

**CALVERT CLIFFS NUCLEAR POWER PLANT
TECHNICAL PROCEDURE**

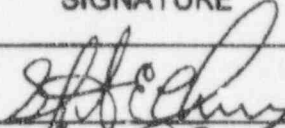
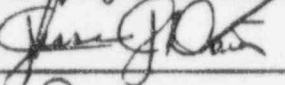
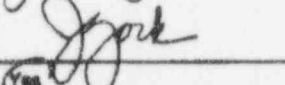
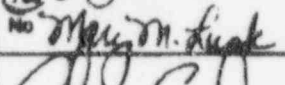
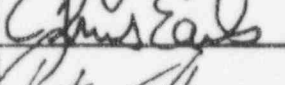
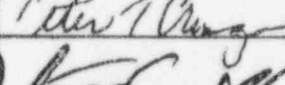

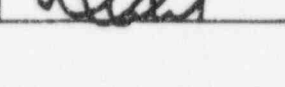
CP-217

**SPECIFICATIONS AND SURVEILLANCE :
SECONDARY CHEMISTRY**

**REV. 4
PCR 94-049**

Safety Related Non-Safety Related

REFERRAL USE - PERIODICALLY REFER TO PROCEDURE DURING USE

ACTION	SIGNATURE	NAME - PRINTED	DATE
PREPARED BY		STEPHEN E. CHERRY	MAY 9, 1994
TECHNICAL REVIEW		Jesse J. Davis	5-9-94
FUNCTIONAL REVIEW		JEFFREY A. YORK	6/1/94
PRE-APPROVAL VALIDATION	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No 	Mary M. Lusk	6/16/94
PROCEDURE SPONSOR		Chris Evans	6/16/94
GSC REVIEW		PETER T. CRINIGAN	6/16/94
DESIGNATED REVIEWER		PCR 94-84	6/23/94
APPROVAL AUTHORITY		T. G. LUMBERT	6/29/94

EFFECTIVE DATE: 7-12-94

REFERRAL USE
Periodically refer to
procedures during use.

ATTACHMENT 13, NON-IMMEDIATE CHANGE FORM

SECTION 1 - NON-IMMEDIATE CHANGE INITIATION

Procedure Title: Specifications and Surveillance: Secondary Chemistry

Procedure No.: CP 217 Rev. No.: 4 Change No.: 95-086 Unit No.: Ø

Reason for Change: Condensate DO startup requirements were clarified

Change Originator: Evelyn M Eshelman Date: 9/13/95

SECTION 2 - PROCEDURE SPONSOR REVIEW

Check Change Type: Temporary Permanent

Expiration Event, Condition, or Date: _____
(Required for Temporary Changes other than One-Time Use)

Designated Reviewer Required: Yes No

Procedure Sponsor: Mark Tom Date: 9/20/95

SECTION 3 - DESIGNATED REVIEWER

PROPOSRC Meeting Number: 95-97 Check Recommendation: Approval Rejection
(Circle one when appropriate) (Approval Recommendation indicates no unreviewed Safety Questions exist)

Designated Reviewer: J. H. Call Date: 10-10-95

SECTION 4 - APPROVAL AUTHORITY

Approval Rejection

Approval Authority: [Signature] Date: 10/10/95
(In cases of disagreement between Approval Authority and Designated Reviewer, FGM completes this block)

SECTION 5 - PROCEDURE SPONSOR ACTIONS

Recommended Action:
Change Master? Yes No Required Reading Other (Explain)

