Final Submittal

(Blue Paper)

FINAL SRO

WRITTEN EXAMINATION

AND REFERENCES

HARRIS JAN./FEB. 2006 EXAM

05000400/2006301

JANUARY 23 - FEBRUARY 2, 2006
FEBRUARY 6, 2006 (WRITTEN)

2/9/06

U.S. Nuclear Regulatory Commission

Site-Specific SRO Written Examination

Applicant Information	
Name:	
Date:	Facility/Unit: Harris Nuclear Plant
Region: I (II) III IV	Reactor Type: (W) CE BW GE
Start Time:	Finish Time:

Instructions

Use the answer sheets provided to document your answers. Staple this cover sheet on top of the answer sheets. To pass the examination you must achieve a final grade of at least 80.00 percent overall, with 70.00 percent or better on the SRO-only items if given in conjunction with the RO exam; SRO-only exams given alone require a final grade of 80.00 percent to pass. You have 8 hours to complete the combined examination, and 3 hours if you are only taking the SRO portion.

Applicant Certification

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

Applicant's Signature _____

Results	
RO/SRO-Only/Total Examination Values	____ / ____ / ____ Points
Applicant's Scores	____ / ____ / ____ Points
Applicant's Grade	____ / ____ / ____ Percent

1. Given the following conditions:

   - The unit is at 100% power
   - One Control Rod in Bank (D) Group (1) was found stuck at 190 steps an hour ago.
   - While aligning the remainder of the rods in Bank (D) to 190 steps an additional Control Rod in Bank (D) Group (2) was found stuck at 210 steps.
   - It has been determined that both rods are mechanically bound.

   In accordance with Technical Specifications, which one of the following describes the action required within one hour?

   A. Determine that QPTR requirements are satisfied or enter the applicable action statement.

   B. Align the remainder of rods in the affected banks within 12 steps of the stuck rod.

   C. Determine that Shutdown Margin requirements are satisfied.

   D. Determine that Axial Flux Difference requirements are satisfied or enter the applicable action statement.

2. Given the following conditions:

   - The plant is in MODE 1, 100% power.
   - The "B" RHR Pump was taken OOS yesterday for maintenance.
   - "A" CSIP is declared INOPERABLE due to NPSH calculation concerns.
   - "B" CSIP and "A" RHR pumps are OPERABLE

   Which ONE (1) of the following describes the required actions for these conditions?

   LCO...

   A. 3.5.2 must be entered. Restore one ECCS Train to service within 6 hours.

   B. 3.5.2 must be entered. Restore both ECCS Trains to service within 72 hours.

   C. 3.0.3 must be entered. Place the plant in Mode 3 within 7 hours.

   D. 3.0.3 must be entered. Place the plant in Mode 3 within 13 hours.

3. Chemistry sample has determined the following:

   - "A" SI Accumulator boron concentration is 2466 ppm.
   - "B" SI Accumulator boron concentration is 2402 ppm.
   - "C" SI Accumulator boron concentration is 2577 ppm.
   - RWST boron concentration is 2388 ppm.

   Which ONE (1) of the following describes the impact of this condition, and the action required?

   A. RWST Boron concentration may not adequately counterract the reactivity effects of an uncontrolled RCS cooldown. Immediately initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

   B. RWST Boron concentration may not adequately counterract the reactivity effects of an uncontrolled RCS cooldown. Restore boron concentration within limits in 1 hour or initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

   C. "C" SI Accumulator Boron solubility concerns may adversely affect ECCS flow analysis assumptions. Immediately initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

   D. "C" SI Accumulator Boron solubility concerns may adversely affect ECCS flow analysis assumptions. Restore boron concentration within limits in 1 hour or initiate a plant shutdown in accordance with GP-006, Plant Shutdown to Hot Standby.

4. Given the following conditions:

   - A manual reactor trip was performed.
   - All DRPI indication is extinguished.
   - Reactor Trip breakers indicate red lights on, green lights off.
   - Power Range indication is 8%.
   - Intermediate Range indication is 2×10^{-5} amps.
   - Intermediate Range Start Up Rate (SUR) is + 0.1 dpm.

   Which one of the following describes the plant condition and the action required?

   A. The reactor is tripped. Continue in PATH-1 to determine if SI is required.

   B. The reactor is tripped. Transition to EPP-004, Reactor Trip Response.

   C. The reactor is NOT tripped. Continue in PATH-1.

   D. The reactor is NOT tripped. Transition to FRP-S.1, Response to Nuclear Power Generation/ATWS.

5. Given the following conditions:

   - A LOCA has occurred
   - The crew is performing PATH-1
   - The following parameters exist:

     - All SG pressures – 800 psig and slowly trending down
     - All SG levels – being controlled at 42% NR
     - PRZ level – off-scale high
     - RVLIS Upper Head indicates 20%
     - Containment Pressure – 8 psig
     - RWST level – 74% and decreasing slowly
     - ONE CSIP has been stopped in accordance with PATH-1
     - RCS pressure – 950 psig and decreasing

   Based on these indications, which ONE (1) of the following procedures will the crew enter next?

   A. EPP-008, "SI Termination" to stop ECCS pumps

   B. EPP-009, "Post-LOCA Cooldown and Depressurization" to cooldown and reduce RCS pressure

   C. EPP-010, "Transfer to Cold Leg Recirculation" to allow for long term recirculation of the RCS

   D. EPP-012, "Loss of Emergency Coolant Recirculation" to initiate makeup and minimize SI flow

6. Given the following conditions:

   - The plant is at 100% power.
   - The following alarms are received in the sequence listed, approximately 10 seconds apart:

     - APP-ALB-009-2-1, PRESSURIZER HIGH LEVEL DEVIATION AND HEATERS ON
     - APP-ALB-009-4-1, PRESSURIZER HIGH LEVEL
     - APP-ALB-009-4-2, PRESSURIZER HIGH LEVEL ALERT

   The RO determines that PRZ Level indicates the following:

     - LI-459 indicates 95% and rising
     - LI-460 indicates 56% and lowering
     - LI-461 indicates 55% and lowering

   Which ONE (1) of the following actions will be directed by the USCO?

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

B. Lower Charging flow and select unaffected PRZ level channels in accordance with the applicable alarm response procedures.

C. Raise Charging flow and select unaffected PRZ level channels in accordance with the applicable alarm response procedures.

D. Isolate Letdown and control Charging as necessary to maintain PRZ level in accordance with OP-107, Charging and Volume Control System.

7. Given the following conditions:

   - The Unit is at 100% power.
   - All systems are in normal alignments.
   - A Steam Line Break occurs downstream of MSIV "A".
   - A Main Steam Line Isolation Signal is generated.

   Which ONE (1) of the following describes the maximum allowable closure time of the MSIVs and the associated reason?

   A. The MSIVs must close within 5 seconds to minimize the reactivity effects of the RCS cooldown.

   B. The MSIVs must close within 5 seconds to limit the pressure rise inside Containment.

   C. The MSIVs must close within 30 seconds to limit the pressure rise inside Containment.

   D. The MSIVs must close within 30 seconds to minimize the reactivity effects of the RCS cooldown.

8. Given the following conditions:

- The plant is at 100% power.
- RCP "B" seal No. 1 leakoff high-low flow alarm is in.
- "B" RCP No. 1 seal leakoff flow indicates 7 gpm.
- NLO has been sent to read "B" RCP #2 seal leakoff flow.
- VCT pressure is 26 psig.
- "B" RCP seal injection flow is 9.5 gpm.
- "B" RCP No. 2 seal leakoff high flow alarm has just been received.

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

A. Trip the reactor and go to EOP-Path -1.

B. Reduce power to less than 49% and secure the "B" RCP within 4 hours.

C. Power operation may continue provided that seal injection flow to "B" RCP is maintained greater than 9 gpm.

D. Initiate a plant shutdown per GP-006, stop "B" RCP within 8 hours.

9. Given the following conditions:

   - The plant is initially operating at 70% Power.
   - APP-ALB-009-3-2, PRESSURIZER HIGH PRESS DEVIATION CONTROL is received.
   - Pressurizer Pressure Indicator PI-444 indicates 2320 psig and INCREASING.
   - Pressurizer Pressure Indicator PI-445.1 indicates 2225 psig and DECREASING.

   Based on the indications above, which ONE (1) of the following describes plant status and what actions are immediately required?

   A. Reactor power is 0%. Enter and perform actions of PATH-1. When directed by PATH-1, CLOSE PORVs 445A and 445B AND/OR their associated Block Valves.

   B. Reactor power remains at approximately 70%. Place Master Pressure Controller PK-444A in Manual and raise controller output to restore RCS pressure IAW APP-ALB-009-3-2.

