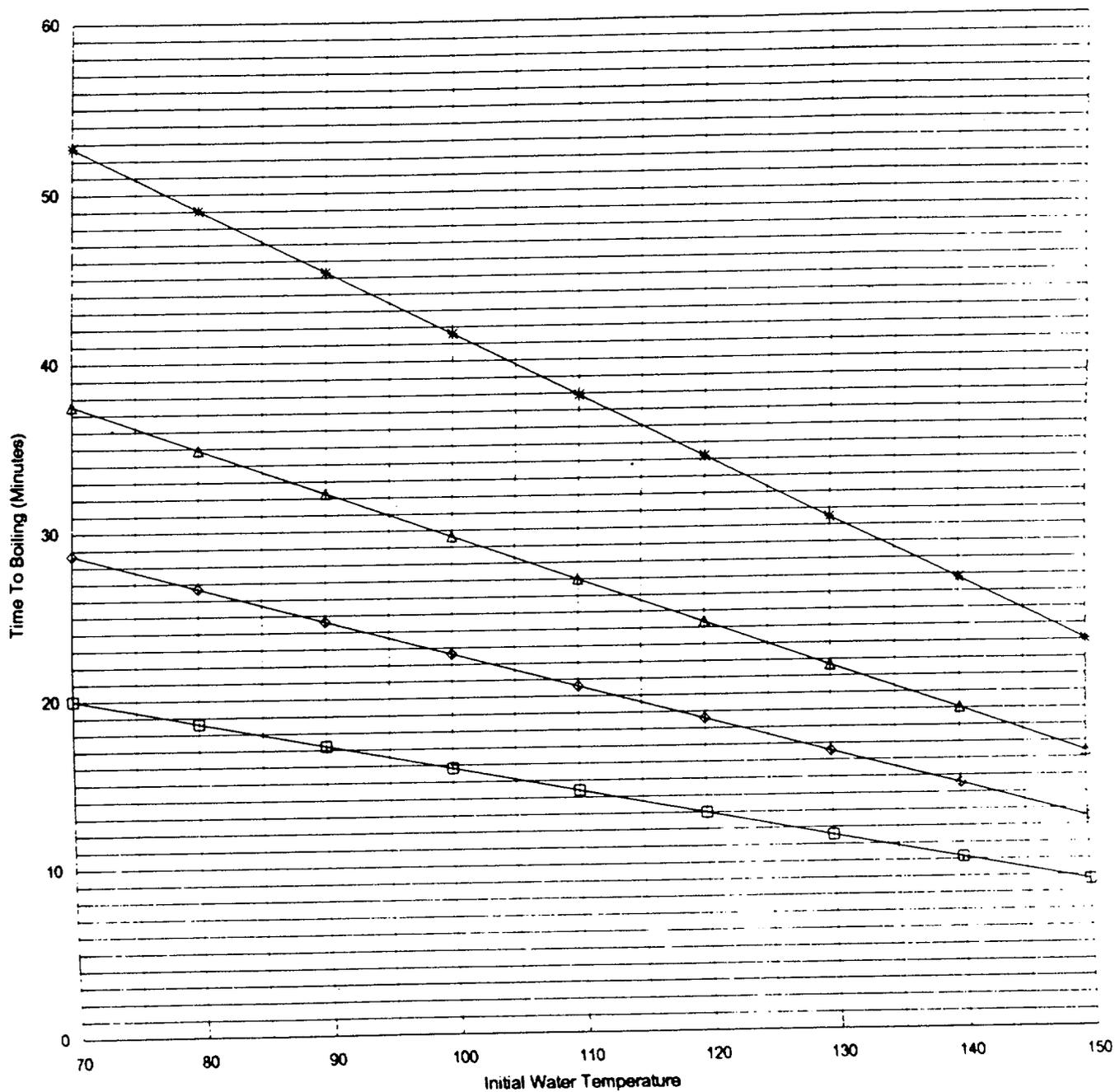
Curve 7.19 - Loss of Residual Heat Removal Cooling
 Water Level Between 0" to -10" Below Vessel Flange



☐ 100 Hours After Shutdown
◊ 10 Days After Shutdown
△ 20 Days After Shutdown
* 40 Days After Shutdown

Based on calculation RNP-WMECH-1590

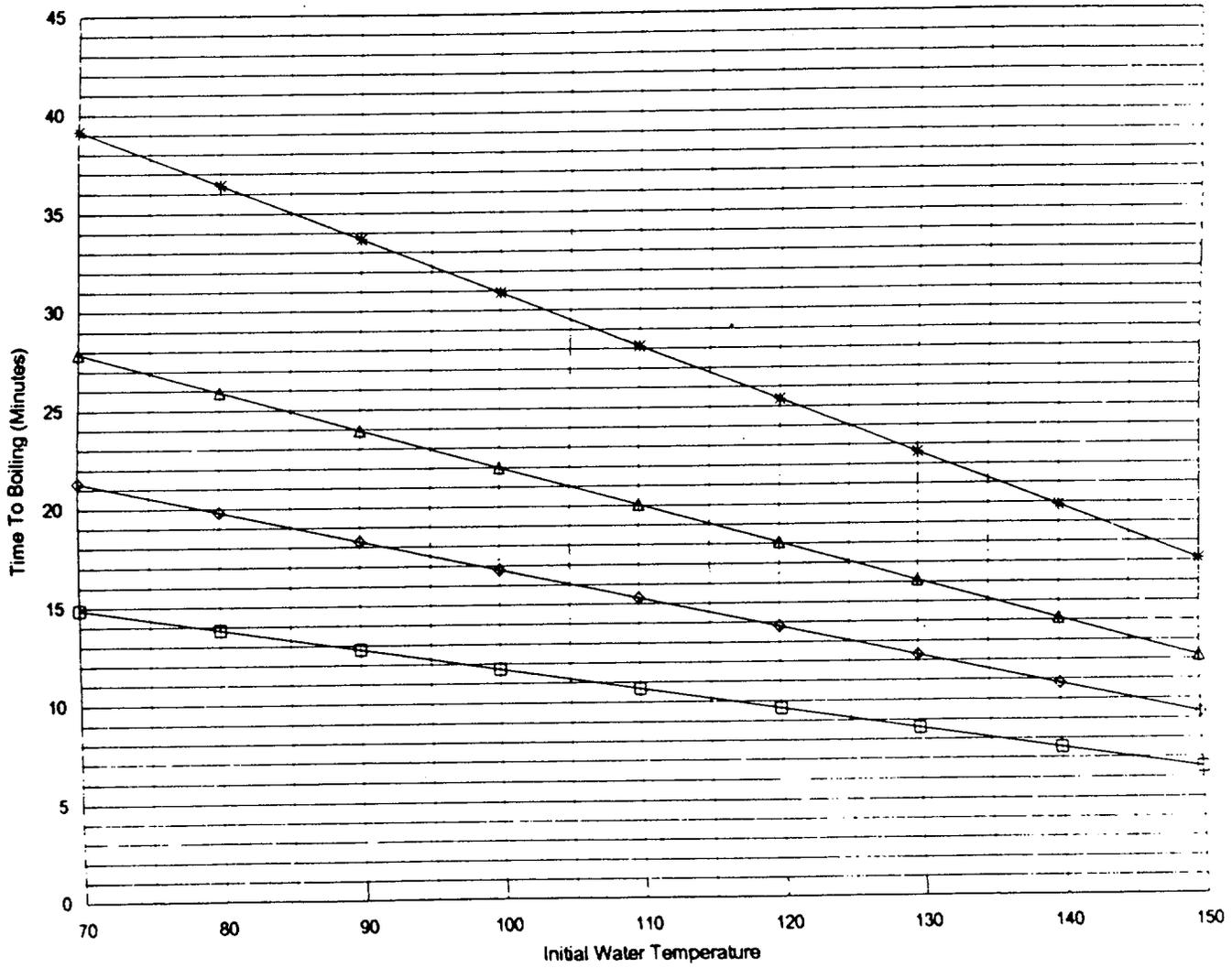
**Curve 7.20 - Loss of Residual Heat Removal Cooling
Water Level Between -10" to -36" Below Vessel Flange**



□ 100 Hours After Shutdown
◇ 10 Days After Shutdown
△ 20 Days After Shutdown
* 40 Days After Shutdown

Based on calculation RNP-MMECH-1590

Curve 7.21 - Loss of Residual Heat Removal Cooling
 Water Level Between -36" to -72" Below Vessel Flange



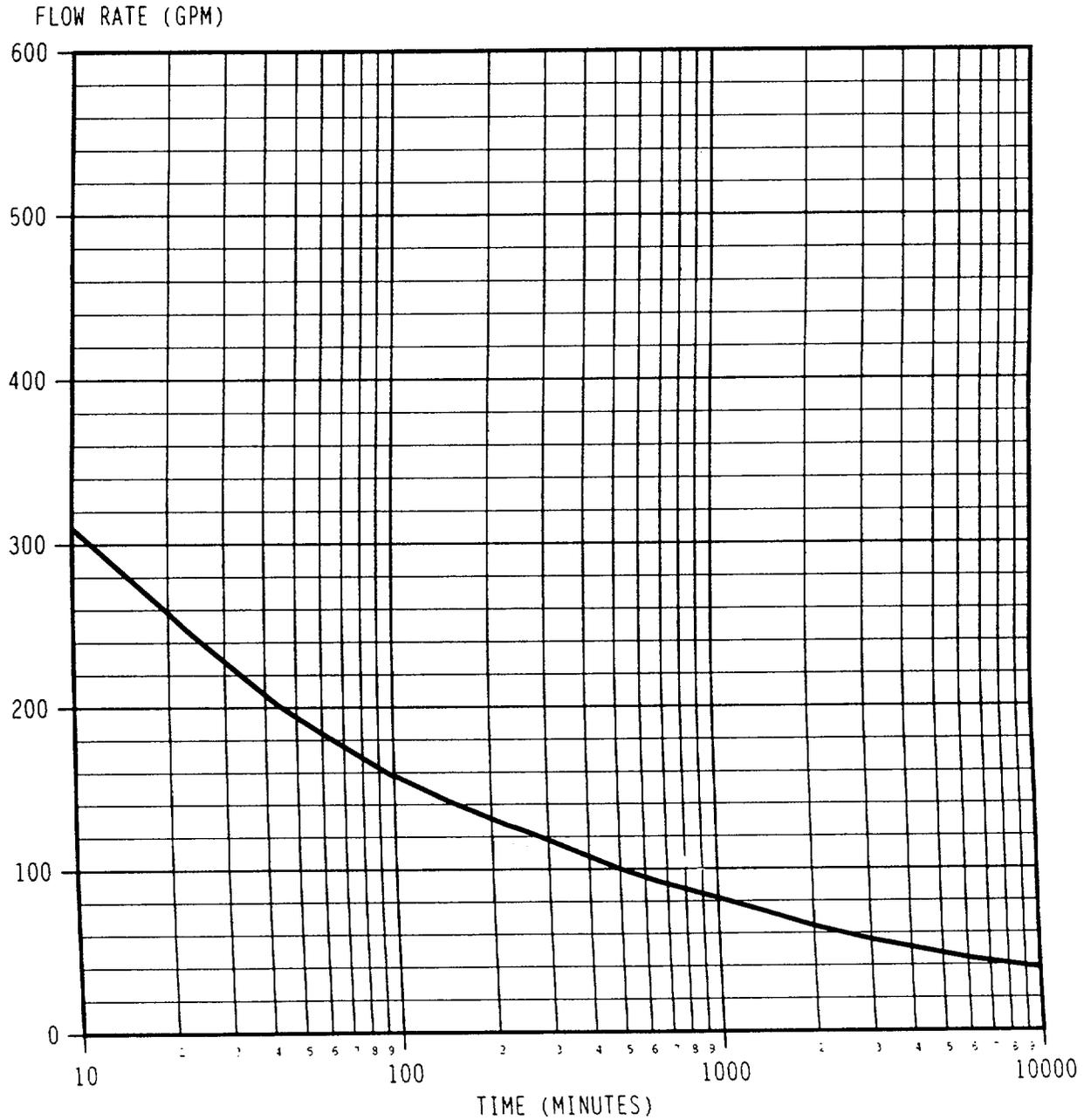
□ 100 Hours After Shutdown ◇ 10 Days After Shutdown △ 20 Days After Shutdown * 40 Days After Shutdown

Based on calculation RNP-MMECH-1590

SUPPLIED REFERENCE MATERIALS FOR RNP NRC REACTOR OPERATOR EXAMINATION

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Plant Curve 7.6	System Resistance Curve, Post Accident Containment Venting System
Plant Curve 7.16	Total Hydrogen Generation Rate from All Sources
Plant Curve 7.19	Loss of Residual Heat Removal Cooling Water Level Between 0" to -10" Below Vessel Flange
Plant Curve 7.20	Loss of Residual Heat Removal Cooling Water Level Between -10" to -36" Below Vessel Flange
Plant Curve 7.21	Loss of Residual Heat Removal Cooling Water Level Between -36" to -72" Below Vessel Flange

ATTACHMENT 1
REQUIRED FLOW RATE VERSUS TIME AFTER REACTOR TRIP
Page 1 of 1



ATTACHMENT 10.1

Page 1 of 1

REACTOR POWER ASCENSION INDICATOR LOG

AVG PWR % (1)	NI-35 amps	NI-36 amps	NI-41A %	NI-42A %	NI-43A %	NI-44A %	LOOP ΔT °F (1)	LOOP 1 ΔT °F	LOOP 2 ΔT °F	LOOP 3 ΔT °F	1 st STAGE PRESS psig (1)	PI-446 OR 447 psig (2)	NET MWe MAX (1)	NET MWe	CCP % PWR (3)	NR-45 (4)	SSO (1)
15-20							9-11.5				68-90		73				
25-30							14.5-17				113-135		153				
35-40							20-23				158-180		235				
45-50							26-28.5				207-230		316				
55-60							32-34.5				261-285		398				
65-70							37-40				320-345		480				
75-80							43-46				384-410		562				
85-90							49-51.5				449-475		643				
95-100							55-57.5				513-540		725				

- (1) Listed ranges and Net MWe maximums are predicted based on past plant performance. The maximum value of each indication is the maximum target value for each power increase. The SSO shall initial if plant management has determined that indications are acceptable to continue with the power escalation.
- (2) Use indicator that corresponds to the channel selected on the 1st STAGE PRESSURE selector switch.
- (3) Record Continuous Calorimetric Program % Power.
- (4) Verify NR-45 is selected to the highest reading channel.