Evaluated By: Mark Tom Date: 10/12/95

Entered into Master Copy By: Jyada M. Parker Date: 10/12/95

RECORD OF REVISIONS AND CHANGES

REVISION NUMBER	CHANGE NUMBER	SUMMARY OF REVISION OR CHANGE
4	94-089	ATTACHMENT #2, SULFATE - VALUE BEFORE 5% POWER COLUMN, ADDED "BEFORE 350F"
4	94-109	ADDED CONTROL ROOM HABITABILITY PRECAUTION TO SECTION 5.0 ADD ETA SPECIFICATIONS AND SURVEILLANCES TO ATTACHMENTS #1, 3, 4 AND 10
4	95-044	ATTACHMENT #1, CHANGE CHLORIDE ACTION LEVEL 1 VALUE TO >20 PPB ATTACHMENT #4, IRON & COPPER ANALYSIS FREQUENCY CHANGED TO >80% POWER FOR >5 DAYS AS DESCRIBED IN FOOTNOTE 1, ADDED SPECIFIC CONDUCTIVITY PARAMETER WITH FOOTNOTE 3 BASED ON MCR COMPLETION ATTACHMENT #8, DELETED COLUMN FOR "VALUE BEFORE PUMPING FORWARD", ADDED FOOTNOTE 1 ON SUSPENDED SOLIDS SAMPLING FREQUENCY, ADDED IRON PARAMETER AND FOOTNOTE 2 STATING FREQUENCY IS "AS DIRECTED BY SPC." ATTACHMENT #10, REMOVED CATION CONDUCTIVITY SAMPLE FREQUENCY CONDITION FOR AMMONIA, HYDRAZINE, ETA AND MORPHOLINE, REMOVED SPECIFIC CONDUCTIVITY SAMPLE FREQUENCY CONDITION FOR CHLORIDE AND SULFATE, ADDED FOOTNOTE 3
4	95-080	PAGES 10 AND 11, ADDS REQUIREMENT TO NOTIFY SPC & RECORD TIME OF OCCURANCE FOR COMING OUT OF AN ACTION LEVEL 1 & 2. PAGE 11 4 D (2) (B) THRESHOLD WAS ADDED TO ACTION LEVEL 1. PAGE 14 ATTACHMENT #1, CHEMISTRY HOLD FOR START UP IS CHANGED FROM 5% REACTOR POWER TO 10%. PAGE 15 ATTACHMENT #2, ELIMINATES 5% START UP HOLD. PAGE 18 ATTACHMENT #5, ADDED COLUMN VALUE BEFORE >30% AND INCLUDED DISSOLVED OXYGEN VALUE OF <10. PAGE 19 ATTACHMENT #8, REASSIGNS 5% CHEMISTRY HOLDS TO 10% POWER HOLDS. PAGE 21 ATTACHMENTS #8, FREQUENCY WAS CHANGED, FOOT NOTE 2 WAS MODIFIED TO CLARIFY SAMPLING CONDITIONS.
4	95-086	PAGE 18 ATTACHMENT #5, REMOVED COLUMN "VALUE BEFORE >30%" AND REPLACED WITH FOOTNOTE (2).

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16	94-109				
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18	95-080, 95-086				
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23	94-109, 95-044				
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Distribution page check completed by	<i>Linda M. Parker</i>	Date	10/12/95
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Installation page check completed by		Date	
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1.0 PURPOSE

This procedure provides the Chemistry Specification and Surveillance Program for the steam generators and associated secondary systems.

2.0 APPLICABILITY/SCOPE

- A. This procedure is applicable to the Plant Chemistry Unit.
- B. This procedure is applicable to the Chemistry Programs Unit.
- C. This Chemistry Specification and Surveillance Program is applicable to the following systems:
 - 1. Steam Generators (All Modes)
 - 2. Condensate Storage Tanks (All Modes)
 - 3. Feedwater (Mode 1)
 - 4. Condensate (Mode 1)
 - 5. Main Steam System (Modes 1 and 2)
 - 6. Heater Drain Tanks (Mode 1)
 - 7. Steam Generator Feed Source (Modes 2, 3, and 4)
 - 8. Condensate Demineralizer Effluent (Modes 1 and 2)
 - 9. Steam Generator Blowdown Ion Exchanger Effluent (Mode 1)

This program is based on Technical Specifications, BGE's interpretation of industry standards and recommendations made by Combustion Engineering. It ensures a timely response to chemical and radiochemical excursions with appropriate corrective actions. Remedial actions are specified to minimize corrosion degradation of components and to ensure that secondary system integrity is maintained.

3.0 REFERENCES AND DEFINITIONS

A. Procedure Development

1. Technical Specification: 3/4.7.1.4
2. PWR SECONDARY WATER CHEMISTRY GUIDELINES: REVISION 3, Electric Power Research Institute, EPRI TR-102134, May 1993.
3. COMBUSTION ENGINEERING CHEMISTRY MANUAL, CENPD-28, Revision 3, September 1982.
4. GUIDELINES FOR CHEMISTRY AT NUCLEAR POWER STATIONS, Institute of Nuclear Power Operations, INPO 88-021, Rev. 01, September 1991.