   C. Reactor power is 0%. Enter and perform actions of PATH-1. When directed by PATH-1, ensure PORVs 445A and 445B close when pressure is reduced below the setpoint, OR close PORV Block Valves IAW APP-ALB-009-3-2.

   D. Reactor power remains at approximately 70%. Enter AOP-019, Malfunction of RCS Pressure Control, and place Master Pressure Controller PK-444A in Manual, reducing controller output to close spray valves and PORV 444B.

10. Given the following conditions:

- The plant is at 100 % power.
- The following conditions have been observed:
  - Condenser Vacuum Pump Rad monitor (REM-01TV-3534) went into alert 4 and 1/2 hours ago.
  - Primary to Secondary leakage into "B" SG has been identified as follows:
    - 21 gallons per day 4 hours ago.
    - 41 gallons per day 3 hours ago.
    - 62 gallons per day 2 hours ago.
    - 82 gallons per day for the last 60 minutes.

Based on the above conditions, which ONE (1) of the following describes the required actions?

A. Hold power stable while performing AOP-016, Excessive Primary Plant Leakage, Attachment 10

B. Perform AOP-016, Attachment 11, and shutdown the plant in accordance with GP-006. Be in Mode 3 within 24 hours

C. Perform AOP-016, Attachment 11, and shutdown the plant in accordance with GP-006. Be in Mode 3 in less than 6 hours

D. Perform AOP-016, Attachment 11, and reduce power to 50% within 1 hour in accordance with GP-006. Be in Mode 3 within the the next 2 hours

11. Given the following conditions:

    - The plant is operating at 100% power.
    - The following alarm and condition is observed in the control room:

        - APP-ALB-022-4-3, GENERATOR VOLT/FREQ RATIO HIGH OR UNDER FREQ
        - Main Generator frequency has dropped to 58.2 Hz.

    Based on the above conditions, which ONE (1) of the following actions is required?

    A. Reduce Turbine Load to maintain reactor power less than 100% IAW AOP-028, Grid Instability.

    B. Raise Generator Excitation to maintain within the limits of the generator capability curve IAW AOP-028.

    C. Monitor the low frequency condition, and if it exists for 5 minutes, initiate a reactor shutdown IAW GP-006, Normal Plant Shutdown from Power Operation to Hot Standby.

    D. Immediately trip the reactor and enter PATH-1.

12. Given the following conditions:

- The plant is at 69% power.
- Plant load increase is in progress in accordance with GP-005.
- The following alarms are received:
  - APP-ALB-020-2-4A, CONDSR PRE TRIP LOW VACUUM
  - APP-ALB-021-8-5, COMPUTER ALARM CIRC WATER SYSTEMS
- The BOP determines that condenser backpressure is 6.6 inches Hg in Zone 2 and rising slowly.
- Computer alarm indicates Vacuum Pump "A" Vibration HIGH.

Which ONE (1) of the following actions is required?

A. Reduce turbine load to less than 60% in accordance with GP-006 to stabilize condenser vacuum.

B. Enter AOP-012, Partial Loss of Condenser Vacuum, to perform actions for vacuum restoration.

C. Trip the reactor and enter PATH-1

D. Trip the turbine and enter AOP-006, Turbine Generator Trouble

13. Given the following conditions:

- The plant was operating at 95 percent power, steady state conditions, when multiple feed system annunciators were received.
- The following plant conditions are observed and communicated by the BOP operator:
  - "A" MFP control switch indicates green
  - ALB-16 /1-4 "FW Pump A/B - O/C Trip, GND, OR Bkr Fail TO Close" is lit.
  - ALB-20 /2-2 "Turbine Runback Operative" is lit
  - Steam Generator Levels 52 percent and lowering
  - FRV M/A controllers output rising
  - Reactor power at 93 percent and lowering.

Which ONE (1) of the following actions is the USCO required to perform?

A. Enter AOP-010, Feedwater Malfunctions. Direct the RO to trip the reactor and go to EOP-PATH-1.

B. Enter AOP-010, Feedwater Malfunctions. Direct performance of Section 3.2, Loss of Running Pumps.

C. Enter AOP-010, Feedwater Malfunctions, and direct the BOP to Isolate SG Blowdown

D. Enter AOP-006, Turbine Generator Trouble. Direct the crew to manually control SG levels 52 percent to 62 percent in accordance with OP-134.01, Feedwater System.

14. Given the following plant conditions:

- The plant is operating at 55% power.
- The following annunciators are received in the Control Room:
  - APP-ALB-002-7-2, SERV WTR PUMPS DISCHARGE LOW PRESS
  - APP-ALB-002-6-1, SERV WTR SUPPLY HEADER A LOW PRESS
  - APP-ALB-002-5-5, SERV WTR HEADER A HIGH/LOW FLOW
- The BOP notes that Cooling Tower Basin Level is decreasing.
- "A" ESW Pump automatically starts.
- APP-ALB-007-7-2, SERV WTR PUMPS DISCHARGE LOW PRESS alarm clears.
- Cooling Tower Basin level stabilizes. .

The crew enters AOP-022, Loss of Service Water and completes the immediate actions. .

Which ONE (1) of the following describes the action required, if any, based on current plant conditions?

A. Trip the reactor and go to PATH-1. Ensure the Emergency Service Water system is aligned in accordance with PATH-1

B. Locate and isolate the leak on ESW Train "A". When the leak is isolated, restore "A" ESW header to service using ESW or NSW in accordance with OP-139, Service Water System.

C. Locate and isolate the leak on the NSW header. When the leak is isolated, shutdown Train "A" ESW and restore normal NSW flow in accordance with OP-139, Service Water System.

D. No additional actions are required because the leak is isolated. Verify ESW is properly aligned to equipment listed in AOP-022, Attachment 1, Equipment Alignment due to Loss of an ESW Header.

15. Given the following conditions:

- A release of Treated Laundry and Hot Shower Tank "A" is in progress.
- A HIGH ALARM is received on REM-*1WL-3540, Treated Laundry and Hot Shower Tank Pump discharge radiation monitor.
- Discharge flow indicated on the Waste Processing computer is approximately 28 GPM.

Which ONE (1) of the following describes the action required for the above plant conditions?

A. The release must be manually terminated. Isolate the release path in accordance with AOP-008, Accidental Release of Liquid Waste, and/or AOP-005, Radiation Monitoring.

B. The release was automatically terminated. Waste Processing computer indication is a setpoint, not actual flow, indicated by the liquid waste release permit. Verify isolation in accordance with AOP-005, Radiation Monitoring.

C. The release may continue because the release permit provides actual sample data of the tank contents. Determine cause of the alarm in accordance with OP-119, Radwaste Radiation Monitoring System.

D. The release may continue provided 2 independent samples of the release are taken and analyzed by qualified individuals and verified to be within limits.

16. Given the following conditions:

- The plant is at 100% power.
- The Compressed Air System (CAS) Control Panel is set for 1C Air Compressor in LEAD (Sequence 3).
- A Valve Shift Error occurs on Air Dryer 1C-NNS.
- Instrument Air Header pressure indicates 110 psig.

Which ONE (1) of the following describes the impact of this failure, and the action required?

A. High Air Dryer DP may cause a Loss of Instrument Air. Bypass Air Dryer 1C-NNS in accordance with AOP-017, Loss of Instrument Air.

B. Instrument Air may have a higher than desired moisture content. Shift the CAS Control Panel to 1A Air Compresor in LEAD (Sequence 1) and isolate Air Dryer 1C-NNS in accordance with OP-151.01, Compressed Air.

C. Instrument Air may have a higher than desired moisture content. Isolate Air Dryer 1C-NNS and place Air Dryer 1A-NNS in service on Air Compressor 1C in accordance with OP-151.01, Compressed Air.

D. High Air Dryer DP may cause a Loss of Instrument Air. Manually perform the valve shift on Air Dryer 1C-NNS in accordance with AOP-017, Loss of Instrument Air.

17. Given the following conditions:

- A LOCA Outside Containment has occurred.
- The crew has completed performing the actions of EPP-013, LOCA Outside Containment.
- RCS pressure is 1450 psig and lowering slowly.

Which ONE (1) of the following describes the action that will be performed?

A. Return to EPP-013, Step 1, and repeat steps to isolate the leak

B. Return to PATH-1, entry point C, to rediagnose the event in progress.

C. Transition to EPP-009, Post LOCA Cooldown and Depressurization.

D. Transition to EPP-012, Loss of Emergency Coolant Recirculation

18. Given the following conditions:

- A reactor trip has occurred due to a loss of offsite power.
- The operating crew is performing actions of EPP-005, Natural Circulation Cooldown.
- Train "A" of RVLIS is out of service.
- The crew has commenced RCS cooldown and depressurization.

