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Indian Point Energy Center

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NON-QUALITY RELATED

2-CY-2625 Revision 16

GENERAL PLANT SYSTEMS SPECIFICATIONS AND FREQUENCIES

APPROVED BY:

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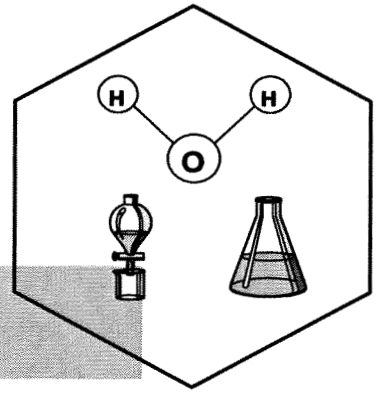

Chemistry

EDITORIAL REVISION

REVISION SUMMARY

1.0 REASON FOR REVISION

1.1 Incorporate user feedback.

2.0 SUMMARY OF CHANGES

2.1 Deleted references to Lubricating Oil particle counts in Attachment 1.

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure establishes the requirements for monitoring of various plant systems.

1.2 This procedure applies to the monitoring of chemistry in plant systems.

2.0 PRECAUTIONS AND LIMITATIONS

2.1 Action should be taken promptly to identify AND correct the cause of any Control Parameter being Out-Of-Specification.

2.2 Analytical results shall be entered in WINCDMS.

2.3 Footnote (8) found in Attachment 1, Specifications and Frequencies, identifies systems, structures and components (SSCs) that interface with the Radiological Groundwater Monitoring Program (Ref. 5.3.3). If a leak were to occur from these SSCs, there can be a significant contribution to ground water contamination. Therefore, a large increase in SSC radioisotope concentration should be evaluated for impact to the ground water monitoring program.

2.4 For counting room related analyses, the delay between sample collection and start of sample counting (sample transit time) is limited as follows:

Plant effluent samples:	count as soon as possible after collection, 1 hour maximum for Noble Gas
All other analyses:	24 hours maximum

3.0 PREREQUISITES

N/A

4.0 PROCEDURE

4.1 Specifications and Frequencies

4.1.1 Attachment 1 defines the specifications and frequencies of chemistry sampling and analysis.

4.1.2 Out of Specification analytical results of parameters in this procedure shall be logged in the Control Room Chemistry OOS Log Book.

4.1.3 Parameters that have a specified frequency of CONTINUOUS are monitored by in-line instrumentation.

4.1.3.1 IF the in-line instrumentation is Out-Of-Service OR secured, THEN manual sampling and analysis shall be performed until the instrumentation is restored to service.

4.1.3.2 The frequency of manual sampling is specified in parentheses after CONTINUOUS in the appropriate Attachment. For example, CONTINUOUS (3/Day) indicates that manual sampling AND analysis shall be performed 3 times per day.

4.1.3.3 IF there is no manual sampling frequency specified after CONTINUOUS, THEN compensatory manual sampling AND analysis is not required.

4.1.3.4 Compensatory sampling AND analysis results shall be appropriately documented.

4.1.4 Laboratory analytical results are initially interpreted by the Chemistry Technician performing the analysis. Abnormal trends are evaluated through data entry into WinCDMS. Any significant abnormality or trend, as well as out of specification or out of control band chemistry parameter shall be brought to the attention of Chemistry Management.

4.1.5 Footnote 8 identifies analyses interfacing with the Radiological Groundwater Monitoring Program. IF an analytical result supporting this program is found to be out of specification, THEN notify Chemistry Management and the Ground Water Technical Specialist.

4.2 Radiation Monitor Out of Service Actions

4.2.1 Compensatory actions for out-of-service equipment are outlined in Attachment 2, Radiation Monitor – Compensatory Action Tracking Form.