B. Procedure Performance

1. CP-102, General Information Records
2. CP-108, Chemistry Technical Evaluations
3. CP-224, Specifications and Surveillance - Unmonitored Radioactive Effluent Pathways and Primary to Secondary Leak.

C. Definitions

1. ACTION LEVEL 1: A value or range of values for a chemical or radiochemical parameter which:
 - (1) is inconsistent with Chemistry Section goals,
 - (2) indicates an adverse trend has developed, or
 - (3) indicates long-term impacts should be anticipated or expected
2. ACTION LEVEL 2: A value or range of values for a chemical or radiochemical parameter which:
 - (1) exceeds a Technical Specification or other government regulation,
 - (2) indicates an adverse trend has developed, or
 - (3) indicates short-term, adverse impacts should be anticipated or expected.
3. ACTION LEVEL 3: A value or range of values for a chemical or radiochemical parameter at which it is not advisable to continue unit operation due to the potential immediate impact on system integrity.
4. C/DR-W: Continuously measured, daily recording of reading, instrument response verified weekly.
5. ETA: Ethanolamine or monoethanolamine (MEA), A morpholine analog.

6. **FULL-FLOW CONDENSATE POLISHING:** The state where most (e.g. >90%) of the condensate flow is routed through the condensate polishers.
7. **PARTIAL-FLOW CONDENSATE POLISHING:** The state where condensate polishers are not full-flow.
8. **PUMPING FORWARD:** When the discharge of the heater drain tank is routed to the condensate system downstream (forward) of the condensate polishers.
9. **TARGET:** The value or range of values for a chemistry or radiochemistry parameter which represents a goal or a predetermined warning limit. A TARGET is not a specification.
10. **TECHNICAL EVALUATION:** A formalized, documented assessment of a chemical or radiochemical excursion.

4.0 PREREQUISITES

A. Responsibilities

1. Technicians are responsible for sampling, analysis, documentation and initial notification of the SPC as indicated in this procedure and on the attachments.
2. The SPC is responsible for:
 - a. Ensuring all surveillance frequencies prescribed by this procedure are met.
 - b. Ensuring that the GSC and the Shift Supervisor are notified of Action Level conditions.
 - c. Ensuring all Technical Evaluations required by this procedure are initiated per CP-108.
3. The GSC is responsible for ensuring Technical Evaluations required by this procedure are performed in accordance with CP-108.

B. Specifications and Surveillance

Specifications and surveillance shall be performed per the following Attachments:

ATTACHMENT	No.
STEAM GENERATOR CHEMISTRY -- POWER OPERATION (MODE 1)	1
STEAM GENERATOR CHEMISTRY -- HOT STANDBY (MODES 2, 3 & 4)	2
STEAM GENERATOR CHEMISTRY -- WET LAYUP (MODES 5 AND 6)	3
FEEDWATER CHEMISTRY -- POWER OPERATION (MODE 1)	4
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INDIVIDUAL CONDENSATE DEMINERALIZER EFFLUENT -- POWER OPERATION (MODES 1 AND 2)	10
CONDENSATE DEMINERALIZER REGENERATION SPECIFICATIONS	11
STEAM GENERATOR BLOWDOWN ION EXCHANGER EFFLUENT -- POWER OPERATION (MODE 1)	12

5.0 PRECAUTIONS

- 5.1 Action Levels may be waived only after QR or PRC or PORSC review & Approval Authority signature. [B346]
- 5.2 New bulk pH additives must be evaluated for Control Room Habitability prior to use.

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6.0 PERFORMANCE**A. Surveillance**

1. **VERIFY** surveillances in Attachments 1 - 12 are performed.

B. Specifications and Special Corrective Actions

1. **COMPARE** surveillance result to the Target, Action Level 1, Action Level 2, and Action Level 3 values listed on the respective attachments, **AND PERFORM** any special corrective actions required by the attachment.