- RCS pressure is 1780 psig and trending DOWN.
- RCS Tavg is 448 deg. F and trending DOWN.
- RCS cooldown rate MUST be performed at approximately 60 deg F/Hr. due to secondary inventory concerns.
- Pressurizer level is 35% and trending UP slowly.

Which one of the following actions will be required in accordance with EPP-005?

A. Repressurize the RCS to minimize void growth.

B. Actuate safety injection and transition to EPP-014, Faulted Steam Generator Isolation.

C. Transition to EPP-007, Natural Circulation Cooldown With Steam Void In Vessel (Without RVLIS).

D. Transition to EPP-006, Natural Circulation Cooldown With Steam Void In Vessel (With RVLIS).

19. Given the following conditions:

- The plant was operating at 100% power when a reactor trip occurred on low pressurizer pressure.
- "C" S/G Tube Rupture was diagnosed, and PATH-2 was entered.
- RCS Cooldown and Depressurization is complete.

Given the following control room indications:

- SG "C" level is 32% and decreasing.
- SG "A" and "B" levels are stable.
- PRZ level is 63% and increasing.

Which ONE (1) of the following describes the required operator action IAW PATH-2?

A. Increase Charging Flow and Depressurize RCS.

B. Decrease Charging flow.

C. Energize Pressurizer heaters.

D. Depressurize RCS and Decrease Charging flow.

20. EXCLUDING any unexpected absences, which ONE (1) of the following describes the MINIMUM shift crew composition required by Technical Specifications in MODE 3 for the positions listed?

	S-SO	USCO	RO	AO
A.	0	1	2	2
B.	1	1	2	2
C.	1	0	2	1
D.	1	1	1	2

21. Which ONE of the below is a responsibility of the WCC-SRO concerning a Temporary Change (Plant Modification) in accordance with EGR-NGGC-0005, Engineering Change?

A. Identify the placement of Temporary Change Tags.

B. Verify proper annotation of affected Priority 0 drawings.

C. Initiate the Temporary Change Log (Form 2)

D. Perform a periodic audit verifying the hanging of the Temporary Change Tags and the state of the Temporary Change Tag integrity

22. A male employee who is 20 years old has received the following exposure:

    -Current Total Effective Dose Equivalent (TEDE) for the year to date is 4200 mrem.
    -Current Deep Dose Equivalent (DDE) for the year to date is 700 mrem.
    -Current Committed Effective Dose Equivalent (CEDE) for the year to date is 3500 mrem.
    -Current Total Organ Dose Equivalent (TODE) for the year to date is 300 mrem.

    Assuming his exposure is properly documented and appropriate management approval is received, which of the following is the MAXIMUM additional whole body exposure the operator can receive this year without exceeding his 10CFR20 exposure limits?

    A. 800 mrem

    B. 1200 mrem

    C. 500 mrem

    D. 1500 mrem

23. A Normal Containment Purge is planned following an outage.

    Which ONE (1) of the following describes the release permit requirements for the planned evolution?

    A. A Batch Release Permit MUST be prepared per CRC-853.

    B. If the purge is within 30 days of the Pre-Entry Purge, the release permit for Pre-Entry Purge may be used.

    C. If all 4 Containment Ventilation Isolation monitors and both RCS leak detection monitors are OPERABLE, a Batch Release Permit is NOT required.

    D. A Batch Release Permit must ONLY be prepared if the previous purge was secured for radiological reasons. If not, a release permit is NOT required.

24. Given the following conditions:

- A loss of Component Cooling Water has occurred.
- The reactor was tripped in accordance with AOP-014, Loss of Component Cooling Water.
- The crew has entered PATH-1.

Which ONE (1) of the following describes the continued use of AOP-014, Loss of Component Cooling Water?

A. Use of AOP-014 is NOT allowed during EOP performance.

B. May ONLY be used concurrently with actions of PATH-1, and ONLY where directed by the procedure.

C. May be used concurrently with EOPs ONLY if referring to the AOP does NOT result in delaying accident mitigation

D. May be used concurrently as necessary under all conditions of EOP use.

25. Given the following conditions:

- The plant is operating at 100% power.
- EDG 1B-SB is out of service and is expected to return to service in two (2) hours.
- Subsequently, the following events occur:
  - A loss of offsite power occurs.
  - The reactor is tripped and the crew enters PATH-1
  - SI is NOT actuated.
  - The crew made a transition to FRP-H.1, Loss Of Secondary Heat Sink based on a CSFST RED Path.

Subsequently, EDG 1A-SA output breaker trips on a bus fault.

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

A. Immediately transition to EPP-001, Loss Of All AC Power to 1A-SA and 1B-SB Buses.

B. Restore feed in accordance with FRP-H.1, and then return to PATH-1 to restore EDG 1A-SA.

C. Remain in FRP-H.1 until directed to return to procedure in effect, and then transition to EPP-001.

D. Remain in FRP-H.1 unless a higher priority RED condition is observed. When directed to return to procedure in effect, return to PATH-1. Restore EDG 1A-SA or 1B-SB in EPP-004, Reactor Trip Response.

PROGRESS ENERGY

HARRIS TRAINING SECTION

EXAMINATION ANSWER KEY

EXAM NUMBER: 2006 ILC SRO NRC Exam LESSON/COURSE CODE: None
SUBJECT/CATEGORY: 2006 ILC RO NRC Written Exam
EXAM POINT VALUE: 25