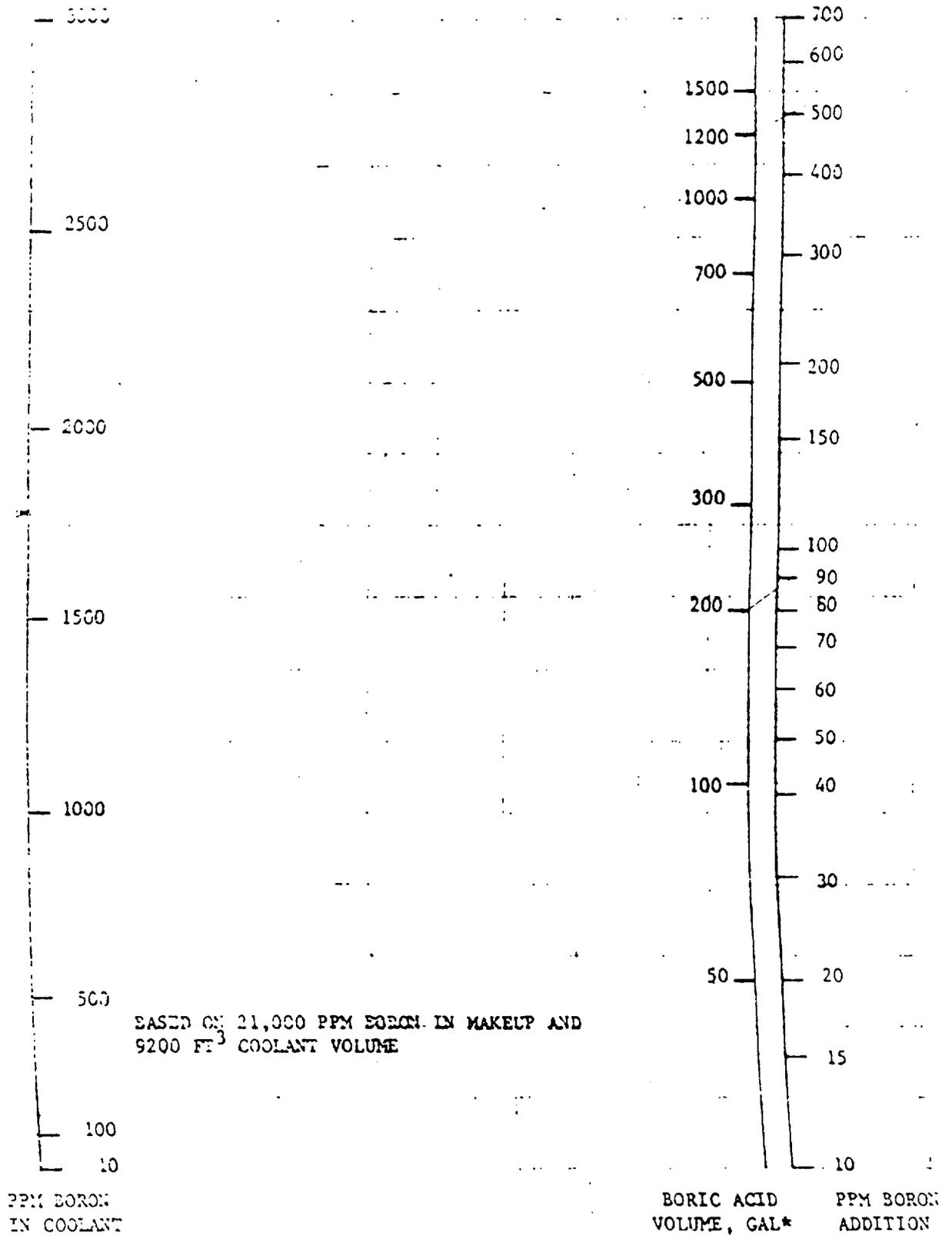


FIGURE S-3.1-3 BORON ADDITION - COOLANT HOT (-580°F)

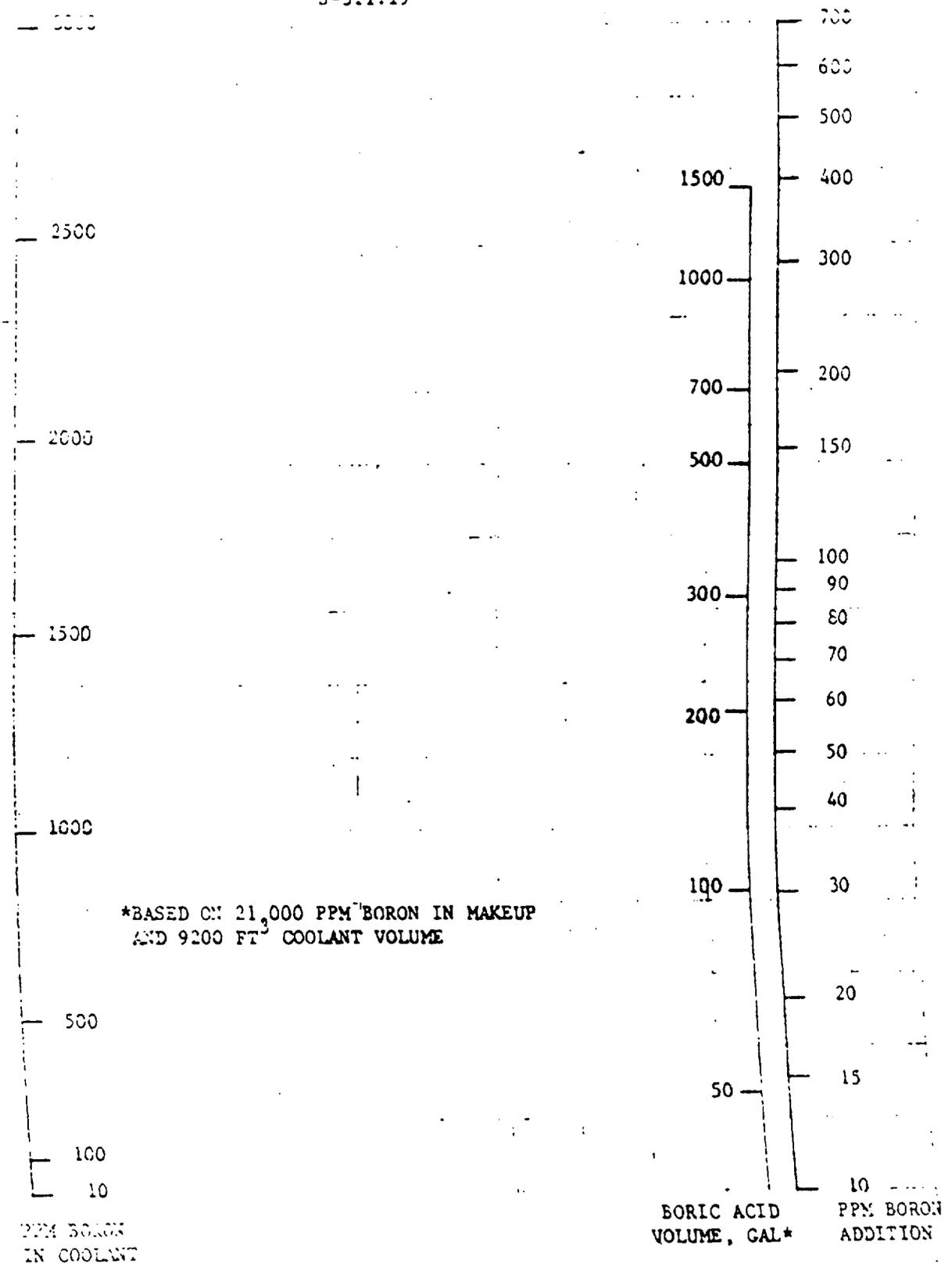


FIGURE S-3.1-4 BORON ADDITION - COOLANT COLD (-100°F)

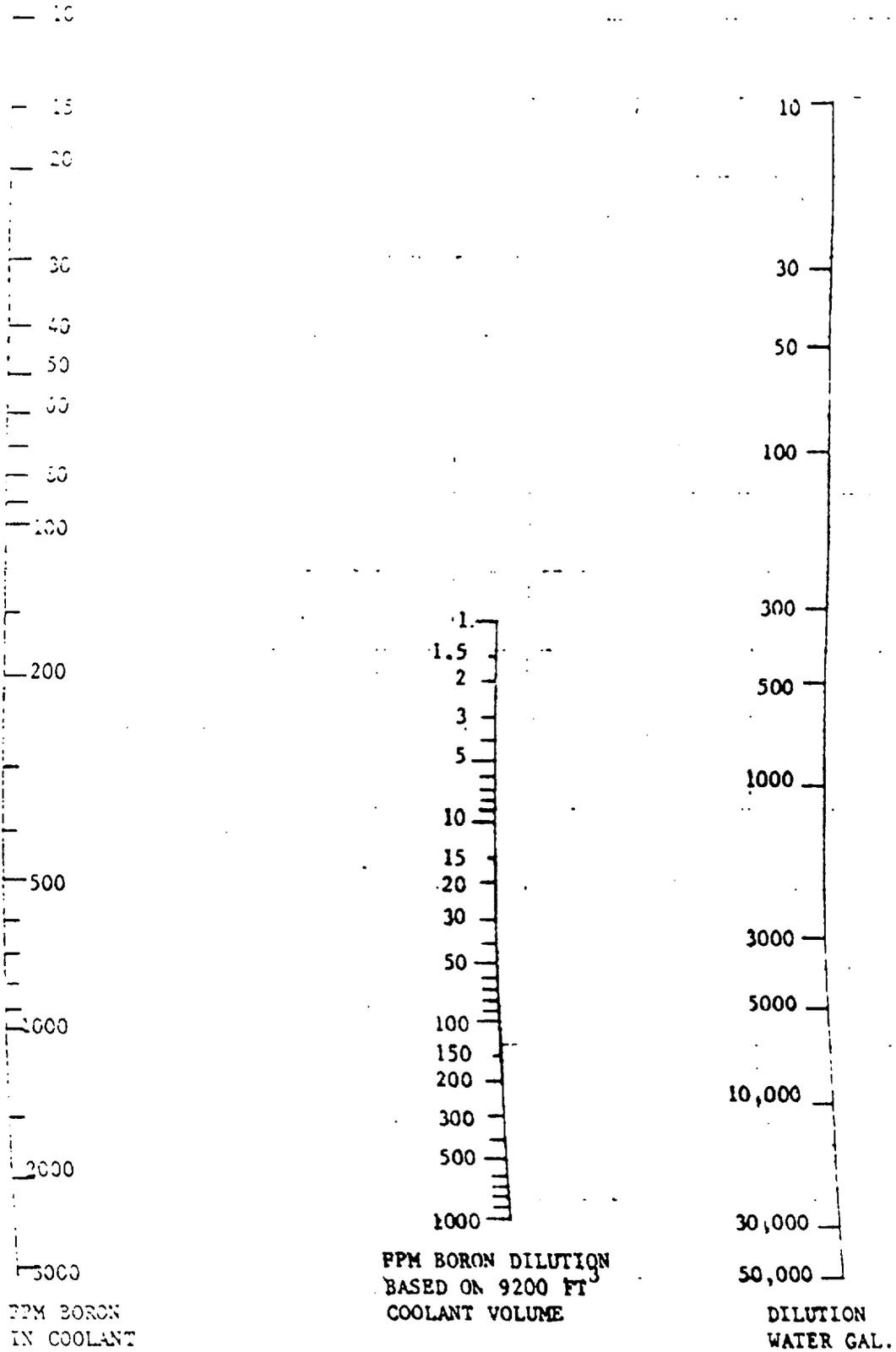


FIGURE S-3.1-7 DILUTION NOMOGRAPH - COOLANT HOT (-580°F)

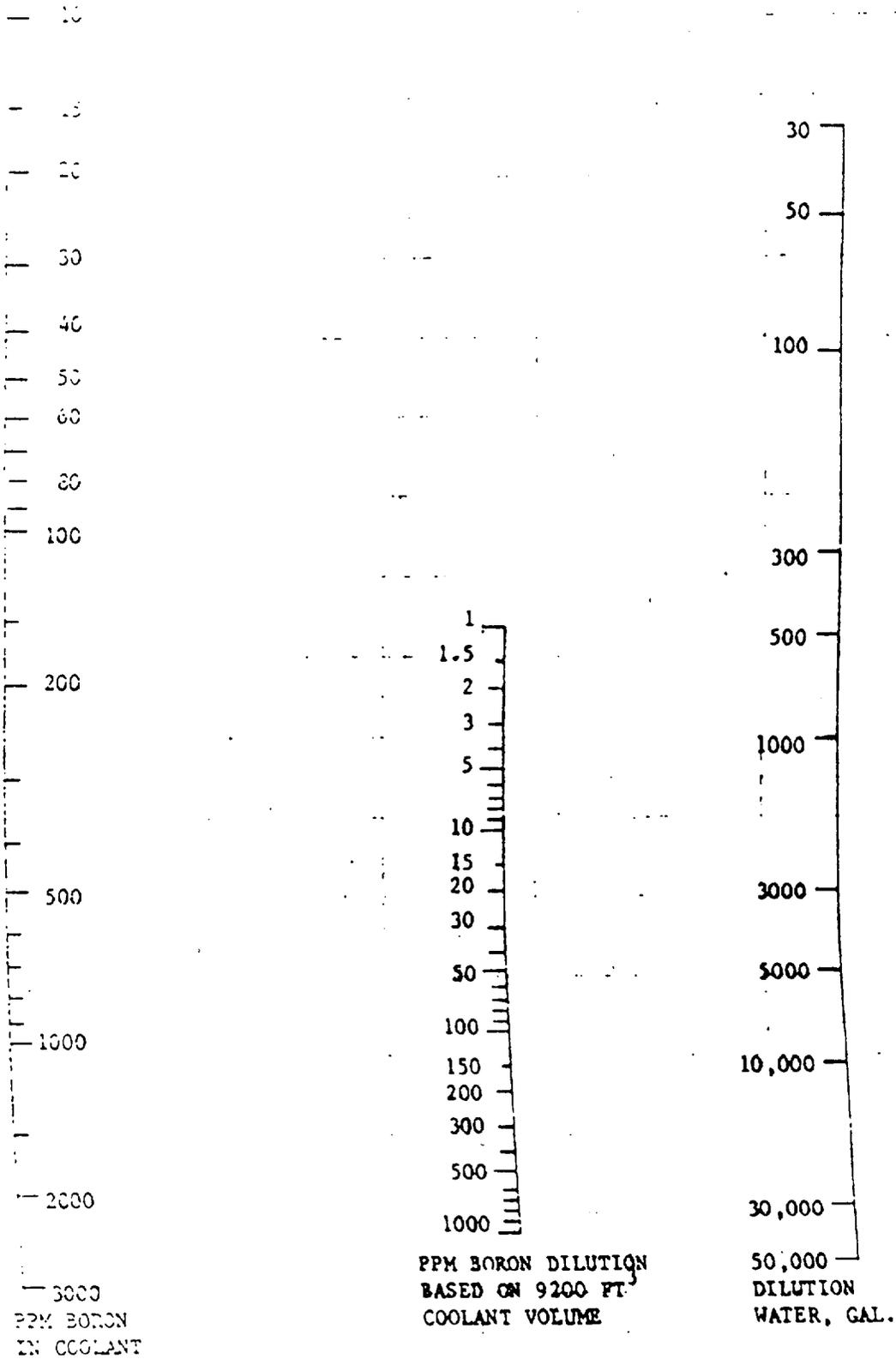
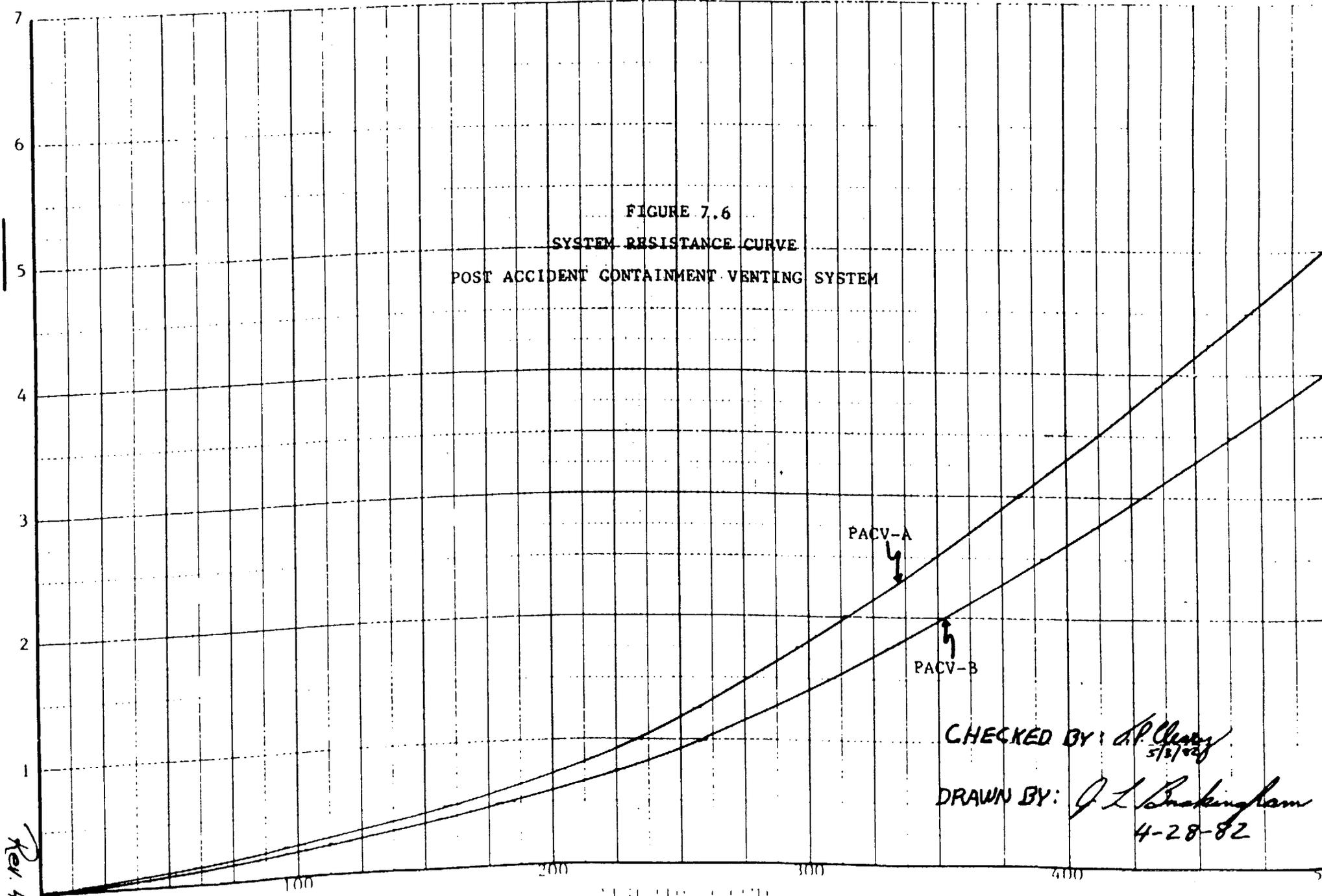
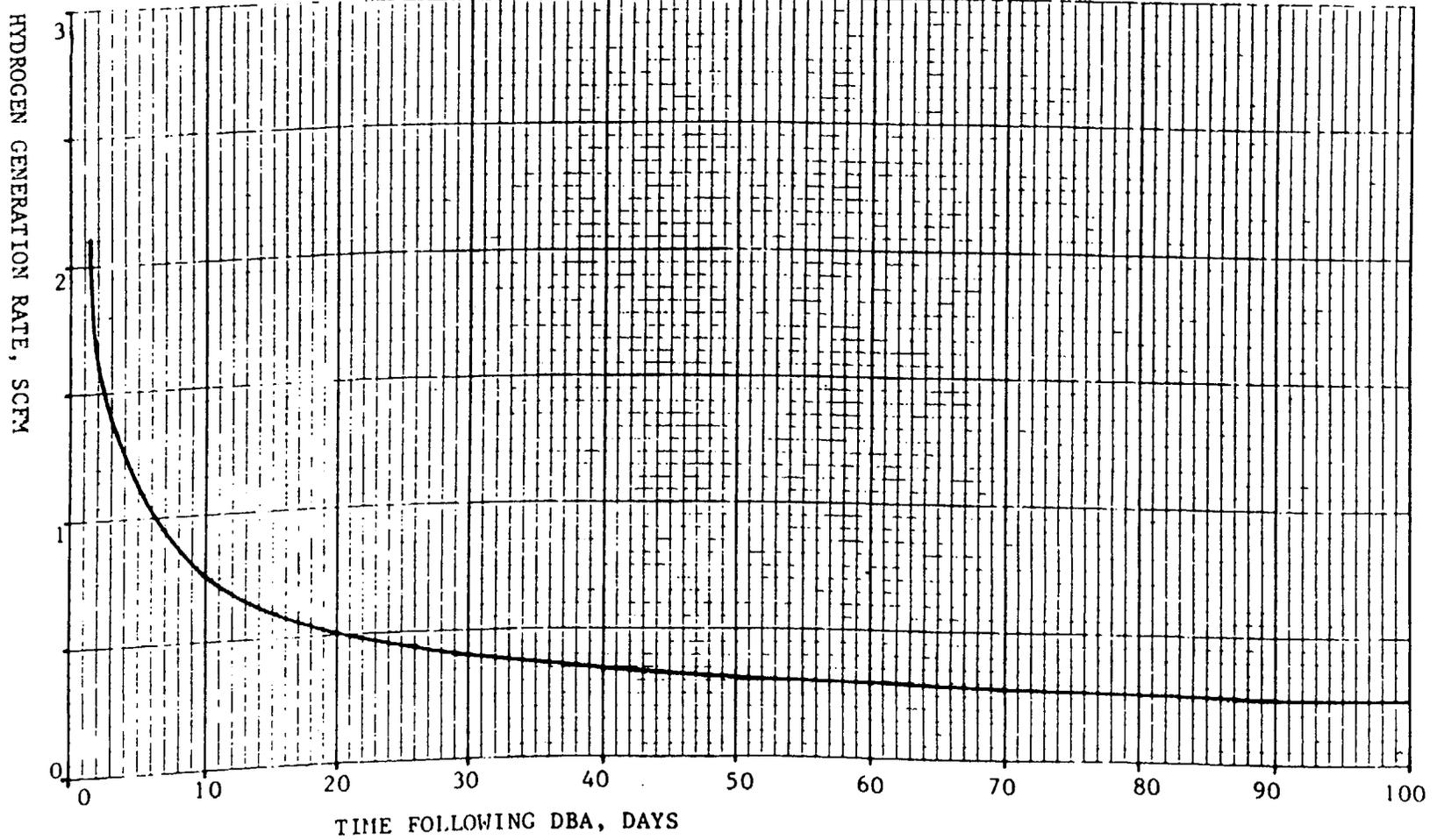