5.0 REFERENCES

5.1 Commitment Documents

5.1.1 IP1 Technical Specifications

5.1.2 IP2 Technical Specifications

5.1.3 NYS DEC Air Emissions Permit #5522011886, Item 6

5.1.4 NRC Generic Letter 80-10

5.1.5 SPDES Permit

5.1.6 Offsite Dose Calculation Manual (ODCM)

5.1.7 Siemens STIM 07.003 (Includes water-in-oil spec for lube oil)

5.2 Development Documents

5.2.1 ASTM Method D 4057, Manual Sampling of Petroleum and Petroleum Products

5.3 Interface Documents

5.3.1 0-CY-3318, Water and Sediment in Fuel Oil

5.3.2 0-CY-3316, Viscosity of Lubricating and Fuel Oil

5.3.3 IP-SMM-CY-100, Radiological Groundwater Monitoring Program

5.3.4 0-NF-102, Fuel Integrity Action Plan

6.0 RECORDS AND DOCUMENTATION

N/A

GAS SAMPLES

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
Plant Vent and Stack Vent	Gamma Isotopic (Gas)	Weekly	N/A
	Gamma Isotopic (Part)	Weekly	
	Gamma Isotopic (Char)	Weekly	
	Tritium	Monthly	
	Sample Station Channel Check	Daily	Correct Operation
Nitrogen System **(2)**	Gamma Isotopic (Gas)	Monthly	< MDA
Condenser Air Ejector	Gamma Isotopic (Gas)	Weekly	Effluents & Pri/Sec Leak
Vapor Containment Atmosphere	Gamma Isotopic (Gas)	Prior to each Purge	N/A
		Weekly	
	Tritium	Quarterly	
Large Gas Decay Tanks	Gamma Isotopic	Each Batch	< 10 µCi/cc
Small Gas Decay Tanks	Gamma Isotopic	Each Batch	< 140 µCi/cc
Volume Control Tank	Hydrogen	Weekly	N/A
	Gamma Isotopic	Monthly	
Combustible Hazards: • Hydrogen Bulk Supplies, • Battery Rooms, • Main Generator North and South Bearings, • Main Generator Bushing Box and Isophase Bus	Combustibles	Monthly	< 0.4%
Transformers- Gas Space	Combustibles (CH_4)	Monthly	< 0.5 %
Main Generator - Gas Space	Dewpoint	Weekly	< 67°F @ Operating Press
	Hydrogen	Weekly	≥ 95 %
5' Sewage Pit	Hydrogen Sulfide	Monthly	< 10 ppm
	Combustibles	Monthly	< 0.4 %
Maint Outage Building (MOB) (1)	Noble Gas	Monthly	RMS in service
		Weekly	RMS OOS and Vent OOS
		Daily	RMS OOS and Vent in service

UNIT 1 WATER SAMPLES

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
Sphere Foundation Drain Sump (8)	Gamma Isotopic	Weekly	Effluents
	Sr89/90, Ni63, Gross Alpha, Fe55, H-3	Monthly Composite	Effluents
North Curtain Drain (NCD) Effluent (8) (Auto sampler 2)	Gamma Isotopic	Weekly	Effluents
	Sr89/90, Ni63, Gross Alpha, Fe55, H-3	Monthly Composite	Effluents
	PCB	Weekly	< MDA
NCD 1st Charcoal Bed Outlet, Auto sampler 1	PCB	Weekly	< MDA
NCD Influent (8)	Gamma Isotopic	Quarterly	4E-5 uCi/ml
	PCB	Quarterly	< MDA
Waste Distillate Storage Tanks (13 & 14) **(8)**	Gamma Isotopic	Each Tank Released	< 10 Curies in Tank, Effluents
	PCB	Each Tank Released	SPDES
	Sr89/90, Ni63, Gross Alpha, Fe55, H-3	Monthly Composite	Effluents
	Boron	1 Released Tank/Week	SPDES
	Lithium	1 Released Tank/Month	SPDES
	Oil and Grease	1 Released Tank/Month	SPDES
	Total Suspended Solids	1 Released Tank/Week	SPDES
House Service Boiler Blowdown **(1) (2) (8)**	Gamma Isotopic	Every 31 Days	< MDA
	Tritium	Every 31 Days	< 5.0E-6 uCi/ml
	Dissolved Oxygen	Continuous (3/Day)	< 100 ppb
	pH @ 25°C	Continuous (3/Day)	< 9.0
	Phosphate (as PO_4)	Continuous (3/Day)	< 1.0
	Total Suspended Solids	Weekly	SPDES
	Phosphate (as P)	Monthly	SPDES
Unit 1 Fresh Water Cooling Service Water Return **(2)**	Gamma Isotopic and Tritium	Every 31 Days	< MDA