See Attached

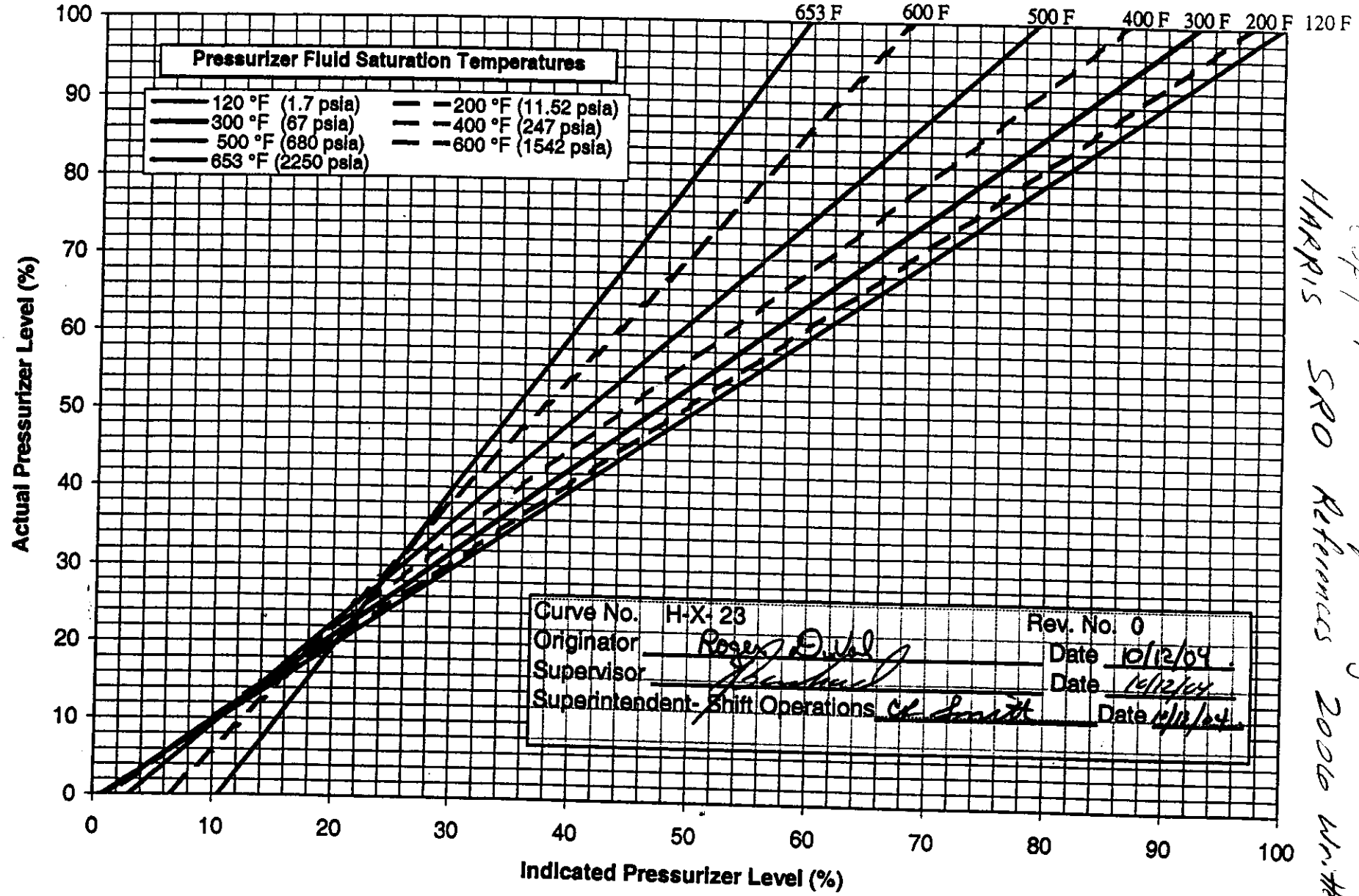
QA VITAL RECORD

ANSWER KEY REPORT

for Harris SRO NRC Exam 2006 Test Form: 0

#	ID	Points	Type	Answers 0
1	005 AA2.03 1	1.00	MCS	C
2	005 G2.1.12 2	1.00	MCS	C
3	006 A2.10 1	1.00	MCS	B
4	007 EA2.04 1	1.00	MCS	D
5	008 G2.4.4 2	1.00	MCS	B
6	011 G2.1.7 1	1.00	MCS	C
7	013 G2.2.22 1	1.00	MCS	A
8	015 G2.1.23 2	1.00	MCS	A
9	027 AA2.09 1	1.00	MCS	D
10	037 G2.1.2 2	1.00	MCS	B
11	045 G2.1.23 1	1.00	MCS	D
12	051 G2.4.45 1	1.00	MCS	B
13	059 G2.4.49 2	1.00	MCS	A
14	062 AA2.03 2	1.00	MCS	B
15	068 A2.04 1	1.00	MCS	A
16	078 A2.01 1	1.00	MCS	B
17	E04 G2.1.20 1	1.00	MCS	D
18	E10 EA2.1 1	1.00	MCS	D
19	G2.1.25 2	1.00	MCS	C
20	G2.1.4 1	1.00	MCS	B
21	G2.2.11 2	1.00	MCS	B
22	G2.3.1 3	1.00	MCS	A
23	G2.3.9 1	1.00	MCS	A
24	G2.4.11 1	1.00	MCS	C
25	G2.4.6 1	1.00	MCS	A

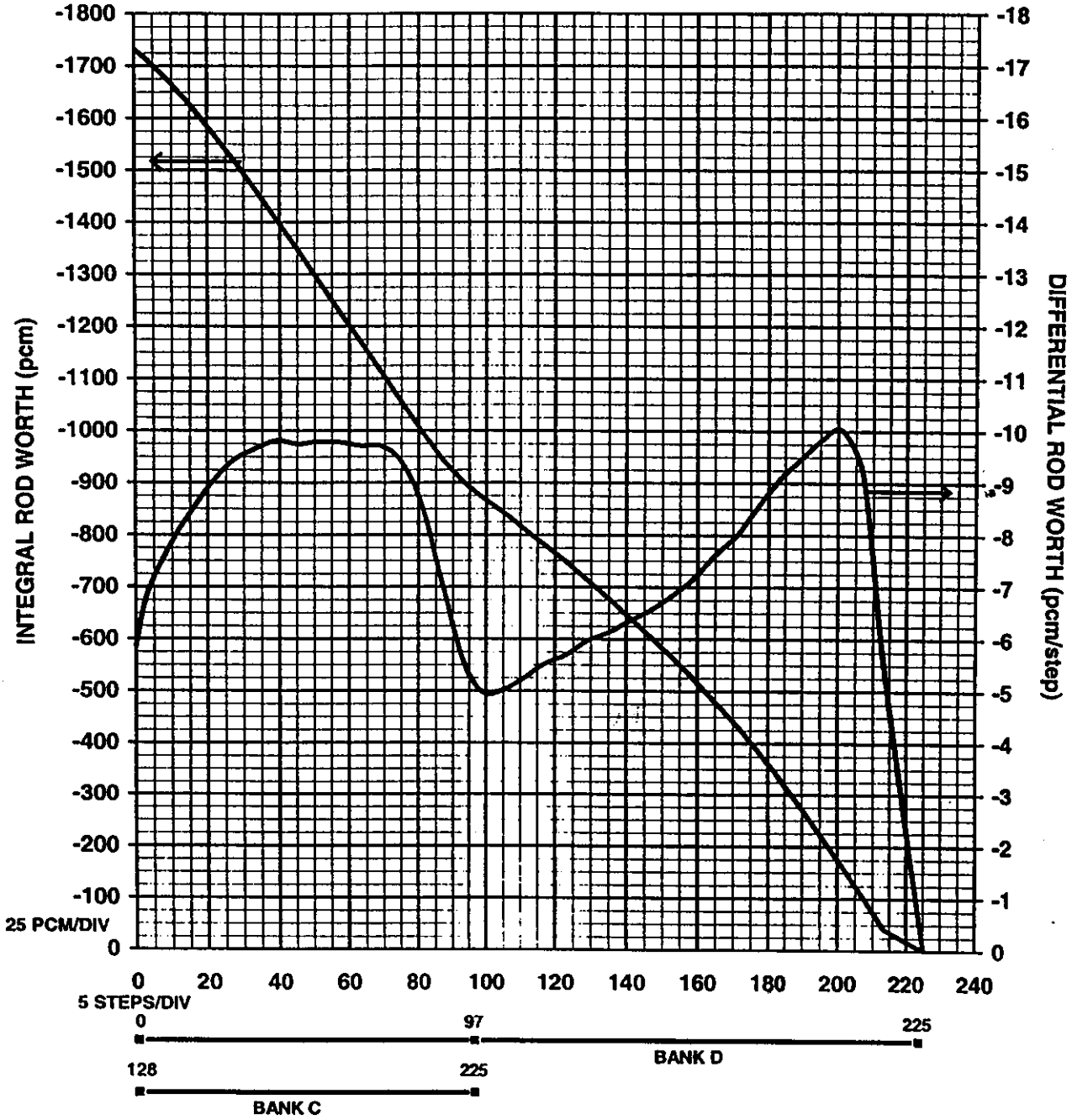
Pressurizer Level Cold Calibrated Channel (LI-462)
Indicated Level versus Actual Water Level at Various Saturation Temperatures



Copy for NRC Harris SRO Reference 2006 Wr. Exam

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

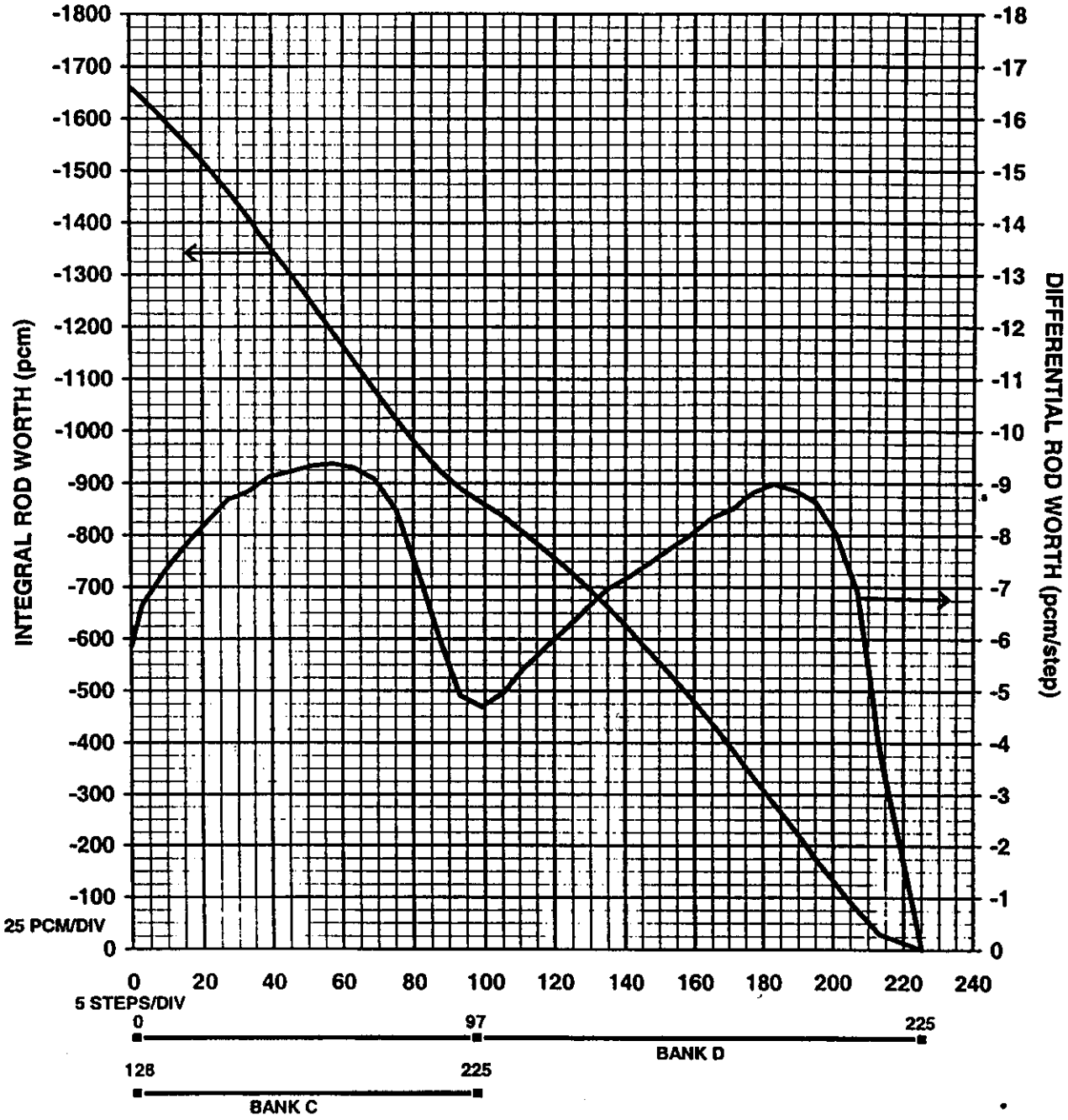
BOL (0 ≤ EFPD ≤ 161), HZP, WITH NO XENON