FIGURE S-3.1-8 DILUTION NOMOGRAPH - COOLANT COLD (-100°F)



CHECKED BY: *A.P. Cleary*
5/15/82

DRAWN BY: *J.L. Buckingham*
4-28-82

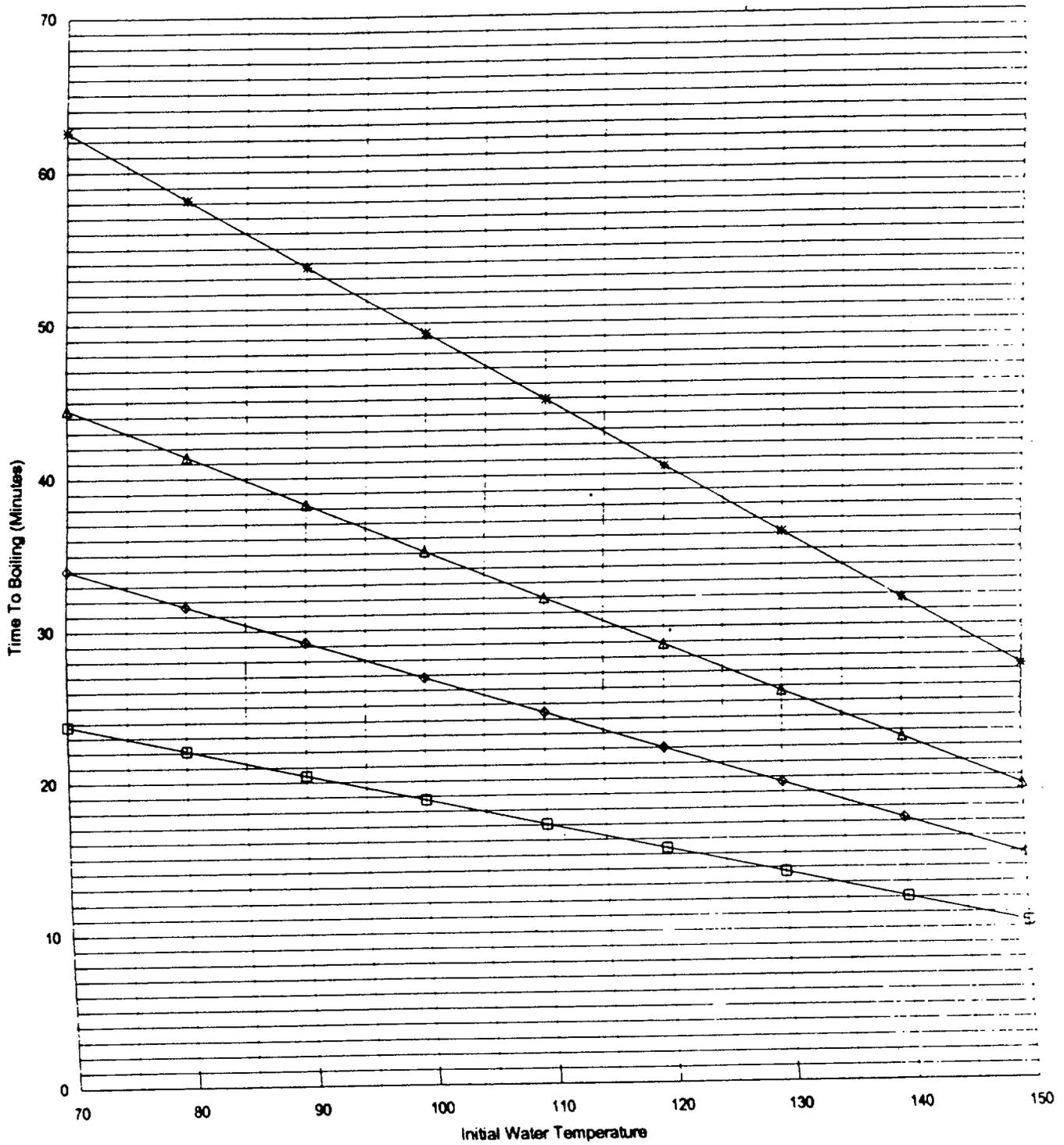


Drawn By: *James M. Nelson* 10-19-84
 Checked By: *Raymond Sheppard* 10/19/84

830 Day Full Power TID Core
 DBA Conditions
 Hydrogen Sources:
 - Zirconium-Water Reaction
 - Aluminum Corrosion
 - Core Solution Radiolysis
 - Sump Solution Radiolysis

CURVE 7.19 TOTAL HYDROGEN GENERATION RATE FROM ALL SOURCES.

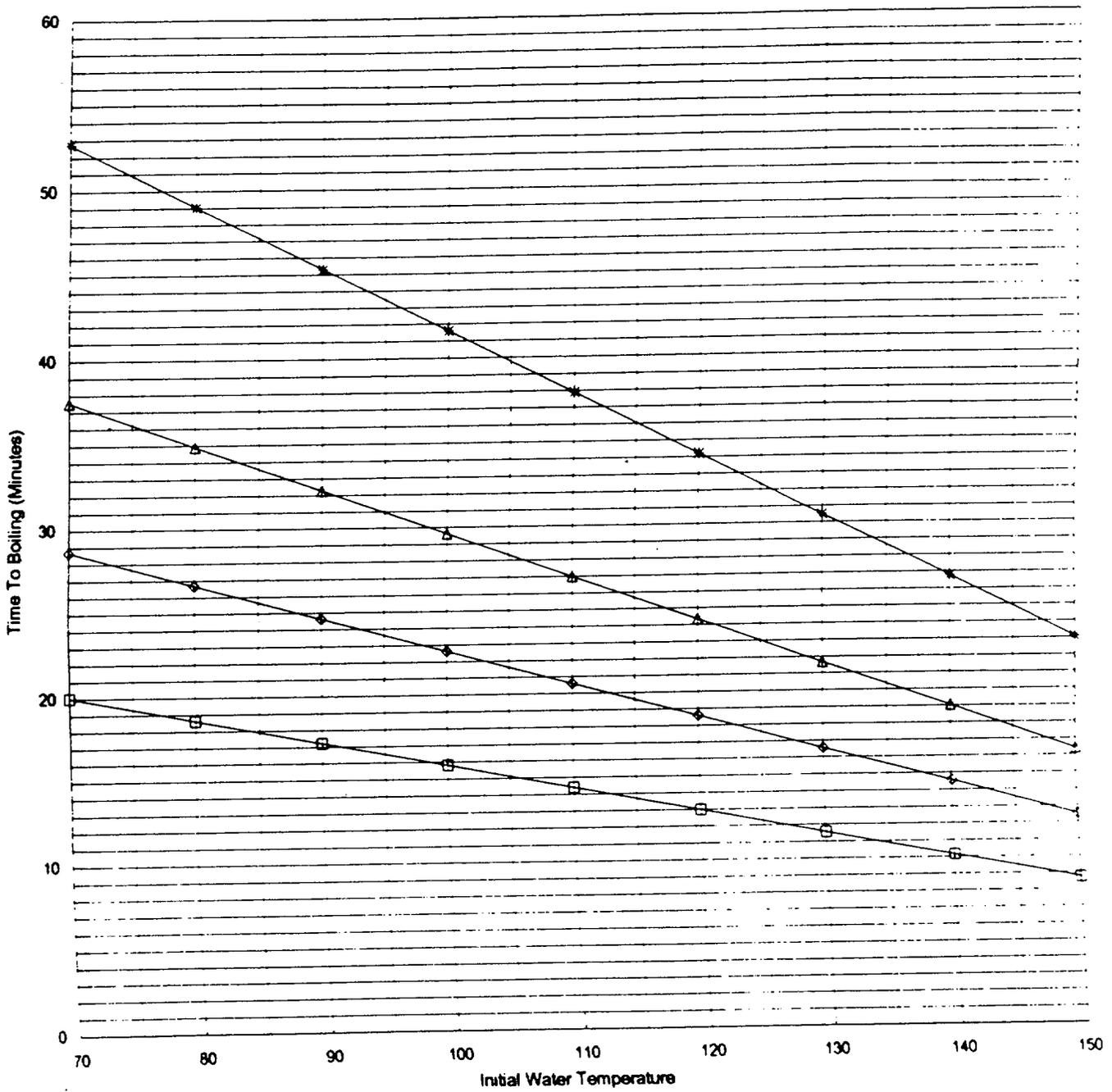
Curve 7.19 - Loss of Residual Heat Removal Cooling
 Water Level Between 0" to -10" Below Vessel Flange



□ 100 Hours After Shutdown ◇ 10 Days After Shutdown △ 20 Days After Shutdown * 40 Days After Shutdown