C. Generic Corrective Actions

1. **VERIFY** that all information is documented per applicable Chemistry Procedures.
2. **IF** Target is exceeded, **THEN**
 - a. **NOTIFY** the SPC.
 - b. **DOCUMENT** notification in appropriate record.
 - c. **IMPLEMENT** corrective actions as directed by the SPC.
3. **IF** Action Level 1 is exceeded, **THEN**:
 - a. **RECORD** the sample time as Action Level 1 time of initiation in appropriate record.
 - b. **NOTIFY** the SPC **AND RECORD** notification in appropriate record.
 - c. **NOTIFY** the Shift Supervisor, as directed by the SPC -- **EXCEPT** as noted in applicable attachment footnote -- **AND RECORD** notification in appropriate record.
 - d. **RESAMPLE AND ANALYZE** the affected parameter as soon as practical, or as directed by SPC, to verify entry into the Action Level 1 condition.
 - e. **INCREASE** surveillance frequency as directed by the SPC.
 - f. **RECORD** the sample time when out of Action Level 1 **AND NOTIFY** SPC and SS, as directed by SPC.
 - g. **IF** a parameter has not cleared Action Level 1 for at least 24 consecutive hours during a seven day period following the Action Level 1 time of initiation, **THEN PERFORM** Action Level 2 responses for those parameters with Action Level 2 values.
 - h. **IF** the parameter has not cleared Action Level 1 within seven days following the Action Level 1 time of initiation, **THEN INITIATE** a Technical Evaluation per CP-108.

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4. IF an Action Level 2 value is exceeded, THEN:

- a. RECORD the sample time as Action Level 2 time of initiation in appropriate record.
- b. NOTIFY the SPC, and the GSC as directed by the SPC, AND RECORD notification in appropriate record.
- c. NOTIFY the Shift Supervisor, as directed by the SPC AND RECORD notification in appropriate record.
- d. AS necessary, ADVISE the Shift Supervisor of plant corrective actions applying to Action Level 2 for secondary systems.

(1). IF a Technical Specification is exceeded, THEN corrective actions SHALL BE performed per the applicable Technical Specification.

(2). IF a secondary system Action Level 2 condition is caused by other than a Technical Specification parameter THEN:

(a) REDUCE power to $\leq 30\%$ within eight hours of the Action Level 2 time of initiation,

(b) Power reduction MAY BE terminated WHEN the parameter has cleared Action Level 1 threshold AND the source of the impurity ingress is controlled.

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(c) Return to full-power MAY BE commenced WHEN parameters clear Action Level 1.

- e. RESAMPLE AND ANALYZE for the affected parameter as soon as practical to verify entry into the Action Level 2 condition.
- f. INCREASE surveillance frequency as directed by the SPC.
- g. RECORD sample time when out of Action Level 2 AND NOTIFY SPC and the SS, as directed by SPC.
- h. INITIATE a Technical Evaluation per CP-108 within seven days after Action Level 2 time of initiation.
- i. IF the parameter has not cleared Action Level 1 within 100 hours following the Action Level 2 time of initiation, THEN PERFORM Action Level 3 responses for those parameters with an Action Level 3 value.

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5. IF an Action Level 3 value is exceeded, THEN:

- a. RECORD the sample time as Action Level 3 time of initiation in appropriate record.
- b. NOTIFY the SPC, and the GSC as directed by the SPC AND RECORD notification in appropriate record.
- c. NOTIFY the Shift Supervisor, as directed by the SPC AND RECORD notification in appropriate record.

- d. **AS** necessary, **ADVISE** the Shift Supervisor of plant corrective actions required by Action Level 3:
 - (1). **INITIATE** an orderly shut down within four hours of the initiation of the Action Level 3 condition, **AND**
 - (2). Restart **MAY** proceed when chemistry parameters are within startup specifications.
- e. **RESAMPLE AND ANALYZE** for the affected parameter as soon as practical to verify entry into the Action Level 3 condition.
- f. **INCREASE** surveillance frequency as directed by the SPC.
- g. **INITIATE** a Technical Evaluation per CP-108.

D. **Out-of-Service Monitor:**

IF a continuous monitor with a C/DR-W Frequency is out-of-service, **THEN PERFORM** grab sample surveillance at least once per four hours in Modes 1, 2, 3, or 4. [B133]

7.0 **POST-PERFORMANCE ACTIVITIES**

None.