UNIT 1 WATER SAMPLES, CONTINUED

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
Unit 1 Utility Tunnel Sump **(2)** (8)	Gamma Isotopic	Every 31 Days	< MDA
	Tritium	Monthly	< 5.0E-6 uCi/ml
Unit 1 15' Weir **(2)**	Gamma Isotopic	Every 31 Days	< MDA
	Tritium	Every 31 Days	< 5.0E-6 uCi/ml
Containment Spray Sump **(1) (2) (8)**	Gamma Isotopic	Every 31 Days	< MDA
	Tritium	Every 31 Days	< 5.0E-6 uCi/ml
	Water Level	Every 31 Days	Trend Only
Secondary Boiler Blow down Demin Out **(1)**	Gamma Isotopic	Daily	N/A
Secondary Boiler Blowdown Purification System Service Water Return **(2)**	Gamma Isotopic	Every 31 Days	< MDA
	Tritium	Every 31 Days	< 5.0E-6 uCi/ml
GT 2&3 Groundwater Monitoring Well	Free Product (Visual)	Monthly	Detectable Product
Sodium Hypochlorite Delivery **(3)**	Chlorine	Each delivery	> 135 gm/liter
Simulator Transformer Vault Oil/Water Separator Discharge	Oil & Grease	Monthly	< 15 ppm
	pH	Monthly	6.0 to 9.0
GT 2&3 Impoundment Oil/Water Separator Discharge	Oil & Grease	Monthly	< 15 ppm
	Benzene	Monthly	< 5 ppm
	Xylene & Toluene	Monthly	< 15 ppm
Filter Backwash Pit **(1)**	Oil and Grease	Monthly	< 15 ppm
	Total Suspended Solids	Weekly	N/A
Waste Neutralization Tank **(1)**	Total Suspended Solids	Weekly	N/A
Foundation Drain Line (Utility Tunnel) **(2) (8)**	Gamma Isotopic	Monthly	< MDA
	Tritium		< 5.0E-6 uCi/ml

(1) When system is in service and sample is available.

(2) Monitored per Generic Letter 80-10.

(3) An assay, based on the bill of lading identifying shipment as Sodium Hypochlorite, may be used in lieu of a sample. Shipment may be accepted without a bill of lading with Chem Management concurrence.

UNIT 2 WATER SAMPLES

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
Unit 2 Spent Fuel Pit (SFP)	pH @ 25°C	Monthly	> 4.0
	Boron	Once per 7 days **(4)**	≥ 2000 ppm
	Chloride	Monthly	< 150 ppb
	Fluoride	Monthly	< 150 ppb
	Conductivity	Monthly	N/A
	Gamma Isotopic **(8)**	Weekly	3E-2 uCi/ml
	Reactive Silica	Monthly	N/A
	Sulfate	Monthly	< 150 ppb
	Total Silicon	Semi-Annually	N/A
	Tritium **(8)**	Monthly	0.3 uCi/ml
	Suspended Solids	As required when handling fuel	N/A
	Boron-10	Per Rx Eng	N/A
SFP Auxiliary HX, Secondary Side **(1) (2)**	Isotopic Analysis **(8)**	Daily (when in service) and prior to drain down	< MDA
	Tritium **(8)**		
SFP Leak Monitoring Device	Boron	Monthly	N/A
	Gamma Isotopic **(8)**	Monthly	N/A
	Tritium **(8)**	Monthly	N/A
	Volume Collected **(8)**	Monthly	N/A
Vapor Containment Sump	Boron	Monthly	N/A
	Conductivity @ 25°C		
	Gamma Isotopic		
	Molybdenum		
	pH @ 25°C		
	Sodium Chloride		
Accumulators	Boron	Every 31 days	2000 to 2600 ppm