Based on calculation RNP-M/MECH-1590

**Curve 7.20 - Loss of Residual Heat Removal Cooling
Water Level Between -10" to -36" Below Vessel Flange**

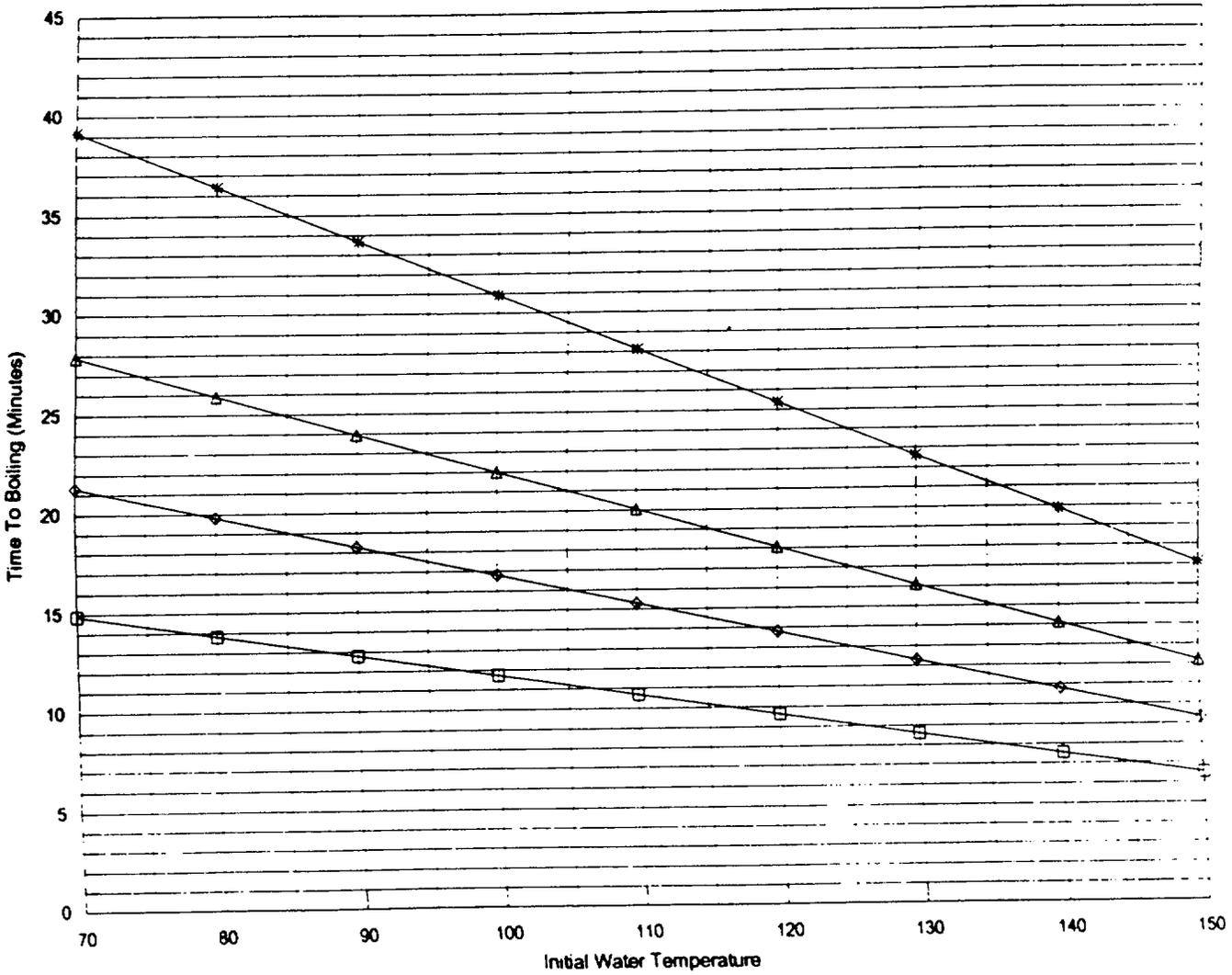


☐ 100 Hours After Shutdown
◊ 10 Days After Shutdown
△ 20 Days After Shutdown
* 40 Days After Shutdown

Based on calculation RNP-MMECH-1590

Rev. 153

**Curve 7.21 - Loss of Residual Heat Removal Cooling
Water Level Between -36" to -72" Below Vessel Flange**



☐ 100 Hours After Shutdown
⊖ 10 Days After Shutdown
△ 20 Days After Shutdown
* 40 Days After Shutdown

Based on calculation RNP-MMECH-1590

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

Applicant Information

Name:	ANSWER KEY	Region:	II
Date:		Facility/Unit:	H.B. Robinson
License Level:	RO	Reactor Type:	Westinghouse
Start Time:		Finish Time:	

Instructions

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

Applicant Certification

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

Applicant's Signature

Results

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

Question: 1

Given the following conditions:

- The unit is operating at 100% power.
- Annunciators APP-008-E7, S. SW HDR STRAINER PIT HI LEVEL, and APP-008-F7, SOUTH SW HDR LO PRESS, come in simultaneously.

Which ONE (1) of the following actions is required as an immediate action?

- a. Stop 'A' and 'B' service water pumps
- b. Close SW supply to south header valve V6-12A
- c. Close SW supply to north header valve V6-12D
- d. Close SW cross-connect valves V6-12B and V6-12C

Answer:

- d. Close SW cross-connect valves V6-12B and V6-12C

Question: 2

Four Operators worked the following schedule at the RTGB position over the past six days:

HOURS WORKED (Shift turnover time not included. Do **NOT** assume any hours worked before or after this period.)

OPERATOR	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6
1	10	14	off	12	12	12
2	14	12	14	10	off	11
3	off	off	off	13	11	14
4	11	13	14	off	11	12

Which ONE (1) of the operators would be permitted to work a 12 hour shift on Day 7 **WITHOUT** requiring permission to exceed normal overtime limits?

- a. 1
- b. 2
- c. 3
- d. 4

Answer:

- a. 1

Question: 3

Given the following conditions:

- The unit was operating at 100% power when a pipe break occurred inside containment.
- Containment pressure is rising.
- RCS temperature is lowering.

Which ONE (1) of the following differentiates between a non-isolable main feed line break inside containment and a non-isolable main steam line break inside the containment of the same size?

- a. RCS heat removal would be greater for the steam line break
- b. Containment pressure would be greater for the feed line break
- c. Containment sump level would be greater for the steam line break
- d. RCS depressurization would be greater for the feed line break

Answer:

- a. RCS heat removal would be greater for the steam line break

Question: 4

Given the following plant conditions:

- The RCP Seal Injection filter has just been changed out.
- HP placed the filter in a lead container.
- Prior to placement of the container, R-4, Charging Pump Room Monitor, read 2 mr/hr.
- The container is on a pallet outside of the Charging Pump Room.
- The activity source in the filter is primarily Cobalt-60.
- The container is 5 feet away from R-4 detector, and R-4 reads 10 mr/hr.

If the container is moved to 10 feet away from the R-4 detector, R-4 will indicate ...

- a. 4.0 mR/hr.
- b. 4.5 mR/hr.
- c. 6.0 mR/hr.
- d. 7.0 mR/hr.

Answer:

- a. 4.0 mR/hr.

ANSWER KEY

Question: 5

Given the following conditions:

- At 0110, a Reactor Trip and Safety Injection occurred following an accident.
- At 0112, an Alert was declared due to RCS leakage.
- At 0116, a Site Area Emergency was declared.
- At 0120, a General Emergency was declared.

Which ONE (1) of the following identifies the **LATEST** time that the **INITIAL** notification to State/County officials and the NRC must be completed?

	STATE / COUNTY	NRC
a.	0125	0210
b.	0127	0212
c.	0131	0216
d.	0135	0220

Answer:

b.	0127	0212
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Question: 6

Given the following plant conditions:

- An emergency boration is in progress through MOV-350, BA to Charging Pmp Suct, per FRP-S.1, "Response to Nuclear Power Generation / ATWS."
- FI-110, Boric Acid Bypass Flow, indicates 33 gpm.
- FI-122, Charging Line Flow, indicates 75 gpm.
- VCT level is 23 inches.
- VCT Makeup is aligned for automatic operation.
- Normal letdown has been isolated.

VCT level will ...

- a. remain essentially unaffected.
- b. decrease to the auto makeup setpoint and stabilize.
- c. decrease to the low-level setpoint and cause the charging pump suction to switch to the RWST.
- d. decrease to the auto makeup setpoint and cycle between the makeup start and stop setpoints.

Answer:

- d. decrease to the auto makeup setpoint and cycle between the makeup start and stop setpoints.

Question: 7

Given the following conditions:

- The unit is operating at 100% power.
- APP-003-C3, PRT HI PRESS and APP-003-D3, PRT HI/LO LVL have alarmed.
- PRT level and pressure are slowly increasing, but there is **NO** appreciable increase in PRT temperature.
- **NO** other annunciators are in alarm.

The PRT response is likely being caused by leakage past ...

- a. PCV-455C, PZR PORV.
- b. RC-551A, PZR Safety.
- c. CVC-203A, High Pressure Letdown Line Relief.
- d. CVC-382, Seal Water Return Line Relief.

Answer:

- d. CVC-382, Seal Water Return Line Relief.

Question: 8

Which ONE (1) of the following conditions would result in a reactor trip?

- a. PT-447, First Stage Turbine Pressure, fails low with power level at 22%
- b. NI-43, PR Channel N43, fails low with power level at 49%
- c. PT-446, First Stage Turbine Pressure, fails high with power level at 1×10^{-8} amps
- d. NI-44, PR Channel N44, fails high with power level at 1×10^{-8} amps

Answer:

- c. PT-446, First Stage Turbine Pressure, fails high with power level at 1×10^{-8} amps

ANSWER KEY

Question: 9

Which ONE (1) of the following describes the reason for RCP restart in FRP-P.1, "Response To Imminent Pressurized Thermal Shock", if the SI termination criteria **CANNOT** be satisfied?

- a. Restores PZR spray to allow RCS depressurization in subsequent steps
- b. Equalizes S/G pressures to allow simultaneous cooldown of all three loops in subsequent steps
- c. Mixes Safety Injection water and RCS water to raise the fluid temperature entering the Reactor Vessel downcomer
- d. Transfer core cooling to forced flow allowing the operators to terminate Safety Injection when the criteria are **NOT** satisfied

Answer:

- c. Mixes Safety Injection water and RCS water to raise the fluid temperature entering the Reactor Vessel downcomer

Question: 10

Given the following conditions:

- The plant has experienced a reactor trip.
- The CRSS directs the RO to manually initiate Safety Injection.
- The RO inadvertently depresses **BOTH** Containment Spray pushbuttons.

In addition to Containment Spray, which ONE (1) of the following are **ALL** expected to automatically occur?

- a.
 - Phase A
 - Phase B
- b.
 - Phase A
 - Containment Ventilation Isolation
- c.
 - Phase B
 - Containment Ventilation Isolation
- d.
 - Phase A
 - Phase B
 - Containment Ventilation Isolation

Answer:

- c.
 - Phase B
 - Containment Ventilation Isolation

Question: 11

Given the following conditions:

- A power reduction is in progress from 22% due to degrading condenser vacuum.
- The unit is currently at 8% power.
- REACTOR TRIP FROM TURB BLOCK P-7 permissive is illuminated.
- Condenser backpressure is 5.7 inches Hg Absolute and degrading slowly.
- **NO** cause has yet been identified.

Which ONE (1) of the following actions should be taken in accordance with AOP-012, "Partial Loss of Condenser Vacuum or Circulating Water Pump Trip"?

- a. Trip the reactor and go to PATH-1
- b. Trip the turbine and go to AOP-007, "Turbine Trip Without Reactor Trip Below P-7"
- c. Trip the turbine and go to GP-006, "Normal Plant Shutdown From Power Operations to Hot Shutdown"
- d. Begin a plant shutdown in accordance with GP-006, "Normal Plant Shutdown From Power Operations to Hot Shutdown"

Answer:

- d. Begin a plant shutdown in accordance with GP-006, "Normal Plant Shutdown From Power Operations to Hot Shutdown"

Question: 12

Given the following conditions:

- The plant is shutdown following a reactor trip.
- RCPs are all secured.
- The Inadequate Core Cooling Monitor is **NOT** capable of providing subcooling margin.
- Primary Plant parameters indicate the following:

INSTRUMENT	PARAMETER	VALUE
PT-455	PZR Press	1485 psig
PT-456	PZR Press	1465 psig
PT-457	PZR Press	1515 psig
PT-402	RCS Press	1500 psig
PT-405	RCS Press	1525 psig
TI-453	PZR Temp (Surge Line)	524 °F
TI-454	PZR Temp (Vapor)	630 °F
TI-413	RCS Hot Leg WR Temp	538 °F
TI-423	RCS Hot Leg WR Temp	536 °F
TI-433	RCS Hot Leg WR Temp	534 °F
--	Highest Five (5) CETs	548 °F
		544 °F
		542 °F
		542 °F
		541 °F

The margin to saturation is ...

- a. 46 °F.
- b. 51 °F.
- c. 56 °F.
- d. 58 °F.

Answer:

- a. 46 °F.

Question: 13

Given the following conditions:

- A 25 year old male started working for the Operations department at H.B. Robinson on March 3rd of this year.
- He previously worked this year at Shearon Harris as part of the Maintenance department.
- His exposure for this year at the Harris plant was 1200 mRem.
- He has received **NO** CP&L management exposure extensions and **NO** emergencies exist.

Which ONE (1) of the following is the **TOTAL ADDITIONAL** effective dose equivalent that the individual can receive **WITHOUT** management concurrence at Robinson this year?

- a. 300 mRem
- b. 800 mRem
- c. 2000 mRem
- d. 2800 mRem

Answer:

- b. 800 mRem

ANSWER KEY

Question: 14

Given the following conditions:

- A clearance is in effect with two (2) Maintenance department clearance holders (Clearance Holders A and B).
- Clearance Holder A has requested a temporary lift of a portion of the clearance to test equipment for one of the tasks.
- Clearance Holder B is **NOT** available on site and is **NOT** expected back for two (2) days.

Which ONE (1) of the following describes the process to temporarily lift the required portion of the clearance?

- Obtain permission of Clearance Holder A and the Control Room Shift Supervisor, remove the tags as necessary, and reinstall the tags when complete
- Obtain permission of Clearance Holder A and Clearance Holder B's supervisor, remove the tags as necessary, and reinstall the tags when complete
- Obtain permission of Clearance Holder A and the Control Room Shift Supervisor, remove and cancel the entire clearance, and reissue a new clearance with different boundaries
- Obtain permission of Clearance Holder A and Clearance Holder B's supervisor, remove and cancel the entire clearance, and reissue a new clearance with the same boundaries when complete

Answer:

- Obtain permission of Clearance Holder A and Clearance Holder B's supervisor, remove the tags as necessary, and reinstall the tags when complete

Question: 15

Given the following conditions:

- Fuel is in the vessel.
- RCS temperature is 120°F.
- It is 10 days after the shutdown.
- RCS Level is 8" below the vessel flange.
- RHR cooling is lost.

Using the supplied references, which ONE (1) of the following identifies how much time remains before boiling begins occurring in the RCS?

- a. 15.5 minutes
- b. 22 minutes
- c. 29 minutes
- d. 40.5 minutes

Answer:

- b. 22 minutes

ANSWER
KEY

Question: 16

Which ONE (1) of the following conditions would be **REQUIRED** to be entered by the Reactor Operator in the Control Operator's Log?

- a. Test data for an unsatisfactory Operations Surveillance Test
- b. Entry into a Technical Specification LCO Action Statement
- c. Name of on-shift person relieving an Auxiliary Operator who went home sick
- d. Change in Secondary Chemistry Action Level

Answer:

- d. Change in Secondary Chemistry Action Level

ANSWER KEY

Question: 17

Given the following conditions:

- RCS temperature is 362 °F.
- RCS pressure is 900 psig.
- RCP pump bearing temperatures are increasing.
- RCP seal injection and seal leakoff flows are:

RCP	SEAL INJECTION	SEAL LEAKOFF
'A'	5.8 gpm	1.2 gpm
'B'	6.7 gpm	0.9 gpm
'C'	6.5 gpm	1.3 gpm

Which ONE (1) of the following actions must be taken to permit opening CVC-307, PRI SEAL BYP ISO?

- Increase RCS pressure more than 100 psig
- Lower RCS temperature more than 12 °F
- Increase RCP 'A' seal injection more than 0.2 gpm
- Increase RCP 'B' seal leakoff more than 0.1 gpm

Answer:

- Increase RCP 'A' seal injection more than 0.2 gpm

Question: 18

Given the following conditions:

- A Reactor Trip and SI has occurred from an unisolable main steam line break on SG 'A'.
- Diagnostic actions are in progress.
- SG 'A' has been isolated per EPP-11, "Faulted SG Isolation", and is dry.
- RCS temperature has been stabilized by dumping steam from the intact SGs following the dryout of the SG 'A'.

Which ONE (1) of the following would be the **FIRST** indication to the operators that a 250 gpm tube leak has subsequently developed in SG 'A'?

- a. R-31A, Main Steamline Monitor, alarming
- b. SG 'A' pressure equalizing with RCS pressure
- c. Pressurizer level decreasing
- d. SG 'A' level increasing

Answer:

- c. Pressurizer level decreasing

Question: 19

While performing OST-012, "Power Range Calorimetric During Power Operation (Manual) Daily," which ONE (1) of the following will result in **ACTUAL** power being **HIGHER THAN INDICATED** power?