8.0 **BASIS**

PROCEDURE SECTION	COMMITMENT	REFERENCE
5.1	B345	NRC 89-04
6.0.D	B133	INPO CY.3-3 (1984)
Attachments 1, 2, & 3	B014	Tech. Spec. 3/4.7.1.4
Attachments 1 & 3	B492	SOER 82-13-R04
Attachment 4	B507	INPO CY.4-2 (1987)

9.0 RECORDS

None

10.0 ATTACHMENTS

Refer to Table of Contents

ATTACHMENT 1. STEAM GENERATOR CHEMISTRY – POWER OPERATION (MODE 1)

PARAMETER	UNITS	FREQUENCY	TARGET	ACTION LEVEL 1	ACTION LEVEL 2	ACTION LEVEL 3	VALUE BEFORE 10% POWER	VALUE BEFORE 38% POWER	BASIS
pH (IF full-flow cond. polishing)		C/DR-W	≥ 8.7	<8.7					
pH (IF partial-flow cond. polishing)		C/DR-W	≥9.0, ≤10.0	<9.0					
Cation Conductivity	μS/cm	C/DR-W	≤ 0.3	>0.8 (1)	>2.0 (1)	>7.0 (1)	≤2.0(1)	≤ 0.8 (1)	
Conductivity (specific)	μS/cm	C/DR-W							
Chloride	ppb	D	≤1.35	>20	>100	>500	<100	≤20	
Fluoride	ppb	W							
Morpholine (WHEN used)	ppm	W	< 6						
ETA (WHEN used)	ppm	W	<12						
Sodium	ppb	D	≤0.8	>20	>100	>500	≤100	≤20	
Sulfate	ppb	D	≤1.35	>20	>100	>500		≤20	[B492]
Gamma Activity	μCi/g	1/72 hr	(2)						[B014]
I-131, D. E.	μCi/g	1/72 hr	(2)		>0.1(3)	≥0.1(3)		≤ 0.1(3)	[B014]
Cation Conductivity Balance	μS/cm	W	± 30%						
Conductivity (specific) Balance	μS/cm	W	± 30%						
Acetate (IF morpholine or ETA used)	ppb	W							
Formate (IF morpholine or ETA used)	ppb	W							
Ammonia	ppb	W							
Silica (Action Level 1 applies At > 80% Power)	ppb	W	≤10	>100					
Tritium	μCi/g	see CP-224	(2)						
pH Balance		W	± 0.2						
Na:Cl Ratio (molar)		W Avg.	0.5-0.7						
Na:(Cl + SO ₄) (molar)		W Avg.	0.3 - 0.5						
Hydrazine	ppb	W							

NOTES:

1. Cation conductivity limit and Action Levels may be based on the cation conductivity calculated from Cl & SO₄ concentrations
2. IF steam generators are contaminated, THEN refer to CP-224
3. **PERFORM** corrective action per Technical specification 3/4.7.1.4

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ATTACHMENT 2. STEAM GENERATOR CHEMISTRY – HOT STANDBY (MODES 2, 3, & 4)

PARAMETER	UNITS	FREQUENCY	TARGET	VALUE BEFORE CRITICAL	BASIS
pH		C/DR-W	≥ 8.7		
Cation Conductivity	μS/cm	C/DR-W	≤ 2.0		
Conductivity (specific)	μS/cm	C/DR-W			
Chloride	ppb	D	≤ 50		
Sodium	ppb	D	≤ 50		
Sulfate	ppb	D	≤ 50	≤ 100 before 350°F	[B492]
Gamma Activity	μCi/gm	1/72 hr ⁽¹⁾	(2)		[B014]
I-131, D. E	μCi/gm	1/72 hr	(2)	≤ 0.1(3)	[B014]
Fluoride	ppb	D	≤ 50		
Silica	ppb	W			

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NOTES:

- The Steam Generators **SHOULD BE** sampled as soon as practical, **BUT** no later than 4 hours after a reactor trip.
- IF** steam generators are contaminated, **THEN** refer to CP-224
- PERFORM** corrective action per Technical specification 3/4.7.1.4

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ATTACHMENT 3. STEAM GENERATOR CHEMISTRY -- WET LAYUP (MODES 5 & 6)(1)