CURVE NO.	A-13-6	REV NO.	0
ORIGINATOR	Charles [illegible]	DATE	10/14/04
SUPERVISOR	[illegible]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

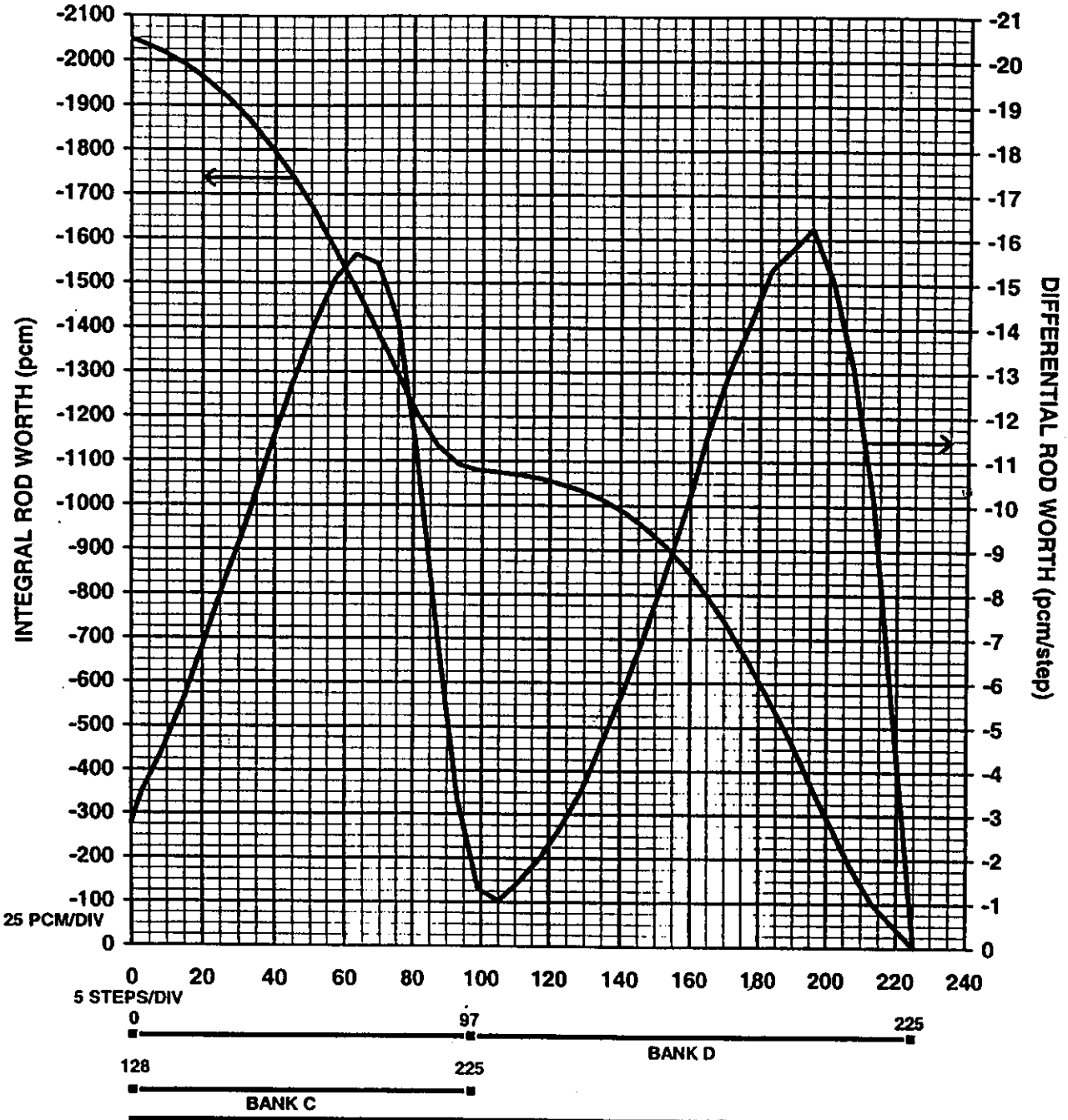
MOL (161 < EFPD ≤ 333), HZP, WITH NO XENON



CURVE NO.	A-13-7	REV NO.	0
ORIGINATOR	Charles [illegible]	DATE	10/14/04 10/15/04
SUPERVISOR	[illegible]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

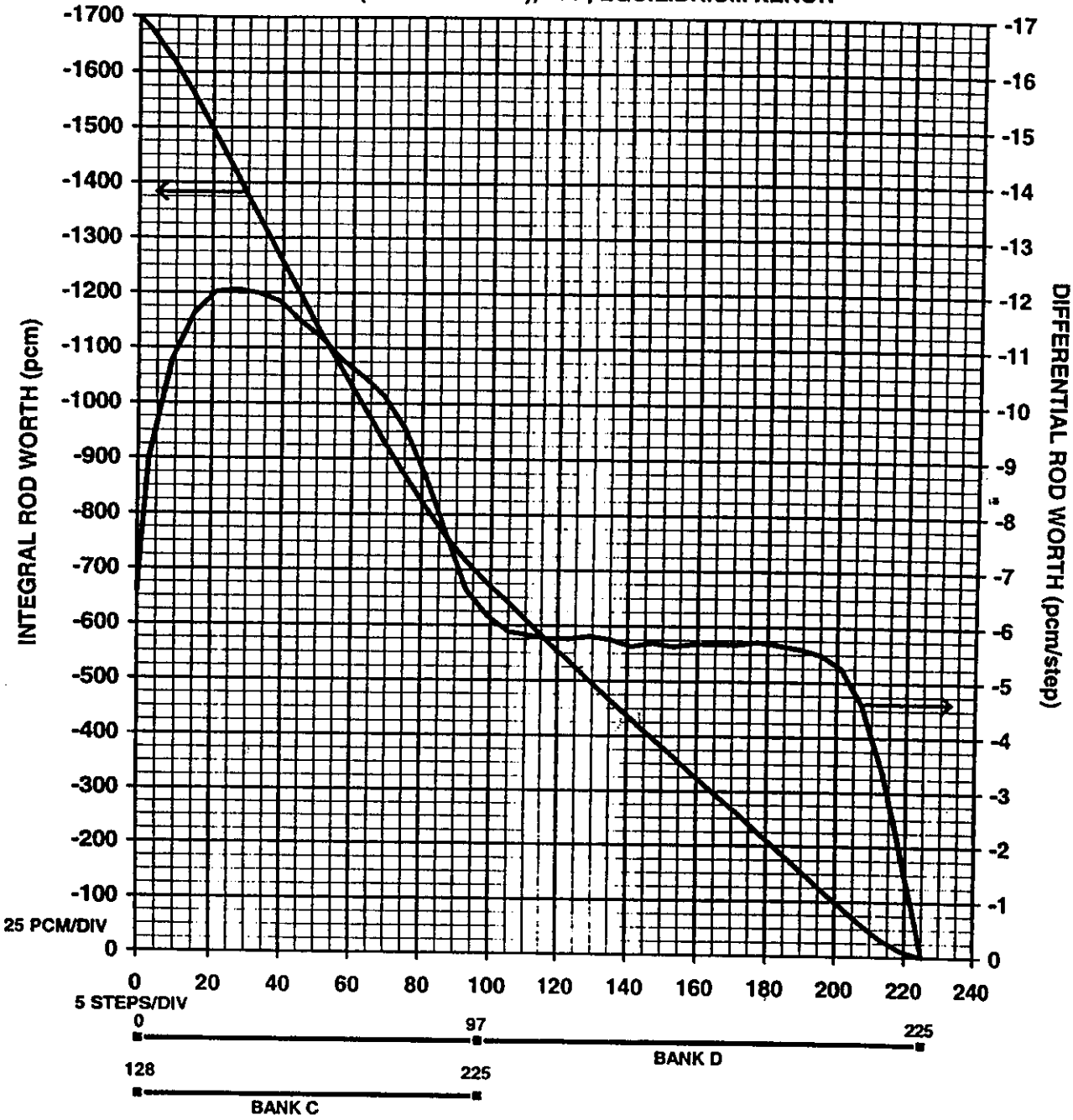
EOL (333 < EFPD ≤ 517), HZP, WITH NO XENON