- a. SG Blowdown is secured prior to starting the data collection
- b. MDAFW Pump 'A' is operating with flow being delivered to a SG
- c. Indicated feedwater temperature used is lower than actual
- d. Indicated feedwater flow used is higher than actual

Answer:

- b. MDAFW Pump 'A' is operating with flow being delivered to a SG

ANSWER KEY

Question: 20

Given the following conditions:

- Refueling Operations are schedule to commence.
- RCS Boron Concentration is currently 1825 ppm.

Which ONE (1) of the following describes the required RCS boron concentration for refueling operations?

- Boron concentration is adequate
- Boron concentration must be increased by a minimum of 75 ppm
- Boron concentration must be increased by a minimum of 125 ppm
- Boron concentration must be increased by a minimum of 175 ppm

Answer:

- Boron concentration must be increased by a minimum of 125 ppm

Question: 21

Given the following conditions:

- A reactor shutdown is in progress.
- APP-005-B2, N-35 LOSS OF COMP VOLT, is received.
- N-35 indicates 6.0×10^{-10} amps.
- N-36 indicates 7.0×10^{-11} amps.
- N-51 indicates 80 counts.
- N-52 indicates 90 counts.

Which ONE (1) of the following describes the **MINIMUM** action(s) required to obtain Source Range N-31 and N-32 indication?

- Push **ONLY** the "Train A Source Range Logic Trip Defeat" button
- Push **ONLY** the "Train A Permissive P-6 Defeat" button
- Push **BOTH** the "Train A Source Range Logic Trip Defeat" AND the "Train B Source Range Logic Trip Defeat" buttons
- Push **BOTH** the "Train A Permissive P-6 Defeat" AND the "Train B Permissive P-6 Defeat" buttons

Answer:

- Push **BOTH** the "Train A Permissive P-6 Defeat" AND the "Train B Permissive P-6 Defeat" buttons

Question: 22

Given the following conditions:

- The unit is operating at 100% power.
- **NO** scheduled releases are in progress.
- A small leak develops from the bottom of Waste Condensate Tank "A".
- All ventilation systems are in a normal configuration.

An indication that would alert the operators of the accidental liquid release in progress is an increase in the level of monitor ...

- a. R-3, PASS Panel Area Monitor.
- b. R-4, Charging Pump Room Area Monitor.
- c. R-9, Letdown Line Area Monitor.
- d. R-14C, Plant Effluent Noble Gas, Low Range Monitor.

Answer:

- d. R-14C, Plant Effluent Noble Gas, Low Range Monitor.

Question: 23

Given the following conditions:

- The Control Room has filled with dense smoke from a fire on Unit 1.
- The reactor has been tripped manually by operators.
- The Control Room has been evacuated due to the dense smoke.

Which ONE (1) of the following identifies the procedure(s) that will be **INITIALLY** used to stabilize the plant?

- a. EOP Path-1 and EPP-004, Reactor Trip Reponse
- b. DSP-002, Hot Shutdown Using the Dedicated/Alternate Shutdown System
- c. AOP-004, Control Room Inaccessibility
- d. GP-006, Normal Plant Shutdown from Power Operation to Hot Shutdown

Answer:

- c. AOP-004, Control Room Inaccessibility

Question: 24

Given the following conditions:

- The unit is operating at 40% power.
- OST-011, "Rod Cluster Control Exercise & Rod Position Indication Monthly Interval," is being performed.
- Annunciator APP-005-E2, ROD CONT SYSTEM URGENT FAILURE, alarms just as Control Bank 'C' rods are being withdrawn.

Which ONE (1) of the following describes this condition and / or the actions that should be taken?

- a.
 - This is an expected alarm.
 - Continue withdrawing Control Bank 'C' rods.
- b.
 - This makes more than one rod inoperable.
 - Trip the reactor and go to PATH-1.
- c.
 - Place the ROD BANK SELECTOR switch in Manual.
 - Restore Tavg to Tref by raising turbine load.
- d.
 - Place the ROD BANK SELECTOR switch in Manual.
 - Restore Tavg to Tref by dilution.

Answer:

- d.
 - Place the ROD BANK SELECTOR switch in Manual.
 - Restore Tavg to Tref by dilution.

Question: 25

Given the following conditions:

- The unit was operating at 100% power.
- A turbine runback is in progress.
- Power is currently at 93% and lowering as the turbine runback occurs.
- APP-005-D5, OT Δ T/OP Δ T TURBINE RUNBACK ROD STOP, is illuminated.
- APP-004-E3, OVERTEMP Δ T TRIP, is illuminated.
- All loop Δ T's indicate less than the OT Δ T and OP Δ T setpoints.
- All OT Δ T and OP Δ T bistables are extinguished.

Which ONE (1) of the following describes the actions to be taken?

- a. Verify the turbine runback stops when power lowers to 90%
- b. Verify the turbine runback stops when power lowers to 70%
- c. Place the turbine in MANUAL due to a runback circuitry failure
- d. Trip the reactor and go to PATH-1

Answer:

- d. Trip the reactor and go to PATH-1

Question: 26

Given the following conditions:

- A valid alarm has been acknowledged for R-1, Control Room Area Monitor.
- The CRSS has entered AOP-005, Radiation Monitoring System.
- Step 3 of Attachment 1 has the operator stop the HVS-1 Auxiliary Building Supply Fan by opening the supply breaker on MCC-5.

Which ONE (1) of the following is the basis for this step?

- Ensures that any air-flow will be from the Control Room to the Auxiliary Building
- Ensures that the air-borne contaminants in the Control Room will be exhausted to the Auxiliary Building for cleanup
- Ensures that personnel in the Auxiliary Building will **NOT** be exposed to high airborne activity for a prolonged period
- Ensures that personnel in the Control Room will **NOT** be exposed to high radiation condition for a prolonged period of time

Answer:

- Ensures that any air-flow will be from the Control Room to the Auxiliary Building

Question: 27

Given the following conditions:

- A large break (DBA) LOCA has occurred.
- EPP-15, Loss of Emergency Coolant Recirculation, is being implemented.
- One SI Pump and one RHR pump are running.
- Time after trip and SI is 20 minutes.
- SI **CANNOT** be terminated due to insufficient subcooling.

Using the supplied references, which ONE (1) of the following states the **MINIMUM** SI flow for these conditions?

- a. One RHR pump injecting, with flow manually throttled to approximately 260 gpm
- b. One RHR pump injecting, with flow manually throttled to approximately 130 gpm
- c. One SI pump injecting, with flow manually throttled to approximately 260 gpm
- d. One SI pump injecting, with flow manually throttled to approximately 130 gpm

Answer:

- c. One SI pump injecting, with flow manually throttled to approximately 260 gpm

Question: 28

Given the following conditions:

- The unit is operating at 24% power during a plant startup.
- Rods are being withdrawn to raise RCS temperature.
- When the IN-HOLD-OUT lever is released, rods continue to step outward.

Which ONE (1) of the following actions should be taken?

- Place the ROD BANK SELECTOR switch in Automatic and verify rod motion stops
- Place the ROD BANK SELECTOR switch in Manual and verify rod motion stops
- Manually trip the reactor in anticipation of an Intermediate Range High Flux Trip and go to PATH-1
- Manually trip the reactor in anticipation of a Power Range High Flux (Low Setpoint) Trip and go to PATH-1

Answer:

- Place the ROD BANK SELECTOR switch in Automatic and verify rod motion stops

Question: 29

A Containment Purge is in progress.

Which ONE (1) of the following will automatically terminate the purge on a high radiation signal?

- a. R-2, Containment Area
- b. R-11, Containment Air and Plant Vent Particulate
- c. R-14A, Plant Effluent Particulate
- d. R-16, Containment HVH Cooling Water Radioactive Liquid

Answer:

- b. R-11, Containment Air and Plant Vent Particulate

ANSWER
KEY

Question: 30

Given the following conditions:

- Reactor power is 35%.
- All control systems are in automatic.
- Pressurizer level transmitter LT-459 is selected for control.
- A small leak develops across the differential pressure bellows for LT-459, resulting in pressure equalizing across the bellows.

Assuming **NO** operator actions, which ONE (1) of the following describes the instrumentation and plant response to this leak?

	LI-459 PZR LVL	LI-460 PZR LVL
a.	Increases	Increases
b.	Increases	Decreases
c.	Decreases	Increases
d.	Decreases	Decreases

Answer:

b.	Increases	Decreases
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Question: 31

Given the following conditions:

- The plant is being shutdown because of high vibrations on Condensate Pump "A".
- The plant is currently at 65% power.
- Two Main Feedwater Pumps, two Condensate Pumps and a Heater Drain Tank Pump are in service.
- Condensate Pump "A" trips.

Which ONE (1) of the following actions should be taken?

- Attempt to stabilize the plant at the current power level
- Attempt to lower turbine load at a rate between 1% minute and 5% per minute and stabilize the plant at or below 60% power
- Attempt to lower turbine load at a rate between 1% minute and 5% per minute and stabilize the plant at or below 50% power
- Trip the reactor and go to PATH-1

Answer:

- Attempt to lower turbine load at a rate between 1% minute and 5% per minute and stabilize the plant at or below 50% power

Question: 32

Given the following excerpt from OP-922, "Post Accident Containment, Hydrogen Reduction/Venting System", and the following conditions:

- A design basis LOCA occurred 90 days ago.
- Hydrogen Concentration (Hydrogen Monitor Reading) is 2.5%.
- The H₂ Recombiner System is unavailable for Containment Hydrogen Reduction.

From OP-922:

5.2.8 Determine the following data:

1. H₂ generation rate from Curve Book, Curve 7.16, Total Hydrogen Generation Rate From All Sources.

- Time following DBA _____ Days
- H₂ Generation Rate _____ SCFM (Curve 7.16)

2. H₂ Concentration from Containment Hydrogen Monitor located in the Control Room or from analysis of Containment samples:

- H₂ Concentration _____ %

5.2.9 Calculate the required exhaust flow:

1. $Q_e = 2400 \frac{G}{C}$

- Q_e is exhaust flow in SCFM
- G is H₂ Generation rate
- C is H₂ Concentration

Required exhaust flow _____ SCFM

NOTE: The Containment Air Exhaust Line (PACV "B") should be used in preference to the Pressure Relief Line (PACV "A").

Using the supplied references, in order to provide required exhaust flow through preferred exhaust path (Containment Air Exhaust), Containment pressure should be raised to approximately ...

- a. 0.9 psig.
- b. 1.1 psig.
- c. 3.7 psig.
- d. 4.6 psig.

Answer:

- a. 0.9 psig.

Question: 33

Which ONE (1) of the following Fire Brigade qualified personnel would normally serve as the Fire Brigade Team Leader in the event of a fire in the Auxiliary Building of Unit 2?

- a. Fire Protection Auxiliary Operator
- b. WCC Senior Reactor Operator
- c. Unit 1 Superintendent Shift Operations
- d. Environmental & Radiation Control Supervisor

Answer:

- b. WCC Senior Reactor Operator

ANSWER
KEY

Question: 34

Given the following conditions:

- The unit is operating at 100% power.
- APP-001-F7, INST AIR HDR LO PRESS, has illuminated.
- AOP-017, "Loss of Instrument Air", is being implemented.
- Instrument air pressure currently reads 79 psig and slowly decreasing.
- The Station Air Compressor is running.

SA to IA cross connect ...

- a. valve, SA-5 will automatically OPEN to pass SA through the IA aftercoolers and separators to remove contaminants prior to passing into the IA header.
- b. bypass filter isolation valves, SA-220 & SA-221, will automatically OPEN to pass SA through a filter to remove contaminants prior to passing into the IA header.
- c. valve, SA-5 will be manually OPENED to pass SA through the IA aftercoolers and separators to remove contaminants prior to passing into the IA header.
- d. bypass filter isolation valves, SA-220 & SA-221, will be manually OPENED to pass SA through a filter to remove contaminants prior to passing into the IA header.

Answer:

- d. bypass filter isolation valves, SA-220 & SA-221, will be manually OPENED to pass SA through a filter to remove contaminants prior to passing into the IA header.

Question: 35

Given the following conditions:

- The unit was operating at 100% with bank D rods at 218 steps when a failure of 'B' inverter occurred.
- **NO** reactor trip occurred.
- Rods **CANNOT** be withdrawn.

Which ONE (1) of the following is preventing rod motion?

- a. Power range flux rod stop
- b. Intermediate range flux rod stop
- c. Overtemperature ΔT rod stop
- d. Overpower ΔT rod stop

Answer:

- a. Power range flux rod stop

Question: 36

Given the following conditions:

- A reactor trip and SI have occurred.
- Containment pressure is 2 psig.
- All RCPs have been secured.
- EPP-007, "SI Termination," is being implemented.
- RVLIS Upper Range is 84%.
- Pressurizer Level is 56%.
- RCS Subcooling is 68 °F.
- SI, Phase A, and Phase B have been reset.
- OP-101 conditions have been met for starting an RCP.

Which ONE (1) of the following describes the conditions for starting an RCP?

- a. All conditions have been met and an RCP may be started
- b. Charging flow must be increased to raise RVLIS Upper Range at least an additional 6% before an RCP can be started
- c. Charging flow must be increased to raise Pressurizer Level at least an additional 19% before an RCP can be started
- d. Pressure must be increased and / or the RCS must be cooled down to raise RCS Subcooling at least an additional 6 °F before an RCP can be started

Answer:

- c. Charging flow must be increased to raise Pressurizer Level at least an additional 19% before an RCP can be started

Question: 37

Given the following conditions:

- Unit 2 is in mid loop operation to repair a S/G primary manway leak.
- The RCS is vented by two hot leg vents.
- RCS level is -71" and rising very slowly.
- RHR pump 'A' is in service at 3000 gpm.
- The operator notices that RHR flow and pressure is oscillating.

Which ONE (1) of the following actions would tend to stabilize RHR flow and pressure?

- a. Start the RHR pump 'B' at 3000 gpm
- b. Lower charging flow to stabilize RCS level
- c. Lower RHR pump 'A' flow
- d. Open the RV head vents

Answer:

- c. Lower RHR pump 'A' flow

Question: 38

Given the following conditions:

- The unit is operating at 100% power.
- 'B' EDG is under clearance to repair a leaky oil fitting.
- A tornado touches down in the switchyard.
- The transient resulting from the destruction causes a Phase Differential on the Main Generator.
- The Startup Transformer (SUT) is destroyed by the tornado.
- 'A' EDG is unable to start due to a faulty air lineup.
- After the initial transient, it is noted that **BOTH** of the Reactor Trip breaker indications are RED.

Which ONE (1) of the following describes the required operator action(s)?

- Enter FRP-S.1, "Response to Nuclear Power Generation / ATWS," due to the ATWS
- Enter PATH-1 due to the turbine trip and then FRP-S.1 due to the ATWS
- Enter EPP-001, "Loss of All AC Power," due to the electrical conditions
- Enter FRP-S.1 due to the ATWS, then EPP-001 due to the electrical conditions

Answer:

- Enter EPP-001, "Loss of All AC Power," due to the electrical conditions

Question: 39

Given the following conditions:

- A makeup to the Component Cooling Water (CCW) Surge Tank is being performed.
- CC-832, CC SURGE TANK MAKE-UP VALVE, is stroked full open.
- When tank level is 50%, the operator momentarily places the switch for CC-832 to close.

Assuming **NO** other operator actions are taken, which **ONE (1)** of the following describes the response of the CCW Surge Tank level?

- a. CCW Surge Tank level will continue to rise to approximately 55% due to the stroke time of the valve
- b. CCW Surge Tank level will stabilize at approximately 50%
- c. CCW Surge Tank level will continue to rise to approximately 55% when the high level alarm will automatically close the valve
- d. CCW Surge Tank level will eventually overflow out the vent valve

Answer:

- d. CCW Surge Tank level will eventually overflow out the vent valve

Question: 40

Given the following conditions:

- RCS pressure is 1805 psig and decreasing.
- RCS temperature is 525 °F and decreasing.
- Tav_g is 537°F and decreasing
- Steam Generator pressures and Steam Flows are:

SG	PRESSURE	STEAM FLOW
'A'	626 psig and decreasing	1.7×10^6 lbm/hr
'B'	745 psig and stable	0.05×10^6 lbm/hr
'C'	740 psig and stable	0.05×10^6 lbm/hr

Which ONE (1) of the following Safety Injection signals would be actuated?