PARAMETER	UNITS	FREQUENCY	TARGET	ACTION LEVEL 1	VALUE BEFORE 200F	BASIS
Dissolved O2 (fill source)	ppb	before feeding steam generators	≤100	>100		
pH		(2)	≥ 9.8	<9.8	≥ 8.5	
Chloride	ppb	(2)	≤100	>1,000	≤ 100	
Sodium	ppb	(2)	≤100	>1,000	≤ 100	
Sulfate	ppb	(2)	≤100	>1,000	≤100 before 350°F	[B492]
Hydrazine	ppm	(2)	75 - 300	<75		
Morpholine (when used)	ppm	(2)				
ETA (when used)	ppm	(2)				
Fluoride	ppb	(2)	≤100			
TIC/TOC	ppb	W IF pH <9.8				
Silica	ppm	As determined by SPC				
Tritium	μCi/g	see CP-224				
Gamma Activity	μCi/g	M				[B014]
I-131, D. E.	μCi/g				<0.1	[B014]

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NOTES:

1. IF ~~hydro~~ is expected within 7 days, THEN these specifications are not applicable, AND UNLESS the steam generators will be drained for maintenance, the steam generators SHOULD BE filled AND hydrazine added to ≥ 5.0 ppm.
2. The Steam Generators SHALL BE sampled 1/W. WHEN Steam Generators recirculation is established, they SHOULD BE sampled 3/W until the SPC determines that chemistry is stable, THEN 1/W.

ATTACHMENT 5. CONDENSATE CHEMISTRY -- POWER OPERATION (MODE 1)

PARAMETER	UNITS	FREQUENCY ⁽¹⁾	TARGET	ACTION LEVEL 1	ACTION LEVEL 2	BASIS
Cation Conductivity (cond. pumps at TPSS)	μS/cm	C/DR-W	≤0.25			
Cation Conductivity (individual HW at TPSS)	μS/cm	C/DR-W	≤0.25			
Dissolved Oxygen (at TPSS)	ppb	C/DR-W	≤2.5	>10	>30(2)	
	ppb	C/DR-W	≤0.2			
pH (at TPSS)		C/DR-W				
Sodium (at CDSS)	ppb	C/DR-W	≤0.2			
Conductivity (specific) (at CDSS)	μS/cm	C/DR-W				
Cation Conductivity (at CDSS)	μS/cm	C/DR-W	≤0.25			

NOTES:

1. IF there are redundant TPSS & CDSS monitors, **AND** one is out-of-service, **THEN** the other's analyzer readings may be used, **AND** the 1/4 hr sampling and analysis **IS NOT** required.
2. During power ascension, IF in Action Level 2, **THEN** a 30% power hold is established until DO is ≤10 ppb.

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ATTACHMENT 6. STEAM GENERATOR FEED SOURCE⁽¹⁾ – HOT STANDBY (MODES 2, 3, & 4)

PARAMETER	UNITS	FREQUENCY	TARGET	ACTION LEVEL 1	VALUE BEFORE 10% POWER	BASIS
pH		C/DR-W	≥8.8	<8.5		
Cation Conductivity	μS/cm	C/DR-W	≤0.25			
Dissolved Oxygen	ppb	C/DR-W	<100	>100	<100	
Sodium	ppb	C/DR-W	≤1			
Chloride	ppb	D	≤1			
Sulfate	ppb	D	≤1			
Hydrazine	ppb	D	≥100 AND ≥3 X DO	<100 AND <3 X DO	>100	
Suspended Solids	ppb	Before initial SG feed	≤100			

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NOTES:

- Attachment 6 MAY apply to EITHER feedwater or condensate WHEN used as a steam generator feed in Modes 2, 3, & 4. Table only applies when feeding steam generators.

ATTACHMENT 7. MAIN STEAM - POWER OPERATION (MODES 1 & 2)

PARAMETER	UNITS	FREQUENCY	TARGET	BASIS
Cation Conductivity	$\mu\text{S/cm}$	C/DR-W	≤ 0.2	
Conductivity (specific)	$\mu\text{S/cm}$	C/DR-W		

ATTACHMENT 8. HEATER DRAIN TANK CHEMISTRY -- POWER OPERATION (MODE 1)

PARAMETER	UNITS	FREQUENCY	TARGET	BASIS
Suspended Solids	ppb	as required(1)	≤100	
Iron	ppb	(integrated)(2)	≤10	

PCR 95-044

1. During start up, where HDT pump discharge sample points are installed, sample concurrently with Heater Drain Tank (HDT) pump being placed in service.
2. As directed by SPC.