CURVE NO.	A-13-8	REV NO.	0
ORIGINATOR	Charles Griffin	DATE	10/14/04 10/19/04
SUPERVISOR	D. Nicholas	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	C R Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

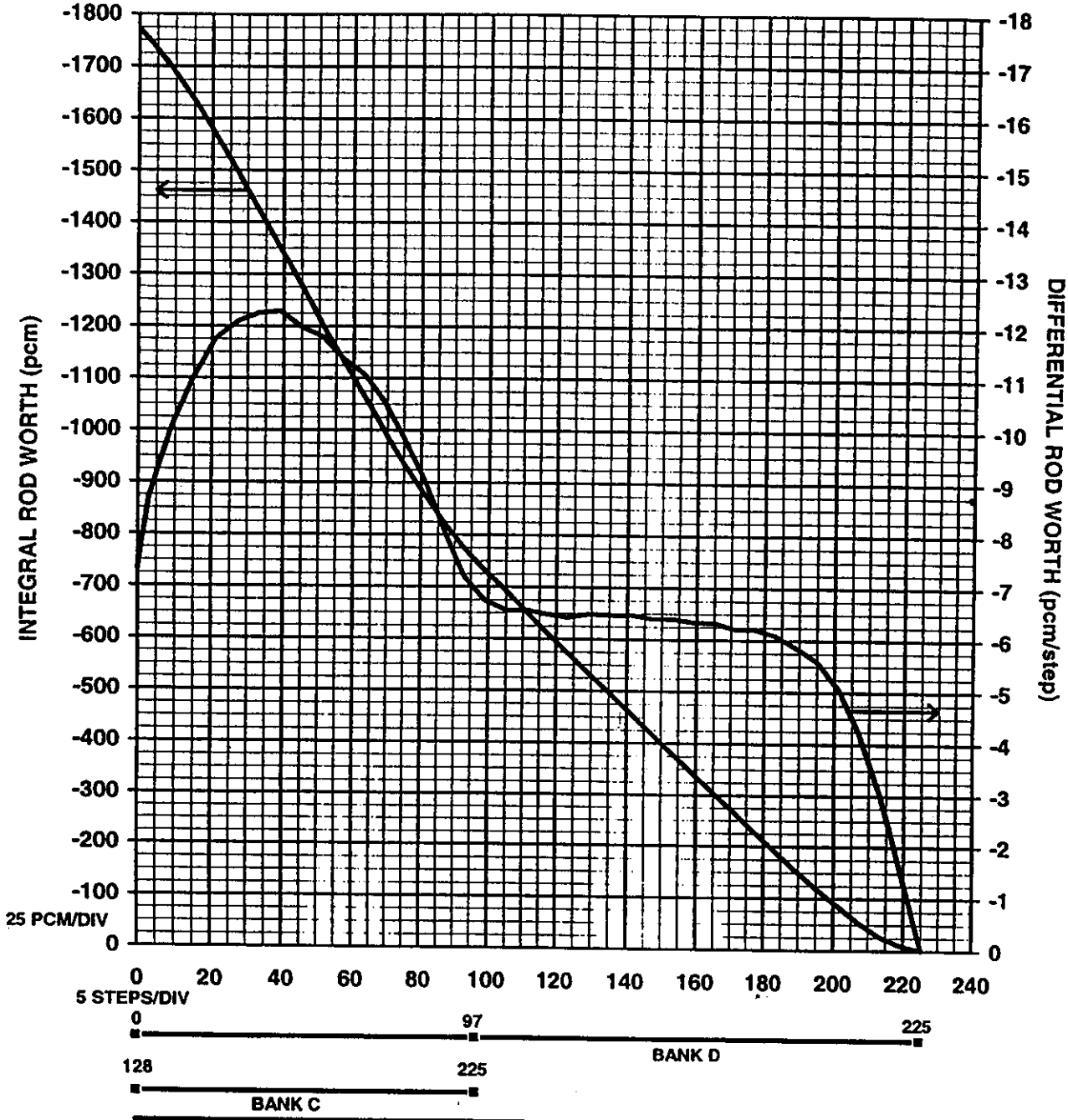
BOL (0 ≤ EFPD ≤ 161), HFP, EQUILIBRIUM XENON



CURVE NO.	A-13-9	REV NO.	0
ORIGINATOR	[signature]	DATE	10/4/04 10/12/04
SUPERVISOR	[signature]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

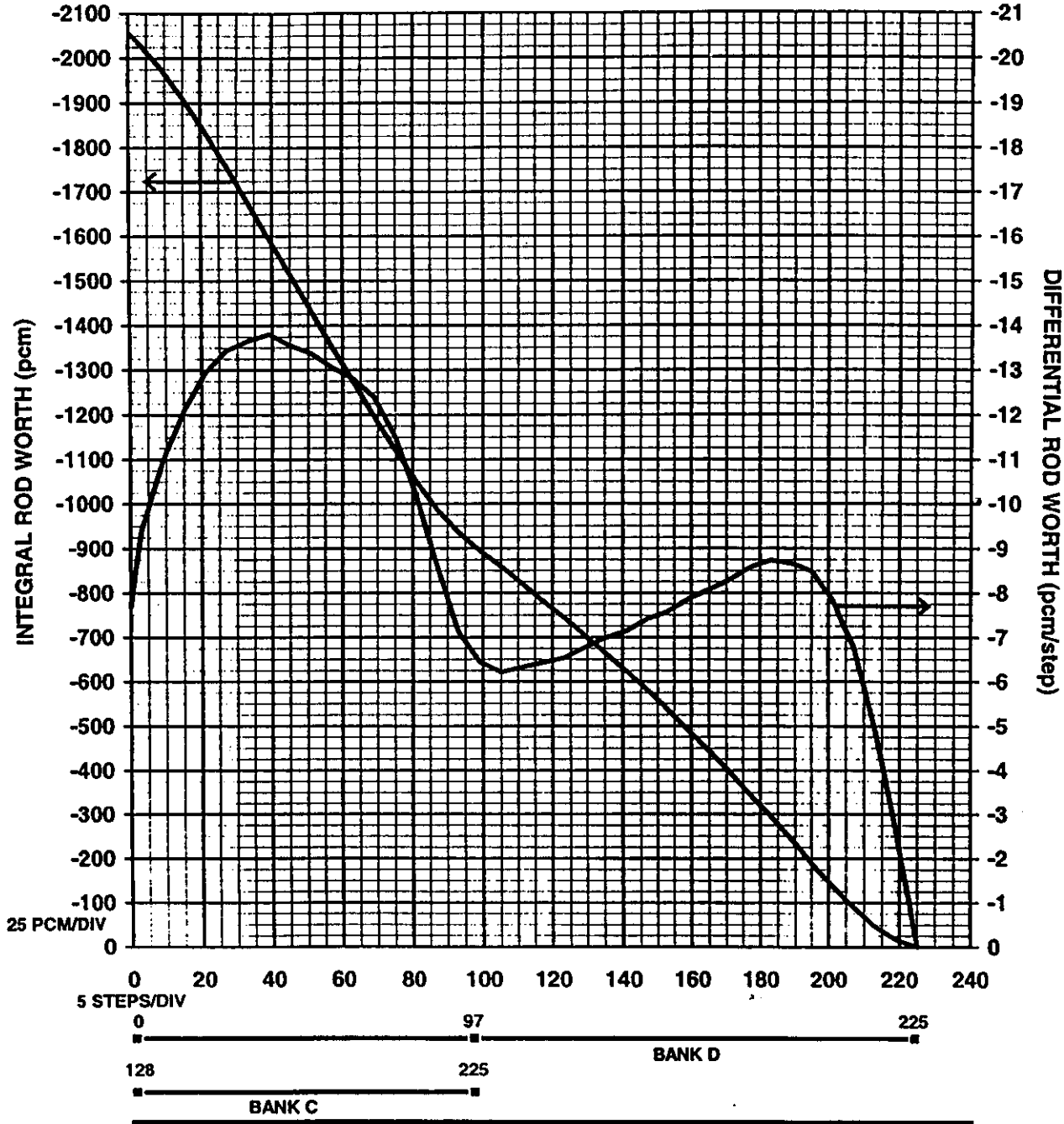
MOL (161 < EFPD ≤ 333), HFP, EQUILIBRIUM XENON