(4) Within 4 hours of placing an MPC in the pool and every 48 hours thereafter, verify with 2 independent measurements that the boron concentration is:

B ≥ 2500 ppm for normal fuel

B ≥ 2700 ppm for failed fuel as identified by procedure 0-NF-102, Fuel Integrity Action Plan.

UNIT 2 WATER SAMPLES

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
CVCS Mixed Bed Demineralizer Outlet	Decayed Isotopic	Weekly	N/A
	Chloride	Monthly	≤ 20 ppb
	Sulfate	Monthly	≤ 20 ppb
CVCS De-Lithiating Ion Exchanger	Lithium	As required	N/A
CVCS Deborating Ion Exchanger	Boron	As required	N/A
	Chloride	As required	N/A
Aux Condensate Return **(8)**	Gamma Emitters	Monthly **(1)**	< MDA
	Tritium	Monthly **(1)**	≤ Secondary System Base Line
Pipe Pen City Water **(2)**	Gamma Isotopic and Tritium	Monthly	< MDA
NPO Shack City Water **(2)**	Gamma Isotopic and Tritium	Monthly	< MDA
Sentry Panel City Water **(2)**	Gamma Isotopic and Tritium	Monthly	< MDA
Component Cooling **(2)** Water Return (21 & 22)	Gamma Isotopic and Tritium	Monthly	< MDA
Fan Cooler Service Water	Gamma Isotopic and Tritium	Monthly, for each loop in service	< MDA
Unit 2 5' Turbine Building North Sump **(2) (8)**	Gamma Isotopic	Monthly	< MDA
	Tritium	Monthly	< 5.0E-6 uCi/ml
Unit 2 5' Turbine Building South Sump **(2) (8)**	Gamma Isotopic	Monthly	< MDA
	Tritium	Monthly	< 5.0E-6 uCi/ml
HPFW and Sextant Sample Drain Tank **(2)**	Gamma Isotopic	Monthly	< MDA
	Tritium	Monthly	< 5.0E-6 uCi/ml

UNIT 2 WATER SAMPLES, CONTINUED

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
Service Water Inlet SW-1148 (Essential Header 1,2,3) OR SW-1149 (Essential Header 4,5,6)	TRC	Daily **(5)**	>0.3 ppm
Service Water Outlet in Transformer Yard SWN 978-46 OR SWN978-53	TRC	Daily **(5)**	>0.3 ppm
Service Water Non-essential header Component Cooling Radiation Monitor SWN-978-39 OR SWN-978-40	TRC	Daily **(5)**	>0.3 ppm
Treated Water System	Conductivity	Continuous	≤ 0.1 μS/cm
	Sodium	Continuous	≤ 0.2 ppb
	Silica	Continuous	≤ 7 ppb
	Dissolved Oxygen	Continuous	≤ 100 ppb
	TOC	Continuous	≤ 5 ppb