PCR
95-080

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ATTACHMENT 9. CONDENSATE STORAGE TANKS – ALL MODES (1)

PARAMETER	UNITS	FREQUENCY	TARGET	ACTION LEVEL 1	BASIS
Chloride	ppb	W	≤MQC	>1.0	
Dissolved Oxygen	ppb	W	≤100	>100	
Silica	ppb	W	≤10		
Sodium	ppb	W	≤MQC	>1.0	
Sulfate	ppb	W	≤MQC	>1.0	
Gamma Activity	μCi/gm	see CP-224			
Tritium	μCi/gm	see CP-224			

NOTES:

1. **WHEN** transferring to the CST by other than normal pathway, (DIST or COND. or Vendor DI Water System), **THEN** analysis for Na, Cl, SO₄, & SiO₂ is required.
IF parameters exceed Action Level 1 values, **THEN** SPC approval for transfer is required.

ATTACHMENT 10. INDIVIDUAL CONDENSATE DEMINERALIZER EFFLUENT—POWER OPERATION (MODES 1 & 2)

PARAMETER	UNITS	FREQUENCY	TARGET	ACTION LEVEL 1	BASIS
Conductivity (specific)	μS/cm	C/DR-W	≤0.1	>0.1	
Cation Conductivity	μS/cm	C/DR-W	≤0.1	>0.1	
Ammonia	ppb	D, IF conductivity ≥ 0.1 μS/cm	≤MQC	>MQC	
Hydrazine	ppb	D, IF conductivity ≥ 0.1 μS/cm	≤MQC	>MQC	
Morpholine	ppm	D, IF conductivity ≥ 0.1 μS/cm AND WHEN used	≤MQC	>MQC	
ETA	ppm	D, IF conductivity ≥ 0.1 μS/cm AND WHEN used	≤MQC	>MQC	
Sodium	ppb	C/DR-W (1) (2) (3)	≤0.2	>0.2	
Chloride	ppb	D, IF cation cond. ≥ 0.1 μS/cm	≤MQC	>MQC	
Sulfate	ppb	D, IF cation cond. ≥ 0.1 μS/cm	≤MQC	>MQC	

NOTES:

1. Analyzer **SHOULD** be aligned to common effluent, **EXCEPT** for the first 30 minutes of service for a new bed **OR** per SPC instruction.
2. **IF** analyzer is out-of-service, **THEN SAMPLE** steam generators for sodium within one hour of placing new demineralizer bed in service
3. **If** analyzer is out-of-service, **THEN** the Feedwater or the Condensate Na analyzer reading may be used, as directed by the SPC, and once per 4 hour sampling is not required.

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PCR 95-044

ATTACHMENT 11. CONDENSATE DEMINERALIZER REGENERATION SPECIFICATIONS

PARAMETER	UNITS	FREQUENCY	VALUE PRIOR TO TRANSFER	BASIS
Conductivity (specific) in Cation/Anion Tank Rinse	$\mu\text{S/cm}$	Continuously, while rinsing after regeneration	$\leq 5.0^{(1)}$	
Conductivity (specific) in Holding Tank Effluent	$\mu\text{S/cm}$	Continuously, while rinsing	$\leq 0.10^{(2,3)}$	

NOTES:

1. Value before transfer to Holding Tank for continuation of normal regeneration.
2. Value before transfer to Service Vessel.
3. IF rinse takes ≥ 8 hours, THEN REPEAT regeneration as directed by SPC.

ATTACHMENT 12. STEAM GENERATOR BLOWDOWN ION EXCHANGER EFFLUENT— POWER OPERATION (MODE 1)

PARAMETER	UNITS	FREQUENCY	TARGET	BASIS
Sodium	ppb	as directed by SPC	≤ MQC	
Chloride	ppb	as directed by SPC	≤ MQC	
Sulfate	ppb	as directed by SPC	≤ MQC	
Fluoride	ppb	as directed by SPC	≤ MQC	

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