CURVE NO.	A-13-10	REV NO.	0
ORIGINATOR	[signature]	DATE	10/14/04 10/17/04
SUPERVISOR	[signature]	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	C R Smith	DATE	10/24/04

HARRIS UNIT 1 CYCLE 13
DIFFERENTIAL AND INTEGRAL
ROD WORTH CONTROL BANKS D and C
MOVING WITH 97 STEP OVERLAP

EOL (333 < EFPD ≤ 517), HFP, EQUILIBRIUM XENON



CURVE NO.	A-13-11	REV NO.	0
ORIGINATOR	Charles Bilisoly	DATE	10/19/04 10/17/04
SUPERVISOR	M. Nichols	DATE	10/23/04
SUPERINTENDENT - SHIFT OPERATIONS	CR Smith	DATE	10/20/04

Attachment 1
Sheet 1 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

1. **NOTIFY** Chemistry to implement CRC-804, Primary-To-Secondary Leak Rate Monitoring, to accomplish the following: **[A.2]**

- ☐ • quantify leak rate
- ☐ • quantify leak rate trend
- ☐ • determine leaking SG

NOTE

Condenser Vacuum Pump radiation monitor indication is sensitive to high temperature and may read higher than actual when the monitor cooler is not in service. The cooling water alignment is located in OP-139, Service Water System.

☐2. **ESTIMATE** Primary-To-Secondary leak rate every 15 minutes based on ONE of the following (no preferred method): **[C.5, 7]**

	Method
(1)	• Condenser Vacuum Pump Rad Monitor, REM-01TV-3534 (Grid 2) • Curve H-X-15a, H-X-15b or H-X-15c (depending on the status of motivating air)
(2)	OSI PI plot (Chemistry tab) for Curve H-X-15a, H-X-15b or H-X-15c
(3)	Condenser Vacuum Pump Rad Monitor, REM-01TV-3534 (Grid 2) and conversion factor (Attachment 20), after Chemistry sampling has commenced

Attachment 1
Sheet 2 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

☐ 3. **IF** measured leak rate becomes stable for one hour (less than or equal to 10% change in 1-hour), **THEN REDUCE** monitoring frequency to once every 2-hours or more frequently, as directed by the Unit SCO.

4. **DETERMINE** leaking SG(s) using the following information:

☐ • Individual SGBD samples

☐ • Main steam line radiation monitor levels

☐ • Local surveys of SGBD lines

Attachment 1
Sheet 3 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED
✸ 5. **CHECK** the following radiation monitor readings indicating NOT IN ALARM:	5. **PERFORM** the following:
☐ • RM-01MS-3591 SB, Main Steam Line A	a. **NOTIFY** Health Physics to survey the following outside the RCA:
☐ • RM-01MS-3592 SB, Main Steam Line B	☐ • SG Blowdown piping ☐ • Vicinity of Main Steam piping
☐ • RM-01MS-3593 SB, Main Steam Line C	b. **IF** ANY monitor is in HIGH ALARM, **THEN PERFORM** the following:
☐ • REM-01TV-3534, Condenser Vacuum Pump Effluent (Group 16 RM-11)	☐ (1) **SOUND** the local evacuation alarm.
☐ • REM-1BD-3527, Steam Generator Blowdown (Group 16 RM-11)	☐ (2) **ANNOUNCE** evacuation of the following areas: • Steam Tunnel • SG PORVs/SG Safety valves area • Turbine Building 314' elevation
☐ • RM-1TV-3536-1, Turbine Building Vent Stack Effluent (Group 16 RM-11)	☐ (3) **REPEAT** sounding the local evacuation alarm AND the announcement.
	☐ (4) **IF** ANY Main Steam Line Monitor is in HIGH ALARM, **THEN PERFORM** an Offsite Dose Calculation (refer to PEP-340, Dose Assessment).

Attachment 1
Sheet 4 of 6
Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED
✸ **6. CHECK** BOTH of the following: ☐ • Turbine Building vent stack radiation monitor reading below the high alarm setpoint ☐ • SG tube leakage is less than Tech Spec limits.	☐ **6. START** CVPETS (refer to OP-133, Main Condenser Air Removal System).
✸ **7. CHECK** the following radiation monitor reading indicating NOT IN ALARM: ☐ • REM-21AC-3525, Aux Steam Condensate Tank (Group 4, RM-11) ☐ • REM-21AC-3543A, WPB Aux Stm Condensate (Group 19, RM-11) ☐ • REM-21AC-3543B, WPB Aux Stm Condensate (Group 19, RM-11)	**7. NOTIFY** Radwaste to perform the following: **a. VERIFY** the following valves are SHUT: ☐ • 1AC-151, AS Condensate Return to Condenser MOV ☐ • 1AC-371, Aux Condensate Return to Aux Boiler MOV **b. VERIFY** the following pumps are STOPPED: ☐ • WPB Auxiliary Condensate Pump 1-4A (216' elev. WPB) ☐ • WPB Auxiliary Condensate Pump 1-4B (216' elev. WPB) ☐ • RAB Auxiliary Condensate Pump 1-2A (216' elev. RAB, access to FHB south) ☐ • RAB Auxiliary Condensate Pump 1-2B (216' elev. RAB, access to FHB south)

Attachment 1
Sheet 5 of 6
Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

☐ **8.** **NOTIFY** Chemistry to sample the Auxiliary Steam System for activity.

☐ **9.** **IF** Chemistry reports activity, **THEN ISOLATE** the Auxiliary Steam System to minimize contamination (refer to OP-130.01, Auxiliary Steam and Condensate System).

Attachment 1
Sheet 6 of 6

Primary-To-Secondary Leak

INSTRUCTIONS	RESPONSE NOT OBTAINED

NOTE

For initial leakage reports, where no previous leakage existed, leakage should be assumed to have changed from zero to the current value in the last hour.

✸ **10. MONITOR** BOTH of the following:

☐ • Primary-to-Secondary leak rate

☐ • Rate of increase reports from Chemistry

AND PERFORM the required actions based on the following: **[C.5, 7]**

Leak Rate (gpd) in any SG	+	Rate of Increase (gpd/hr) in any SG	=	Required Action
Increased Monitoring				
5 to less than 30	+	N/A	=	• Perform Attachment 9
Action Level 1				
30 to less than 75	+	N/A	=	• Perform Attachment 10
Action Level 2				
Greater than or equal to 75 sustained for 1 hour	+	Less than 30	=	• Perform Attachment 11 • Be in Mode 3 within 24 hours
Action Level 3				
Greater than or equal to 75	+	Greater than or equal to 30	=	• Perform Attachment 11 • Reduce power to 50% within 1 hour • Be in Mode 3 within the next 2 hours (3 hours total time)
Greater than or equal to 75 **AND** LOSS of REM-01TV-3534, Condenser Vacuum Pump Rad Monitor (Grid 2)	+	N/A	=	• Perform Attachment 11 • Be in Mode 3 in less than 6 hours
Greater than or equal to 150	+	Less than 30	=	• Perform Attachment 11 • Be in Mode 3 in less than 6 hours • Be in Mode 5 within the next 30 hours (36 hours total)

– END OF ATTACHMENT 1 –

Instructions	Response Not Obtained

39. Control RCS Pressure AND Charging Flow To Minimize RCS-To-Secondary Leakage Using Table:

REQUIRED ACTION FOR PRESSURE CONTROL

Priority for RCS depressurization:

1. Normal spray
2. IF letdown in service, THEN use auxiliary spray.
3. One PRZ PORV

PRZ LEVEL	Ruptured SG Level		
	INCREASING	DECREASING	OFFSCALE HIGH
Less than 25% [40%]	Increase charging flow Depressurize RCS.	Increase charging flow	Increase charging flow * Maintain RCS AND ruptured SG pressures equal.
Between 25% and 50% [40% and 50%]	Depressurize RCS.	Energize PRZ heaters.	Maintain RCS AND ruptured SG pressures equal.
Between 50% and 75% [50% and 60%]	Decrease charging flow Depressurize RCS.	Energize PRZ heaters.	Maintain RCS AND ruptured SG pressures equal.
Greater than 75% [60%]	Decrease charging flow	Energize PRZ heaters.	Maintain RCS AND ruptured SG pressures equal.