(5) When Chlorination is in service

UNIT 2 WATER STORAGE TANKS

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
Primary Water Storage Tank (PWST)	Gamma Isotopic **(8)**	Every 31 Days	< mda
	Tritium **(8)**	Monthly	1.0E-6 uCi/ml
	Silica	Quarterly	N/A
	Aluminum	Quarterly	≤ 80 ppb
	Calcium	Quarterly	≤ 40 ppb
	Magnesium	Quarterly	≤ 40 ppb
Unit 2 Condensate Storage Tank	Dissolved Oxygen	Continuous	< 100 ppb
	Gamma Isotopic **(8)**	Monthly	<10 Ci
	Tritium **(8)**	Monthly	< 5.0E-6 uCi/ml
Refueling Water Storage Tank (RWST)	Chloride	Monthly	< 150 ppb
	Fluoride	Monthly	< 150 ppb
	Conductivity	Monthly	N/A
	pH @ 25°C	Monthly	N/A
	Boron	Every 31 Days	2400 to 2600
	Gamma Isotopic **(8)**	Every 31 Days	<10 Ci in tank
	Tritium **(8)**	Quarterly	0.3 uCi/ml
	Boron-10	Prior to Startup from refueling	N/A
	Silica	Monthly	<3 ppm prior to refueling
	Total Suspended Solids	Monthly	N/A
	Aluminum	Quarterly	≤ 80 ppb
	Calcium	Quarterly	≤ 40 ppb
	Magnesium	Quarterly	≤ 40 ppb
Boric Acid Storage Tanks (21 BAST and 22 BAST)	Aluminum	Monthly	< 600 ppb
	Calcium	Monthly	<600 ppb
	Chloride	Weekly **(6)**	<150 ppb
	Fluoride	Weekly **(6)**	<150 ppb
	Gamma Isotopic	Monthly	< LLD
	Magnesium	Monthly	<600 ppb
	Silica	Monthly	<5000 ppb
	Sulfate	Weekly **(6)**	<150 ppb
	Boric Acid	2 per week, not to exceed 5 days	11.5% to 13.0%
	Boron-10	Prior to Startup	N/A

(6) Interpreted from TRM 3.4.A for Reactor Coolant Systems

LUBRICATING OIL SAMPLES

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
Main Turbine Oil Reservoir, Main Boiler Feed Pump Reservoir Skid Inlet	Water & Sediment	Monthly, when operating	<0.1%
	Viscosity @ 40C		160 to 175 SUS

UNIT 1 SAMPLES

SAMPLE	PARAMETER	FREQUENCY	SPEC
Oil/Water Separator Discharge GT 2&3 Impoundment	Benzene	Monthly	< 0.7 ppb
	Oil & Grease	Monthly	< 15 ppm
	Xylene & Toluene	Monthly	< 5 ppb
In service Triple Stacked Heat Exchangers RW-132,RW-135 or RW-127 OR Unit 2 Turbine Oil Coolers SWT-526 **(7)**	TRC	Daily **(5)**	>0.3 ppm

(7) During 3 header operation, the Unit 2 turbine lube oil cooler is cooled by Unit service water

(8) These samples also support the Radiological Groundwater Monitoring Program, Ref 5.3.3.

INSTRUMENT AIR SAMPLES

SAMPLE	PARAMETER	FREQUENCY	SPECIFICATION
PAB	Gamma Emitters	Monthly	N/A
Outlet of Filter Dryer Set 21	Dewpoint, °F at Pressure	Monthly	< -30
	Hydrocarbons (mg/m^3)	Yearly	< 1.0
	Particulates	Yearly	<3 micron
Outlet of Filter Dryer Set 22	Dewpoint, °F at Pressure	Monthly	< -30
	Hydrocarbons (mg/m^3)	Yearly	< 1.0
	Particulates	Yearly	<3 micron
Outlet of Filter Dryer Set 23	Dewpoint, °F at Pressure	Monthly	< -30
	Hydrocarbons (mg/m^3)	Yearly	< 1.0
	Particulates	Yearly	<3 micron
Low point drain on Stator Cooling Water Skid	Dewpoint, °F at Pressure	Monthly	< -30
1 Dryer Outlet, #11 SADD	Dewpoint, °F at Pressure	Monthly	< -30
Upstream of Diesel Generators Cooling Water Valves	Dewpoint, °F at Pressure	Yearly	< -30
	Hydrocarbons (mg/m^3)	Yearly	< 1.0
	Particulates	Yearly	<3 micron
Containment Penetration Downstream of PCV-1228 at IA-502	Dewpoint, °F at Pressure	Yearly	< -30
	Hydrocarbons (mg/m^3)	Yearly	< 1.0
	Particulates	Yearly	<3 micron
Aux. Feed Pump Bldg. Low Point Near Feedwater Control Valves	Dewpoint, °F at Pressure	Yearly	< -30
	Hydrocarbons (mg/m^3)	Yearly	< 1.0
	Particulates	Yearly	<3 micron