- High Steamline ΔP
- Low Pressurizer Pressure
- High Steam Line Flow with Low Tav_g
- High Steam Line Flow with Low Steam Line Pressure

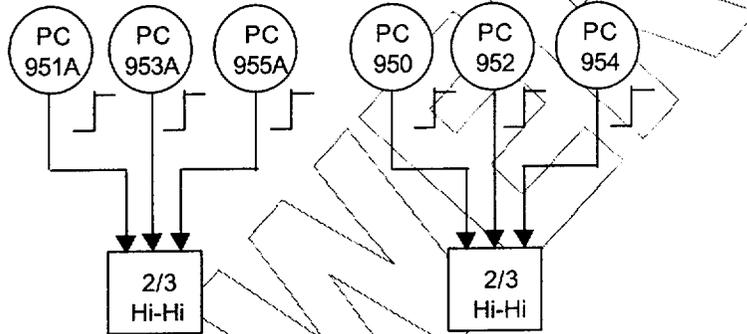
Answer:

- High Steamline ΔP

Question: 41

Given the following conditions:

- Power has been lost to Containment Pressure channel 954.
- Containment Pressure transmitter PT-950 has failed low.
- **NO** actions in OWP-032, "Containment Pressure," have been performed.
- A large break LOCA occurs and actual Containment Pressure reaches 21 psig.



Which ONE (1) of the following describes the response of the Containment Spray system?

- NEITHER** train of Containment Spray will automatically actuate
- ONLY** Train 'A' of Containment Spray will automatically actuate
- ONLY** Train 'B' of Containment Spray will automatically actuate
- BOTH** trains of Containment Spray will automatically actuate

Answer:

- NEITHER** train of Containment Spray will automatically actuate

Question: 42

Given the following conditions:

- The unit is operating at 100% power.
- Normal letdown is in service.
- Pressurizer level control is in automatic
- Leakage passed the hydrogen pressure regulator to the VCT causes pressure in VCT to increase.

Which ONE (1) of the following describes the effect of this on RCP seal flow?

	No. 1 SEAL LEAKOFF FLOW	No. 2 SEAL LEAKOFF FLOW
a.	Increases	Increases
b.	Decreases	Decreases
c.	Decreases	Increases
d.	Increases	Decreases

Answer:

c.	Decreases	Increases
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Question: 43

Given the following conditions:

- A reactor trip occurred from 20% power.
- Coincident with the reactor trip, 480V Bus E-1 deenergized and was subsequently energized by the EDG.
- Twenty (20) seconds following the trip, SG levels are:

SG	LEVEL
'A'	12%
'B'	28%
'C'	26%

Which ONE (1) of the following describes the expected condition of the Auxiliary Feed Water pumps 20 seconds following the trip?

	MDAFW PUMP 'A'	MDAFW PUMP 'B'	SDAFW PUMP
a.	Running	Running	Off
b.	Off	Running	Running
c.	Off	Running	Off
d.	Off	Off	Running

Answer:

c.	Off	Running	Off
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Question: 44

Given the following conditions:

- The plant is operating at 50% power.
- All control systems are operating in automatic.
- The First Stage Pressure Channel Selector switch is aligned to the PT-447 position.
- First Stage Pressure Transmitter PT-446 fails low.

Which ONE (1) of the following plant responses is expected?

- a. Feedwater Regulating Valves throttle closed
- b. Control Rods step inward
- c. Automatic rod control is blocked
- d. Steam Dumps have a demand signal

Answer:

- d. Steam Dumps have a demand signal

Question: 45

Given the following conditions:

- Due to low heat loads and extremely cold outside temperatures, Spent Fuel Pool (SFP) water temperature is 65°F.
- CC-775, CC FROM SPENT FUEL PIT HX BUTTERFLY Valve, has been throttled to the maximum allowed closed position.

Which ONE (1) of the following actions should be taken to raise Spent Fuel Pool water temperature?

- Place the SFP on recirc to the RWST
- Throttle the discharge valve of the in-service SFP Cooling pump
- Shutdown the in-service SFP Cooling pump
- Start an additional SFP Cooling pump

Answer:

- Shutdown the in-service SFP Cooling pump

Question: 46

Given the following conditions:

- The plant is operating at 68% power.
- Power Range channel N-43 is out of service for repairs.
- N-43 has been removed from service in accordance with the OWP.
- While working on N-43, the technician causes the Control Power fuses to blow.

Which ONE (1) of the following describes the effect of this on the plant?

- a. **NO** effect since the OWP places the DROPPED ROD MODE switch in the "Bypass" position
- b. **NO** effect since the Dropped Rod Runback requires two-of-four (2/4) coincidence to actuate
- c. The turbine will runback for 9 seconds at 200% per minute
- d. The turbine will runback at a cyclic rate of 200% per minute

Answer:

- c. The turbine will runback for 9 seconds at 200% per minute

Question: 47

Given the following conditions:

- A LOCA has occurred inside containment.
- Due to electrical problems an entry was made to EPP-15, "Loss of Emergency Coolant Recirculation."
- One (1) Containment Spray pump was operating upon exiting EPP-15, with containment pressure at 16 psig.
- Subsequently, an entry was made to FRP-J.1, "Response to High Containment Pressure," due to containment pressure being at 14 psig and lowering slowly.

Which ONE (1) of the following describes the actions that are to be taken regarding the Containment Spray system?

- a. Return to EPP-15 to determine Containment Spray system requirements
- b. Stop the running Containment Spray pump
- c. Maintain the current Containment Spray system configuration
- d. Start the second Containment Spray pump

Answer:

- c. Maintain the current Containment Spray system configuration

Question: 48

Given the following conditions:

- A recovery from a small break LOCA is in progress.
- **NO** RCPs are running.
- EPP-008, "Post-LOCA Cooldown and Depressurization," is being implemented.
- Depressurization of the RCS has commenced.
- Pressurizer level has just risen rapidly from off-scale low to 50%.

The depressurization of the RCS has ...

- a. increased RHR and SI flow, which is rapidly refilling the pressurizer.
- b. caused voiding to occur in the reactor vessel head, which is rapidly refilling the pressurizer.
- c. increased auxiliary spray flow, which is rapidly refilling the pressurizer.
- d. caused voiding in the pressurizer level reference leg, which is providing an indication of rapidly increasing pressurizer level.

Answer:

- b. caused voiding to occur in the reactor vessel head, which is rapidly refilling the pressurizer.

Question: 49

Given the following conditions:

- The unit is operating at 100% power.
- Rod Control is in Manual.
- A safety valve fails open on SG 'B'.

Which ONE (1) of the following describes the **INITIAL** effect on indicated power and RCS Tavg?

	INDICATED NIS POWER	RCS T-AVG
a.	Increases	Remains Relatively Constant
b.	Increases	Decreases
c.	Remains Relatively Constant	Remains Relatively Constant
d.	Remains Relatively Constant	Decreases

Answer:

b.	Increases	Decreases
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Question: 50

Given the following conditions:

- The unit is operating at 85% power.
- Control Rod Bank 'D' Demand is at 195 steps.
- IRPI indication for Bank D Control Rods are as follows:

ROD	POSITION
D-8	123"
M-8	121"
H-4	120"
H-8	110"
H-12	122"

Design power peaking and Shutdown Margin Limits ...

- a. are met under these conditions.
- b. will be met if Control Rod H-8 is withdrawn to 115".
- c. will be met if power is reduced below 80%.
- d. will be met if Control Rod D-8 is inserted to 120".

Answer:

- b. will be met if Control Rod H-8 is withdrawn to 115".

Question: 51

Given the following conditions:

- A reactor trip and safety injection have occurred.
- Due to multiple failures, an entry has been made to EPP-16, "Uncontrolled Depressurization of All Steam Generators."
- Containment pressure is 8 psig.
- The RCS cooldown rate is 130 °F/hour.
- SG levels are:

SG	LEVEL
'A'	1%
'B'	3%
'C'	14%

Which ONE (1) of the following actions should be taken?

- a. Secure all AFW to 'A' and 'B' SGs, while feeding 'C' SG at a rate between 80 gpm and 90 gpm using a MDAFW pump
- b. Secure all AFW to 'A' and 'B' SGs, while feeding 'C' SG at a rate between 80 gpm and 90 gpm using the SDAFW pump
- c. Feed 'A' and 'B' SGs at a rate between 80 gpm and 90 gpm, while feeding 'C' SG only as needed to maintain the RCS cooldown rate below 100 °F/hour
- d. Feed all SGs at a rate between 80 gpm and 90 gpm

Answer:

- d. Feed all SGs at a rate between 80 gpm and 90 gpm

Question: 52

Given the following conditions:

- The unit is operating at 100% power.
- Testing is being performed on Reactor Trip Breaker 'B' and it is currently open.
- A loss of the 'A' 125 VDC Distribution Panel occurs.
- Reactor Trip Breaker 'A' fails to open.

Which ONE (1) of the following describes the expected response of the plant due to this sequence of events, assuming **NO** operator action?

- a. **NO** reactor trip occurs
- b. Reactor Trip Bypass Breaker 'B' opens on an Undervoltage trip **ONLY**, resulting in a reactor trip
- c. Reactor Trip Bypass Breaker 'B' opens on a Shunt trip **ONLY**, resulting in a reactor trip
- d. Reactor Trip Bypass Breaker 'B' opens on **BOTH** an Undervoltage trip and a Shunt trip, resulting in a reactor trip

Answer:

- b. Reactor Trip Bypass Breaker 'B' opens on an Undervoltage trip **ONLY**, resulting in a reactor trip

Question: 53

Given the following conditions:

- The unit is in Hot Standby.
- A change in boron concentration from 500 ppm to 470 ppm is required.

Using the supplied references, which ONE (1) of the following identifies approximately how many gallons of primary water must be added to make this change?

- a. 70 gallons
- b. 90 gallons
- c. 3000 gallons
- d. 4500 gallons

Answer:

- c. 3000 gallons

ANSWER KEY

Question: 54

Given the following conditions:

- Unit 2 is being ramped to 100% following a refueling outage.
- The following Plant Parameters are noted:

PARAMETER	VALUE
Loop 'A' Tav _g	576°F
Loop 'B' Tav _g	575°F
Loop 'C' Tav _g	576°F
NI-41	100.0%
NI-42	99.0%
NI-43	99.0%
NI-44	100.0%
Loop 'A' ΔT	58.2°F
Loop 'B' ΔT	57.8°F
Loop 'C' ΔT	58.2°F
Loop 'A' Steam Flow	3.40 x 10 ⁶ lbm/hr
Loop 'B' Steam Flow	3.40 x 10 ⁶ lbm/hr
Loop 'C' Steam Flow	3.45 x 10 ⁶ lbm/hr
Loop 'A' Feed Flow	3.40 x 10 ⁶ lbm/hr
Loop 'B' Feed Flow	3.40 x 10 ⁶ lbm/hr
Loop 'C' Feed Flow	3.50 x 10 ⁶ lbm/hr
1 st Stage Press (446)	545 psig
1 st Stage Press (447)	546 psig
Generator Output	730 Mwe

Using the supplied references, reactor power is ...

- 99.5%. The power ramp may continue until the plant is at 100%.
- 99.5%. Power should be held constant to perform a calorimetric.
- greater than 100%. Power should be held constant to perform a calorimetric.
- greater than 100%. Power should be immediately lowered.

Answer:

- greater than 100%. Power should be immediately lowered.

Question: 55

Given the following conditions:

- A Temporary Change (TC) to Revision 44 of OP-305, Boron Recycle Process, was issued on March 1, 2001.
- Revision 45 of OP-305 was issued on March 6, 2001.
- The Temporary Change was **NOT** incorporated into Revision 45, but was cancelled and subsequently reissued (using a new TC number) with the issuance of Revision 45.

The Temporary Change now expires on ...

- a. March 15, 2001.
- b. March 20, 2001.
- c. March 22, 2001.
- d. March 27, 2001.

Answer:

- c. March 22, 2001.

Question: 56

Given the following conditions:

- The plant is operating at 43% power.
- An electrical transient causes a momentary underfrequency condition on 4 KV Bus 1.
- Moments later, an undervoltage condition is also sensed on 4 KV Bus 1.
- The RCP powered from 4 KV Bus 1 trips.
- The other two RCPs remain running.

Which ONE (1) of the following identifies the signal which **DIRECTLY** generated the reactor trip?

- a. Bus underfrequency
- b. Bus undervoltage
- c. Low flow
- d. Pump breaker trip

Answer:

- d. Pump breaker trip

Question: 57

Given the following conditions:

- An inadvertent reactor trip and safety injection have occurred.
- The SI and Phase A signals have just been reset.

Which ONE (1) of the following describes the expected position of the Normal and Emergency Inlet Dampers for the Containment Air Recirculation Fans (HVH-1 through 4) following resetting of these signals?

	NORMAL INLET DAMPERS	EMERGENCY INLET DAMPERS
a.	Open	Open
b.	Open	Closed
c.	Closed	Open
d.	Closed	Closed

Answer:

c.	Closed	Open
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Question: 58

Given the following conditions:

- The unit has experienced a loss of off-site power.
- The reactor trip and turbine trip have been verified.
- EPP-1, "Loss of ALL AC Power," was implemented until the inside AO restored power to 480V Bus E-2 per Attachment 6 of EPP-1.
- A transition has been made back to PATH-1.
- SI has **NOT** occurred and is **NOT** required.

Which ONE (1) of the following describes how power will be supplied to the Charging Pumps?

	FROM 'B' EDG	FROM DSDG
a.	Charging Pump 'B'	Charging Pump 'A'
b.	Charging Pump 'C'	Charging Pump 'B'
c.	Charging Pump 'B'	Charging Pump 'C'
d.	Charging Pump 'C'	Charging Pump 'A'

Answer:

d.	Charging Pump 'C'	Charging Pump 'A'
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Question: 59

Given the following conditions:

- The unit is experiencing a loss of all feedwater event and FRP-H.1, "Response to Loss of Secondary Heat Sink," has been entered.
- **NO** AFW flow is available.
- Containment pressure is 0.4 psig.

Which **ONE** (1) of the following describes when the operator is required to trip the RCPs and immediately initiate feed and bleed?

- a. Five highest core exit TC temperatures are 658 °F, 656 °F, 649 °F, 648 °F, and 645 °F and are all rising
- b. RCS hot leg temperatures are 652 °F, 646 °F, and 648 °F and are all rising
- c. Pressurizer levels are indicating 93%, 97%, and 94% and are all stable
- d. SG wide range levels are 18%, 22%, and 36% and are all stable

Answer:

- d. SG wide range levels are 18%, 22%, and 36% and are all stable

Question: 60

Given the following conditions:

- A unit trip and safety injection have occurred due to a SGTR on 'A' SG.
- EPP-012, "Post-SGTR Cooldown using Backfill," is being implemented.
- RCS pressure is 940 psig.
- It has been determined that the accumulators should be isolated.
- The breakers for the accumulator discharge valves (SI-865A, B, C) have been closed.
- The 'A' accumulator discharge valve (SI-865A) loses light indication after it is given a closed signal.
- 'B' and 'C' accumulator valves stroke closed as expected.

Which ONE (1) of the following actions should be taken regarding 'A' accumulator?

- a. Slow the rate at which the RCS is being depressurized to allow a controlled injection of the accumulator
- b. Drain the accumulator to the Reactor Coolant Drain Tank
- c. Vent the accumulator to Containment atmosphere
- d. Maintain RCS pressure above 800 psig until a Containment entry can be made to locally close the discharge valve

Answer:

- c. Vent the accumulator to Containment atmosphere

Question: 61

Given the following conditions:

- A licensed operator who has an inactive license has been performing administrative duties in the Training Section for twelve (12) months.
- He is returning to Operations and is to be placed back on shift.
- All licensed operator continuing training and fire brigade qualifications are current.