3/4.3.3 MONITORING INSTRUMENTATION

RADIATION MONITORING FOR PLANT OPERATIONS

LIMITING CONDITION FOR OPERATION

3.3.3.1 The radiation monitoring instrumentation channels for plant operations shown in Table 3.3-6 shall be OPERABLE with their Alarm/Trip Setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel Alarm/Trip Setpoint for plant operations exceeding the value shown in Table 3.3-6, adjust the Setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With one or more radiation monitoring channels for plant operations inoperable, take the ACTION shown in Table 3.3-6.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel for plant operations shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and DIGITAL CHANNEL OPERATIONAL TEST for the MODES and at the frequencies shown in Table 4.3-3.

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

INSTRUMENT	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
1. Containment Radioactivity--					
a. Containment Ventilation Isolation Signal Area Monitors	2	3	1, 2, 3, 4, 6	#	27
b. Airborne Gaseous Radioactivity					
1) RCS Leakage Detection	1	1	1, 2, 3, 4	$\leq 1.0 \times 10^{-3}$ μCi/ml	26, 27
2) Pre-entry Purge	1	1	##	$\leq 2.0 \times 10^{-3}$ μCi/ml	30
c. Airborne Particulate Radioactivity					
1) RCS Leakage Detection	1	1	1, 2, 3, 4	$\leq 4.0 \times 10^{-8}$ μCi/ml	26, 27
2) Pre-entry Purge	1	1	##	$\leq 1.5 \times 10^{-8}$ μCi/ml	30
2. Spent Fuel Pool Area-- Fuel Handling Building Emergency Exhaust Actuation					
a. Fuel Handling Building Operating Floor--South Network	1/train***	1/train 2 trains	**	$\leq$ 100 mR/hr	28
b. Fuel Handling Building Operating Floor--North Network	1/train***	1/train 2 trains	*	$\leq$ 100 mR/hr	28
3. Control Room Outside Air Intakes--					
a. Normal Outside Air Intake Isolation	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools.	$\leq 4.9 \times 10^{-6}$ μCi/ml	29

TABLE 3.3-6 (Continued)

RADIATION MONITORING INSTRUMENTATION FOR PLANT OPERATIONS

INSTRUMENT	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ALARM/TRIP SETPOINT	ACTION
3. Control Room Outside Air Intakes-- (Continued)					
b. Emergency Outside Air Intake Isolation--South Intake	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools.	$\leq 4.9 \times 10^{-6}$ μCi/ml	29
c. Emergency Outside Air Intake Isolation--North Intake	1	2	1,2,3,4,5,6 and during movement of irradiated fuel assemblies and movement of loads over spent fuel pools.	$\leq 4.9 \times 10^{-6}$ μCi/ml	29

TABLE 3.3-6 (Continued)

TABLE NOTATIONS

* With irradiated fuel in the Northend Spent Fuel Pool or transfer of irradiated fuel from or to a spent fuel shipping cask.

** With irradiated fuel in the Southend Spent Fuel Pool or New Fuel Pool.

*** Each channel consists of 3 detectors with 1 of 3 logic. A channel is OPERABLE when 1 or more of the detectors are OPERABLE.

\# For MODES 1, 2, 3 and 4, the setpoint shall be less than or equal to three times detector background at RATED THERMAL POWER. During fuel movement the setpoint shall be less than or equal to 150 mR/hr.

\#\# Required OPERABLE whenever pre-entry purge system is to be used.

ACTION STATEMENTS

ACTION 26 - Must satisfy the ACTION requirement for Specification 3.4.6.1.

ACTION 27 - With less than the Minimum Channels OPERABLE requirement, operation may continue provided the containment purge makeup and exhaust isolation valves are maintained closed.

ACTION 28 - With less than the Minimum Channels OPERABLE requirement, declare the associated train of Fuel Handling Building Emergency Exhaust inoperable and perform the requirements of Specification 3.9.12.

ACTION 29 - With the number of OPERABLE channels one less than the Minimum Channels OPERABLE requirement, within 1 hour initiate isolation of the respective air intake. With no outside air intakes available, maintain operation of the Control Room Emergency Filtration System in the Recirculation Mode of Operation.

ACTION 30 - With less than the Minimum Channels OPERABLE requirement, pre-entry purge operations shall be suspended and the containment pre-entry purge makeup and exhaust valves shall be maintained closed.

3/4.9.12 FUEL HANDLING BUILDING EMERGENCY EXHAUST SYSTEM

LIMITING CONDITION FOR OPERATION

3.9.12 Two independent Fuel Handling Building Emergency Exhaust System Trains shall be OPERABLE.*

APPLICABILITY: Whenever irradiated fuel is in a storage pool.

ACTION:

a. With one Fuel Handling Building Emergency Exhaust System Train inoperable, fuel movement within the storage pool or crane operation with loads over the storage pool may proceed provided the OPERABLE Fuel Handling Building Emergency Exhaust System Train is capable of being powered from an OPERABLE emergency power source and is in operation and discharging through at least one train of HEPA filters and charcoal adsorber.

b. With no Fuel Handling Building Emergency Exhaust System Trains OPERABLE, suspend all operations involving movement of fuel within the storage pool or crane operation with loads over the storage pool until at least one Fuel Handling Building Emergency Exhaust System Train is restored to OPERABLE status.

c. The provisions of Specification 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.9.12 The above required Fuel Handling Building Emergency Exhaust System trains shall be demonstrated OPERABLE:

a. At least once per 31 days on a STAGGERED TEST BASIS by initiating, from the control room, flow through the HEPA filters and charcoal adsorbers and verifying that the system operates for at least 10 continuous hours with the heaters operating;

b. At least once per 18 months or (1) after any structural maintenance on the HEPA filter or charcoal adsorber housings, or (2) following significant painting, fire, or chemical release in any ventilation zone communicating with the system by:

   1. Verifying that the cleanup system satisfies the in-place penetration and bypass leakage testing acceptance criteria of less than 0.05% and uses the test procedure guidance in Regulatory Positions C.5.a, C.5.c, and C.5.d of Regulatory Guide 1.52, Revision 2, March 1978, and the unit flow rate is 6600 cfm ± 10% during system operation when tested in accordance with ANSI N510-1980

* The Fuel Handling Building Emergency Exhaust System boundary may be opened intermittently under administrative controls.

SURVEILLANCE REQUIREMENTS (Continued)

4.9.12 (Continued)

2. Verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of $\leq$ 2.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

c. After every 720 hours of charcoal adsorber operation by verifying, within 31 days after removal, that a laboratory analysis of a representative carbon sample obtained in accordance with Regulatory Position C.6.b of Regulatory Guide 1.52, Revision 2, March 1978, has a methyl iodide penetration of $\leq$ 2.5% when tested at a temperature of 30°C and at a relative humidity of 70% in accordance with ASTM D3803-1989.

d. At least once per 18 months by:

1. Verifying that the pressure drop across the combined HEPA filters and charcoal adsorber bank is not greater than 4.1 inches water gauge while operating the unit at a flow rate of 6600 cfm ± 10%.

2. Verifying that, on a High Radiation test signal, the system automatically starts and directs its exhaust flow through the HEPA filters and charcoal adsorber banks,

3. Verifying that the system maintains the spent fuel storage pool area at a negative pressure of greater than or equal to 1/8 inch water gauge, relative to the outside atmosphere, during system operation at a flow rate of 6600 cfm ± 10%, and

4. Deleted

5. Verifying that the heaters dissipate 40 ± 4 kW when tested in accordance with ANSI N510-1980.

e. After each complete or partial replacement of a HEPA filter bank, by verifying that the unit satisfies the in-place penetration leakage testing acceptance criteria of less than 0.05% in accordance with ANSI N510-1980 for a DOP test aerosol while operating the unit at a flow rate of 6600 cfm ± 10%.