ATTACHMENT 2 Page 1 of 1

RADIATION MONITOR COMPENSATORY ACTION TRACKING FORM Date:_____

Date Out of Service	MONITOR #	MONITOR DESCRIPTION	Radiation Monitor Compensatory Actions	2300-0700	0700-1500	1500-2300
	R-27	High Range Plant Vent	No Chem actions *(PAM requirements only when RCS > 350°F)*			
	R-39	21 Comp Cooling Service Water Return	Sample 1/8hr shift in the 1st 4 hours of shift IF 21 CCW HX is I/S			
	R-40	22 Comp Cooling Service Water Return	Sample 1/8hr shift in the 1st 4 hours of shift IF 22 CCW HX is I/S			
	R-41	Containment Particulate	No Chem Actions *(HPs collect and analyze grab samples daily).*			
	R-42	Containment Gas	VC Purges are prohibited. A Noble Gas grab sample is required within 24 hours prior to a VCPR.			
	R-41 & 42	Containment Particulate and Gas	Sample the VC for gas activity once per 24 hours, OR OPS performs TS 3.4.15 RCS leak rate.			
	R-44	Plant Vent Gas	Sample 1/8hr shift in the 1st 4 hours of shift. Two samples of source needed prior to a gas tank release.			
	R-45	Condenser Air Ejector	Sample 1/8hr shift in the 1st 4 hours of shift. During a Pri/Sec Leak, increase periodicity per 0-CY-2450.			
	R-46 & 53	. . Fan Cooler Service Water Return	IF both are OOS, THEN sample SW 1/8hr shift in the 1st 4 hours of shift			
	R-47	Component Cooling Water	Sample once per 24 hours			
	R-48	Monitor Tanks	Two Independent Samples Prior to Tank Release			
	R-49	Steam Generator Blowdown	In Modes 1-4, sample at least once per 12 hours. In Modes >4, sample the effected SG within 24 hrs prior to release. Obtain a 2nd sample either from the recirc system, during the draindown, or within one hour of termination of draindown (due to no RMS).			
	R-50	Gas Decay Tanks	Sample once per 12 hours (Receiving Tank)			
	R-51	Sec Boiler Blowdown Purification	Sample 1/8hr shift in the 1st 4 hours of shift IF System is In Service			
	R-52	Sec Boiler Blowdown Purification SW Return	Sample 1/8hr shift in the 1st 4 hours of shift IF System is In Service			
	R-54	Liquid Waste Release	Two Independent Samples Prior to Tank Release			
	R-59	House Service Boiler Condensate Return	IF R-59 is OOS AND a sample is available THEN sample once per 24 hours			
	R-60	Stack Vent Gas	Sample 1/8hr shift in the 1st 4 hours of shift			
	R-62	Sphere Foundation Drain	Sample 1/8hr shift in the 1st 4 hours of shift			
	R-5976	MOB Exhaust, Noble Gas portion only	IF ventilation is in service, THEN sample for noble gas once per 24 hours (weekly with vent. OOS).			
	MSA	Waste Gas Analyzer	Every 4 hours during degassing operations - OR Every 12 hours during other operations.			