Which ONE (1) of the following are the additional **MINIMUM** requirements for returning his license to an active status?

- a. Complete **FOUR** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and review all the procedure changes for the past three (3) months
- b. Complete **FOUR** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and conduct a complete plant tour
- c. Complete **FIVE** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and review all the procedure changes for the past three (3) months
- d. Complete **FIVE** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and conduct a complete plant tour

Answer:

- b. Complete **FOUR** normal shifts, including shift turnovers IAW plant procedures, before and after each watch, and conduct a complete plant tour

Question: 62

Given the following conditions:

- The unit is operating at 100% power.
- RCS Tavg is 575.4°F.
- PZR level is 53%
- VCT level is 23" and stable.
- Letdown flow is 45 gpm (FI-150).
- RCP seal injection flows are:

RCP	SEAL INJ
'A'	8.3 gpm
'B'	7.9 gpm
'C'	7.8 gpm

Which ONE (1) of the following would be the expected flow indication on FI-122A, Charging Header Flow, assuming **NO** RCS leakage?

- a. 21 gpm
- b. 30 gpm
- c. 36 gpm
- d. 54 gpm

Answer:

- b. 30 gpm

Question: 63

The following personnel are entering the RCA to perform plant related activities:

1. Two operators doing a valve lineup in the RCA expect to receive a dose of about 125 mrem each.
2. Operators doing routine radwaste processing.
3. Electrical maintenance workers cleaning and inspecting an MCC breaker in the RCA.

Which ONE (1) of the following identifies ALL of the above activities which can be performed using a General RWP in accordance with HPP-006, "Radiation Work Permits"?

- a. 1 and 2 **ONLY**
- b. 1 and 3 **ONLY**
- c. 2 and 3 **ONLY**
- d. 1, 2, and 3

Answer:

- c. 2 and 3 **ONLY**

ANSWER KEY

Question: 64

Given the following conditions:

- The unit was operating at 100% power.
- All IRPI indication fails to zero with **NO** rod bottom bistable lights.
- A Turbine Runback to 70% has occurred.
- APP-005-A3, PR DROP ROD ROD STOP, is illuminated.

Which ONE (1) of the following procedures should be used to mitigate this plant transient?

- a. AOP-001, Malfunction of Reactor Control System
- b. AOP-015, Secondary Load Rejection or Turbine Runback
- c. AOP-024, Loss of Instrument Buses
- d. AOP-025, RTGB Instrument Failures

Answer:

- a. AOP-001, Malfunction of Reactor Control System

Question: 65

Given the following conditions:

- A line break caused the Fire Header pressure to drop.
- Fire Header pressure eventually stabilized at 83 psig.

Which ONE (1) of the following expected fire system responses would have resulted in this condition?

- The Electric Fire Pump automatically started, then the Diesel Fire Pump automatically started.
- The Electric Fire Pump automatically started and the Diesel Fire Pump remained in standby.
- The Diesel Fire Pump automatically started, then the Electric Fire Pump automatically started.
- The Diesel Fire Pump automatically started and the Electric Fire Pump remained in standby.

Answer:

- The Electric Fire Pump automatically started, then the Diesel Fire Pump automatically started.

Question: 66

Given the following conditions:

- Emergency Diesel Generator 'A' is in the process of being started on Unit 2 to parallel it to the E-1 Bus.
- A "Remote Manual Slow Speed Start" is being performed in accordance with OP-604, "Diesel Generators A and B."

Which ONE (1) of the following describes the operation of the diesel generator voltage control during this evolution?

- a. The Voltage Regulator will automatically control voltage between 470 VAC and 490 VAC during the entire start after the field is automatically flashed at 200 RPM.
- b. The Voltage Regulator must be manually shutdown after the field is automatically flashed at 200 RPM, and will be automatically reinstated when engine speed is above 900 RPM to control voltage between 470 VAC and 490 VAC.
- c. The Voltage Regulator will be automatically shutdown 5 seconds after the field is flashed at 200 RPM if engine speed does **NOT** reach 900 RPM, and must be manually reinstated when engine speed is above 900 RPM to control voltage between 470 VAC and 490 VAC.
- d. The Voltage Regulator must be manually shutdown after the field is automatically flashed at 200 RPM, and must be manually reinstated when engine speed is above 900 RPM to control voltage between 470 VAC and 490 VAC.

Answer:

- d. The Voltage Regulator must be manually shutdown after the field is automatically flashed at 200 RPM, and must be manually reinstated when engine speed is above 900 RPM to control voltage between 470 VAC and 490 VAC.

Question: 67

Given the following conditions:

- The unit is in Hot Standby.
- All systems are operating normally.
- SG "A" PORV is closed.
- SG "A" PORV automatic potentiometer is adjusted from "3.10" to "1.50".

Which ONE (1) of the following describes the effect adjusting the potentiometer will have on the PORV?

	SETPOINT	PORV
a.	Increases	Opens
b.	Decreases	Opens
c.	Increases	Remains Closed
d.	Decreases	Remains Closed

Answer:

c.	Increases	Remains Closed
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Question: 68

Given the following conditions:

- A small break LOCA has occurred.
- Entry has been made into FRP-C.1, "Response to Inadequate Core Cooling."
- CETs are all indicating between 740 °F and 760 °F and rising slowly.
- RCS pressure has stabilized at 1605 psig.
- PZR level is off-scale low.
- RVLIS Full Range is indicating 39% and lowering slowly.
- Charging flow is **NOT** available.
- SG pressures are all between 360 psig and 400 psig.

Which ONE (1) of the following actions should be taken?

- a. Dump steam to cooldown and depressurize the RCS to provide Safety Injection flow
- b. Open the RCS Vent System valves to depressurize the RCS to provide Safety Injection flow
- c. Start an RCP immediately to provide forced cooling flow
- d. Open the PZR PORVs to depressurize the RCS to provide Safety Injection flow

Answer:

- a. Dump steam to cooldown and depressurize the RCS to provide Safety Injection flow

Question: 69

Given the following conditions:

- The unit is at operating at 35% power in preparation for increasing power to 100%.
- Circulating Water Pump 'A' is under clearance for maintenance.
- A fault occurs on 4KV Bus #4 and all loads are lost.

Which ONE (1) of the following describes the effect on the turbine to the above conditions?

- a. The turbine will **NOT** automatically trip, but must be manually tripped when condenser back pressure increases to 5.5" HgA
- b. The turbine will automatically trip due to all 3 Circulating Water Pump breakers being open
- c. The turbine will automatically trip when condenser back pressure increases to 10" HgA unless load is lowered to within the capacity of the one remaining Circulating Water Pump
- d. The turbine will **NOT** automatically trip due to load already being within the capacity of the one remaining Circulating Water Pump

Answer:

- b. The turbine will automatically trip due to all 3 Circulating Water Pump breakers being open

Question: 70

Given the following conditions:

- The unit is operating at 2% power.
- The following RCP indications are observed:

INDICATION	RCP 'A'	RCP 'B'	RCP 'C'
Motor Bearing Temperatures	210°F and ↑ slowly	180°F and stable	195°F and ↑ slowly
#1 Seal Leakoff Temperatures	150°F and stable	150°F and stable	165°F and ↑ slowly
#1 Seal Leakoff Flow	5.8 gpm and stable	4.2 gpm and stable	3.8 gpm and stable
Thermal Barrier ΔP	10" and stable	10" and stable	8" and stable
Frame Vibration	3.6 mils and ↑ at 0.1 mil per hr	2.8 mils and stable	4 mils and ↑ at 0.05 mil per hr
Shaft Vibration	12 mils and stable	7 mils and stable	9.5 mils and ↑ at 0.6 mils per hour

Which ONE (1) of the following describes the actions required for this condition?

- Stop 'A' RCP and enter Technical Specification 3.4.4, RCS Loops - Modes 1 & 2
- Trip the reactor, stop 'A' RCP, and go to PATH-1
- Stop 'C' RCP and enter Technical Specification 3.4.4, RCS Loops - Modes 1 & 2
- Trip the reactor, stop 'C' RCP, and go to PATH-1

Answer:

- Stop 'A' RCP and enter Technical Specification 3.4.4, RCS Loops - Modes 1 & 2

Question: 71

Which ONE (1) of the following requires entry into DSP-001, "Alternate Shutdown Diagnostic"?

- a. A fire in the Main Turbine that has the potential to destroy the generator when the reactor is above 10% power
- b. A fire in the Containment Vessel that has the potential to destroy the pressurizer heater power cables when in hot standby
- c. A fire in the Control Room that has the potential to destroy RHR pump control cables when refueling
- d. A fire in the Auxiliary Building that has the potential to destroy the running Charging Pump when in cold shutdown

Answer:

- b. A fire in the Containment Vessel that has the potential to destroy the pressurizer heater power cables when in hot standby

ANSWER
KEY

Question: 72

CC-707, Component Cooling Water Surge Tank relief valve, is sized to accommodate the ...

- a. maximum CCW insurge to the tank resulting from a loss of the Residual Heat Removal system.
- b. maximum flowrate associated with a rupture of a Reactor Coolant Pump Thermal Barrier Heat Exchanger.
- c. maximum CCW insurge to the tank resulting from a loss of the Service Water system.
- d. maximum flowrate associated with a rupture of a Residual Heat Removal pump cooler during the recirculation phase of an accident.

Answer:

- b. maximum flowrate associated with a rupture of a Reactor Coolant Pump Thermal Barrier Heat Exchanger.

ANSWER KEY

Question: 73

Which ONE (1) following procedures is used to provide instructions in the event of a cask drop when loaded with spent fuel in Dry Shielded Canister (DSC)?

- a. AOP-005, Radiation Monitoring System
- b. AOP-008, Accidental Release of Liquid Waste
- c. AOP-013, Fuel Handling Accident
- d. AOP-028, ISFSI Abnormal Events

Answer:

- d. AOP-028, ISFSI Abnormal Events

ANSWER
KEY

Question: 74

Given the following conditions:

- The unit is in Mode 2.
- PZR level transmitter LT-460 failed low and was removed from service.
- The PZR high-high level and low level bistables associated with LT-460 were placed in the TRIPPED condition.
- PZR level channel selector switch LM-459 was selected to "461 REPL 460".

Which ONE (1) of the following describes the function provided by PZR level transmitter LT-461 under these conditions?

- a. Energizes the backup heaters on a high level deviation
- b. Decreases charging pump speed on an increasing level
- c. Deenergizes the proportional and backup heaters on a low level
- d. Trips the reactor on a high-high level

Answer:

- c. Deenergizes the proportional and backup heaters on a low level

Question: 75

Given the following conditions:

- Reactor power was initially 100%.
- All CCW flow has been lost to the RCPs and a reactor trip has been initiated.

Which ONE (1) of the following nuclear instrument indications would warrant entry into FRP-S.1, "Response To Nuclear Power Generation/ATWS"?

- a. **BOTH** source range channels are energized and intermediate range startup rate is +0.1 dpm
- b. Power range indicates 3%
- c. Source range startup rate is +0.3 dpm
- d. **NEITHER** source range channel is energized and intermediate startup rate is -0.1 dpm

Answer:

- a. **BOTH** source range channels are energized and intermediate range startup rate is +0.1 dpm

Question: 76

Given the following plant conditions:

- Following a refueling outage, the unit is being raised to 100% power.
- Reactor Engineering has **NOT** implemented any power ramp rate limitations other than those stated in GP-005, "Power Operation."

Which ONE (1) of the following power changes would violate the power ramp rate limitations identified in GP-005?

- Raising power from 7% to 14% over a 3-minute period
- Raising power from 31% to 36.6% over a 1-hour period
- Raising power from 62% to 65.8% over a 1-hour period
- Raising power from 93% to 96.2% over a 1-hour period

Answer:

- Raising power from 62% to 65.8% over a 1-hour period

Question: 77

Given the following conditions:

- The reactor has tripped from 100% power due to a feed line break.
- SI has been actuated.
- AFW pumps are supplying feed to the SGs.
- Immediate operator actions are complete.
- Foldout A has been implemented.
- The Outside AO reports a large leak at the CST.

Which ONE (1) of the following describes the available backup sources to the AFW Pump Suction?

	PREFERRED BACKUP	ALTERNATE BACKUP
a.	Service Water	Deepwell Water
b.	Service Water	Fire Water
c.	Deepwell Water	Fire Water
d.	Fire Water	Service Water

Answer:

a.	Service Water	Deepwell Water
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Question: 78

Given the following conditions:

- A turbine runback has occurred from 100% to 70% power.
- RCS Tavg is 567 °F.
- PZR Pressure is 2265 psig.
- PZR Level is 51%.

Which ONE (1) of the following describes the expected condition of the proportional heaters and pressurizer spray valves?

	PROPORTIONAL HEATERS	SPRAY VALVES
a.	On	Open
b.	On	Closed
c.	Off	Open
d.	Off	Closed

Answer:

a	On	Open
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c
OFF

Rate 4/10/01

Question: 79

Following an accident, FRP-C.2, "Response to Degraded Core Cooling," is being implemented.

After the performance of several steps in FRP-C.2, the following Critical Safety Function Status Tree (CSFST) conditions are noted:

- Integrity - RED
- Core Cooling - RED
- Containment - ORANGE
- Heat Sink - YELLOW
- Subcriticality - YELLOW
- Inventory - YELLOW

Which ONE (1) of the following describes which action should be taken by the CRSS?

- Remain in FRP-C.2, "Response to Degraded Core Cooling," until completion and then recheck the CSFSTs
- Transition to FRP-C.1, "Response to Inadequate Core Cooling" due to the RED condition on Core Cooling
- Transition to FRP-P.1, "Response to Imminent Pressurized Thermal Shock," due to the RED condition on Integrity
- Transition to FRP-J.1, "Response to High Containment Pressure," due to the ORANGE condition on Containment

Answer:

- Transition to FRP-C.1, "Response to Inadequate Core Cooling" due to the RED condition on Core Cooling

Question: 80

Given the following conditions:

- A reactor trip has occurred from 100% power.
- All SGs levels indicate 6%.

Upon initiation of AFW, which ONE (1) of the following correctly describes the automatic response of the AFW system to these conditions?

- The normally closed MDAFW pump discharge flow control valves (FCV 1424 and 1425) fully open
- The normally open SDAFW pump discharge flow control valve (FCV 6416) throttles closed
- The normally closed SDAFW pump discharge flow control valve (FCV 6416) throttles open
- The normally open MDAFW pump discharge flow control valves (FCV 1424 and 1425) throttle closed

Answer:

- The normally open SDAFW pump discharge flow control valve (FCV 6416) throttles closed

Question: 81

Given the following conditions:

- The unit is operating at 100% power.
- Channel III PZR Pressure PT-457 is failed, with all bistables in the TRIPPED condition.
- An electrical fault occurs which results in a loss of Instrument Bus 2.

Which ONE (1) of the following describes the impact that the loss of Instrument Bus 2 has on the plant?

- a. A reactor trip and SI occur and **BOTH** trains of Engineered Safeguards loads are automatically started by the sequencers
- b. A reactor trip and SI occur, but **ONLY** Train 'A' Engineered Safeguards loads are automatically started by the sequencers
- c. A reactor trip and SI occur, but **ONLY** Train 'B' Engineered Safeguards loads are automatically started by the sequencers
- d. A reactor trip occurs, but **NO** SI occurs.

Answer:

- c. A reactor trip and SI occur, but **ONLY** Train 'B' Engineered Safeguards loads are automatically started by the sequencers

Question: 82

Given the following conditions:

- The plant is in Hot Shutdown.
- A loss of 4KV Bus 2 occurs.

Which ONE (1) of the following identifies plant equipment that is affected by the power loss?

- a.
 - Reactor Coolant Pump 'B'
 - Station Service Transformer 2B
- b.
 - Reactor Coolant Pump 'C'
 - Station Service Transformer 2A and 2F
- c.
 - Main Feedwater Pump 'B'
 - Station Service Transformer 2D
- d.
 - Main Feedwater Pump 'B'
 - Reactor Coolant Pump 'C'

Answer:

- b.
 - Reactor Coolant Pump 'C'
 - Station Service Transformer 2A and 2F

Question: 83

In accordance with AOP-032, "Response To Flooding From The Fire Protection System," the concern for a fire water break in containment is ...

- a. the adverse affects on safeguards equipment.
- b. the thermal stress effects of water coming in contact with the reactor vessel.
- c. the adverse impact on the instrumentation associated with systems in containment.
- d. the unanalyzed dilution caused by the water in the event of a LOCA.

Answer:

- d. the unanalyzed dilution caused by the water in the event of a LOCA.

ANSWER KEY

Question: 84

Given the following conditions:

- Inverter 'C', is being shut down in accordance with OP-601, "DC Supply System."
- The N-43 DROPPED ROD MODE switch is placed in the BYPASS position prior to aligning PP-26 to its alternate supply (IB-3).

Which ONE (1) of the following describes the consequences of failing to place the switch in the BYPASS position?

- a. A turbine runback may occur due to an Instrument Bus transient
- b. A reactor trip and safety injection may occur due to an Instrument Bus transient
- c. The inverter power supply breaker may trip open
- d. The backup power supply breaker may trip open when attempting to close

Answer:

- a. A turbine runback may occur due to an Instrument Bus transient

Question: 85

Given the following conditions:

- A batch release of Waste Condensate Tank 'E' is scheduled to be performed.
- The Waste Condensate Recirc Pump is out-of-service.

Waste Condensate Tank 'E' ...

- a. can be recirculated after transferring to Waste Condensate Tank 'C'.
- b. **CANNOT** be recirculated unless transferred to Waste Condensate Tank 'D'.
- c. can be recirculated using Waste Condensate Pump 'B'.
- d. **CANNOT** be recirculated until the Waste Condensate Recirc Pump is repaired.

Answer:

- d. **CANNOT** be recirculated until the Waste Condensate Recirc Pump is repaired.

ANSWER
KEY

Question: 86

Given the following conditions:

- The plant is being started up with the Feed Water Regulating Valves and Feed Water Regulating Bypass Valves all open.
- A Reactor Trip occurs.
- RCS Tavg stabilizes at no load Tavg.
- The Feed Water Regulating Valves automatically close.

Which ONE (1) of the following identifies the expected position of the Feed Water Regulating Bypass Valves (FRBVs) and the Feed Water Block Valves (FBVs)?

	FRBVs	FBVs
a.	Open	Open
b.	Open	Closed
c.	Closed	Open
d.	Closed	Closed

Answer:

a.	Open	Open
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Question: 87

Given the following conditions:

- A small break LOCA has occurred.
- Due to problems with the Containment Cooling system, containment pressure increased to 6.1 psig.
- After establishing proper operation of the Containment Cooling system, containment pressure has been lowered to 3.2 psig.
- A step in one of the EPPs states:

"Depressurize RCS To Minimize RCS Leakage:

c. Check EITHER of the following:

PZR LEVEL - GREATER THAN 71% [60%]

OR

RCS SUBCOOLING - LESS THAN 45 °F [65 °F]

d. Stop RCS depressurization"

- As the RCS is being depressurized, PZR level is noted to be 62% and RCS Subcooling is 76 °F.

The RCS depressurization should ...

- a. be stopped immediately.
- b. continue until PZR level exceeds 71%.
- c. continue until RCS subcooling drops below 65 °F.
- d. continue until RCS subcooling drops below 45 °F.

Answer:

- a. be stopped immediately.

Question: 88

Given the following conditions:

- The unit is in Hot Shutdown.
- The Startup Transformer (SUT) is supplying all 4KV buses.
- A severe short has resulted in a loss of the 'B' DC Bus.

Which ONE (1) of the following describes the response of the emergency diesel generators (EDG's)?

	EDG 'A'	EDG 'B'
a.	Starts, but field fails to flash	Does NOT start
b.	Does NOT start	Starts, but field fails to flash
c.	Starts and loads	Starts, but does NOT load
d.	Starts, but does NOT load	Starts and loads

Answer:

b.	Does NOT start	Starts, but field fails to flash
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Question: 89

Given the following conditions:

- The plant is operating at 90% power.
- Control Bank "D" Step Counters indicate 198 steps.
- A check of the Rod Position indications for Control Bank "D" shows the following rod positions:

D8 at 124"
M8 at 116"
H4 at 120"
H8 at 121"
H12 at 131"

Which ONE (1) of the following describes the status of the rods in Control Bank 'D'?

- BOTH** rods M8 and H12 are misaligned from the bank
- ONLY** rod M8 is misaligned from the bank
- ONLY** rod H12 is misaligned from the bank
- All rods are within rod alignment limits

Answer:

- ONLY** rod H12 is misaligned from the bank

Question: 90

Given the following conditions:

- Pressurizer pressure transmitter PT-457 has failed low and is being removed from service in accordance with the OWP.
- The OWP requires the low pressure bistables in the Hagan racks be placed in the TRIPPED condition.

Which ONE (1) of the following describes the verification required for this function?

- NO verification is required
- Independent verification
- Concurrent verification
- Functional verification

Answer:

- Concurrent verification

ANSWER KEY

Question: 91

Given the following conditions:

- The unit has just experienced a reactor trip.
- **NO** SI equipment has actuated.
- One (1) turbine stop valves is shut.
- Three (3) turbine governor valves are shut.
- RCS pressure is 1860 psig.
- Tavg is 542°F.
- All MSIVs are open.
- SG Pressures and Steam Flows are:

SG	PRESSURE	STEAM FLOW
'A'	925 psig	0.1×10^6 lbm/hr
'B'	935 psig	0.1×10^6 lbm/hr
'C'	845 psig	1.3×10^6 lbm/hr

The reactor is tripped, the turbine is ...

- tripped, and SI is **NOT** required.
- tripped, and SI is required.
- NOT** tripped, and SI is **NOT** required.
- NOT** tripped, and SI is required.

Answer:

- NOT** tripped, and SI is **NOT** required.

Question: 92

Given the following conditions:

- A reactor trip occurred due to a loss of offsite power.
- The plant is being cooled down on RHR per EPP-005, "Natural Circulation Cooldown."
- RVLIS upper range indicates greater than 100%.
- Both CRDM fans have been running during the entire cooldown.
- RCS cold leg temperatures are 190 °F.
- Steam generator pressures are 50 psig.

Steam should be dumped from all SGs to ensure ...

- a. boron concentration is equalized throughout the RCS prior to taking a sample to verify cold shutdown boron conditions.
- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.
- c. RCS and SG temperatures are equalized prior to any subsequent RCP restart.
- d. RCS temperatures do **NOT** increase during the required 29-hour vessel soak period.

Answer:

- b. all inactive portions of the RCS are below 200 °F prior to complete RCS depressurization.

Question: 93

Given the following conditions:

- The unit is operating at 100% power.
- A release is in progress from Waste Gas Decay Tank 'A'.
- A loss of Instrument Bus 3 occurs, requiring termination of the release.

Which ONE (1) of the following describes how the release is terminated as a result of the loss of the Instrument Bus?

- Automatically due to the loss of R-14, Plant Vent Monitor
- Manually due to the loss of R-14, Plant Vent Monitor
- Manually due to the loss of power to the Waste Disposal Boron Recycle Panel
- Automatically due to the loss of power to the Waste Disposal Boron Recycle Panel

Answer:

- Automatically due to the loss of R-14, Plant Vent Monitor

Question: 94

Which ONE (1) of the following conditions related to the Pressurizer would require entry into a Technical Specification action or a Technical Requirement Manual compensatory action, as applicable?

- a. A pressurizer level control system fault results in level being at 68% with the plant operating at 2% power
- b. A pressurizer pressure control system fault results in pressure being at 2184 psig with the plant operating at 14% power
- c. SST-2A Disconnect, used to supply emergency power to the pressurizer heaters from EDG 'A', is removed from service for maintenance with the plant operating at 35% power
- d. Auxiliary Spray, at 400 °F, is used to depressurize the RCS from 2235 psig, resulting in a cooldown rate of the Pressurizer of 135 °F per hour

Answer:

- b. A pressurizer pressure control system fault results in pressure being at 2184 psig with the plant operating at 14% power

Question: 95

Given the following conditions:

- The unit is operating at 70%.
- Rod Control is in AUTO.
- Bank 'D' control rods are at 195 steps.
- Tref is 566.9 °F.
- Loop Tavgs are:

LOOP	T-AVG
'A'	569 °F
'B'	567 °F
'C'	566 °F

Which ONE (1) of the following failures will cause control rods to step inward?

- Loop 1 Thot fails high
- Loop 1 Tcold fails low
- Loop 2 Tcold fails high
- Loop 3 Thot fails low

Answer:

- Loop 2 Tcold fails high

Question: 96

Given the following conditions:

- The unit is operating at 30% power.
- A dropped control rod has just been re-aligned.
- While attempting to reset the Rod Control Urgent Failure alarm, the operator inadvertently pushes the Rod Control STARTUP button.

Which ONE (1) of the following describes the effect of operating the incorrect button?

- a. All Control Bank control rods drop into the core, causing an automatic reactor trip
- b. All rods, including Control Bank and Shutdown Bank rods, drop into the core, causing an automatic reactor trip
- c. All rods remain in their current position and there is **NO** effect on the Rod Control System circuitry
- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Answer:

- d. All rods remain in their current position, but the Rod Control System circuitry senses all rods are fully inserted

Question: 97

Service Water Pump "D" is capable of being powered from which ONE (1) of the following power sources?

- a. **ONLY** 480 VAC Bus E-1
- b. **ONLY** 480 VAC Bus E-2
- c. Either 480 VAC Bus E-1 OR 480 VAC DS Bus
- d. Either 480 VAC Bus E-2 OR 480 VAC DS Bus

Answer:

- d. Either 480 VAC Bus E-2 OR 480 VAC DS Bus

ANSWER
KEY

Question: 98

Given the following conditions:

- A plant cooldown is in progress in accordance with GP-007, "Plant Cooldown From Hot Shutdown to Cold Shutdown."
- RCS Pressure is 1500 psig.
- RCS Tavg is 515°F.
- A RCS leak is identified inside containment.

Which ONE (1) of the following identifies the valid signals that could result in a Containment Ventilation Isolation under these conditions?

- a.
 - Hi Steamline ΔP
 - Alarm on R-12, Containment Noble Gas Monitor
- b.
 - Low Pressurizer Pressure Safety Injection
 - Alarm on R-14C, Plant Effluent Noble Gas Monitor
- c.
 - Manual actuation of Containment Isolation Phase A
 - Alarm on R-12, Containment Noble Gas Monitor
- d.
 - Manual actuation of Containment Isolation Phase A
 - Alarm on R-14C, Plant Effluent Noble Gas Monitor

Answer:

- c.
 - Manual actuation of Containment Isolation Phase A
 - Alarm on R-12, Containment Noble Gas Monitor

Question: 99

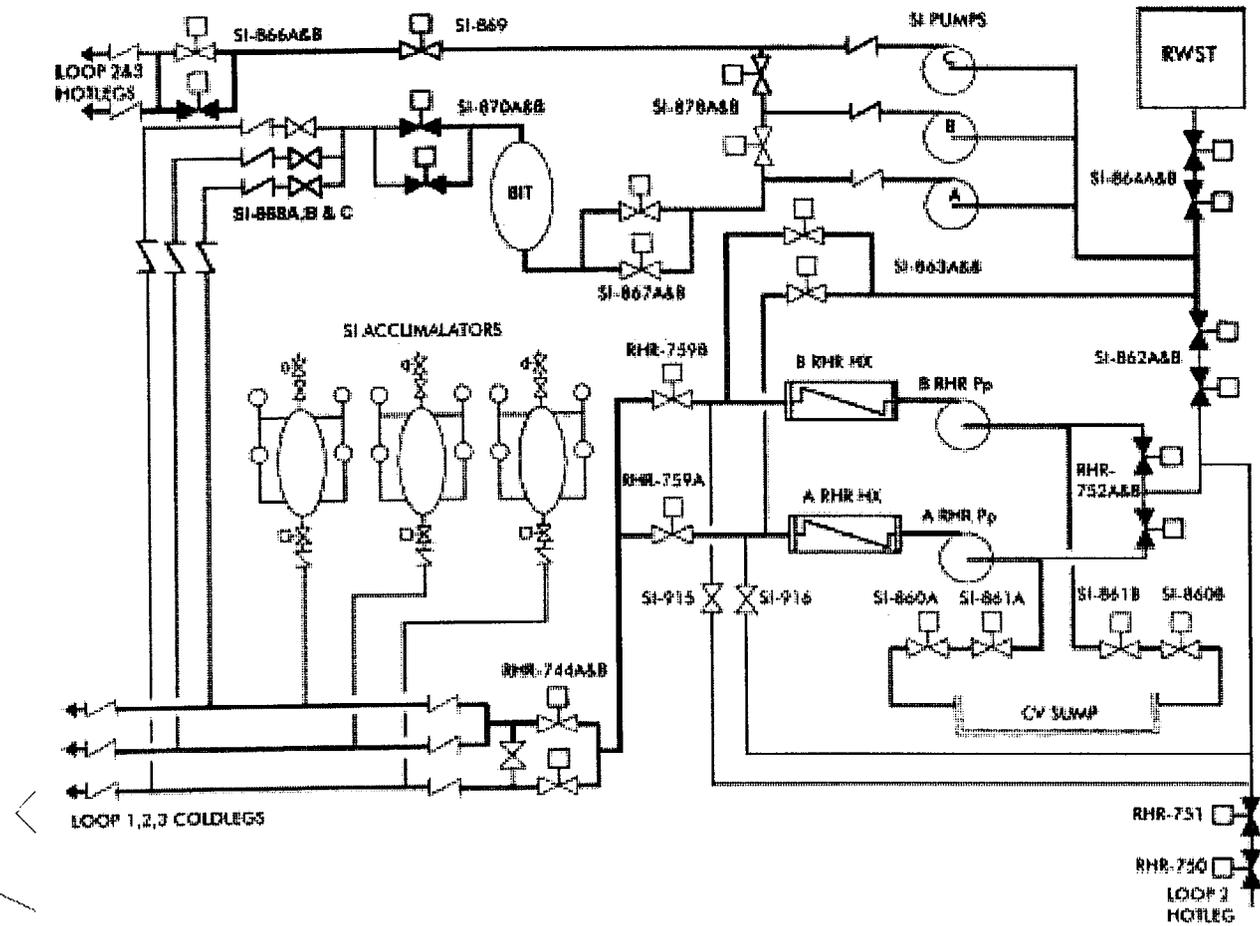
Given the drawing on the following page containing an ECCS alignment, which ONE (1) of the following describes the ECCS alignment?

- a. Cold leg injection
- b. Cold leg recirculation
- c. Hot leg injection
- d. Long term recirculation

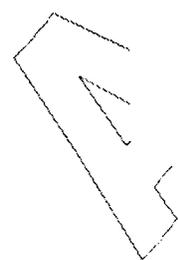
Answer:

- d. Long term recirculation

ANSWER
KEY



RHR-759A throttled to 1200 gpm
RHR-759B throttled to 2300 gpm



Question: 100

Given the following conditions:

- A Large Break LOCA has occurred.
- PATH-1 is being implemented.
- The CRSS directs you to "Verify Supplement D components capable of recirc."

Which ONE (1) of the following describes the actions permitted during performance of Supplement D, "Emergency Recirculation Equipment"?

- a. Restoring flowpath from containment sump to RHR
- b. Aligning flowpath from RHR pumps to the SI pumps
- c. Restoring control power to SI valves controlled from the RTGB
- d. Aligning flowpath from SI pumps to the hot legs

Answer:

- c. Restoring control power to SI valves controlled from the RTGB