Form 34731 (10-81)
(Formerly SPD-1002-1)

DUKE POWER COMPANY
PROCEDURE PREPARATION
PROCESS RECORD

(1) ID No: CP/O/B/8800/05
Change(s) 0 to
2 Incorporated

(2) STATION: Catawba

(3) PROCEDURE TITLE: Chemistry Procedure for the Recording and Management of Data

(4) PREPARED BY: F L Painter DATE: 11/1/83

(5) REVIEWED BY: T D Evans DATE: 11-1-83

Cross-Disciplinary Review By: N/R TDE

(6) TEMPORARY APPROVAL (IF NECESSARY):

By: _____ (SRO) Date: _____

By: _____ Date: _____

(7) APPROVED BY: M S Tuckman Date: 11/7/83

(8) MISCELLANEOUS:

Reviewed/Approved By: _____ Date: _____

Reviewed/Approved By: _____ Date: _____

MASTER FILE

8402220585 840215
PDR ADOCK 05000413
E PDR

Form 34634 (4-81) SPD-1001-2

DUKE POWER COMPANY
NUCLEAR SAFETY EVALUATION CHECK LIST

(1) STATION: Catawba UNIT: 1 ____ 2 ____ 3 ____
OTHER: Shared

(2) CHECK LIST APPLICABLE TO: CP/O/B/8800/05

(3) SAFETY EVALUATION - PART A

The item to which this evaluation is applicable represents:

Yes ____ No ✓ A change to the station or procedures as described in the FSA or a test or experiment not described in the FSAR?

If the answer to the above is "Yes", attach a detailed description of the item being evaluated and an identification of the affected section(s) of the FSAR.

(4) SAFETY EVALUATION - PART B

Yes ____ No ✓ Will this item require a change to the station Technical Specifications?

If the answer to the above is "Yes," identify the specification(s) affected and/or attach the applicable pages(s) with the change(s) indicated.

(5) SAFETY EVALUATION - PART C

As a result of the item to which this evaluation is applicable:

Yes ____ No ✓ Will the probability of an accident previously evaluated in the FSAR be increased?

Yes ____ No ✓ Will the consequences of an accident previously evaluated in the FSAR be increased?

Yes ____ No ✓ May the possibility of an accident which is different than any already evaluated in the FSAR be created?

Yes ____ No ✓ Will the probability of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?

Yes ____ No ✓ Will the consequences of a malfunction of equipment important to safety previously evaluated in the FSAR be increased?

Yes ____ No ✓ May the possibility of malfunction of equipment important to safety different than any already evaluated in the FSAR be created?

Yes ____ No ✓ Will the margin of safety as defined in the bases to any Technical Specification be reduced?

If the answer to any of the preceding is "Yes", an unreviewed safety question is involved. Justify the conclusion that an unreviewed safety question is or is not involved. Attach additional pages as necessary.

(6) PREPARED BY: R L Rainter DATE: 11/1/83

(7) REVIEWED BY: F D Evans DATE: 11-1-83

(8) Page 1 of 1

Form 18855 (3-80)

DUKE POWER COMPANY

ALARA EVALUATION CHECKLIST

(1) Station Catawba Unit: 1____ 2____ 3____

Other: Shared

(2) Checklist Applicable to: CP/O/B/8800/05

(3) ALARA Evaluation

Check those items below which were considered applicable during the preparation and review of this document.

_____ Flushing and draining were used to minimize source - strength and contamination levels prior to performing an operation.

_____ Permanent and/or movable shielding was specified for reduction of levels.

_____ Use of permanent or temporary local exhaust ventilation systems was used for control of airborne contamination.

_____ Operation was designed to be completed with the least practicable time spent in the radiation field.

_____ Appropriate tools and equipment were specified for the operation to be performed.

_____ The operation was designed considering the minimum number of people necessary for safe job completion.

_____ Remote handling equipment and other special tools were specified to reduce external dose.

_____ Contamination - control techniques were specified.

_____ The operation was designed to be conducted in areas of as low an exposure as practicable.

_____ Additional ALARA considerations were:

_____

_____

_____

__✓__ ALARA Principles were not considered since the procedure did not involve work in a radiation area.

(5) Prepared by: R L Pointer Date 11/1/83

(6) Reviewed by: M D Evans Date 11-1-83

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
CHEMISTRY PROCEDURE FOR THE
RECORDING AND MANAGEMENT OF DATA

1.0 DISCUSSION

The purpose of this procedure is to outline steps taken by the Chemistry section in sampling, recording of analytical results, and transmittance of data to various members of the Catawba Nuclear Station organization during normal operation.

2.0 APPARATUS

Not applicable

3.0 REAGENTS

Not applicable

4.0 PROCEDURE

4.1 Routine Sampling Schedule

The Power Chemistry and Radwaste Chemistry units of the Chemistry section will collect, analyze, and record samples according to their jurisdictional responsibilities. Enclosures 6.1 through 6.9 describe the sampling schedules for Power Chemistry and Radwaste Chemistry. Frequency of sampling is determined by system operation, as well as State, Federal, and Company requirements.

4.2 Normal Operating Sampling Specifications

Enclosures 6.10 through 6.18 give the normal operating specifications for Power Chemistry and Radwaste Chemistry. Samples are to be analyzed using the appropriate chemistry analytical procedure.

4.3 Interlaboratory Sample Processing

Requests for sample analysis may be made to the Chemistry section whenever needed by filling out a Sample Requisition Form (Enclosure 6.19), and submitting it to the appropriate lab. Sample requests originating from within the Chemistry section for analysis to be performed by another unit of the Chemistry section must be accompanied by a Sample Requisition Form. Requests for radiochemical counting are made by submitting a Sample Requisition Form to the Health Physics Count Room. The form is filled out by the requesting lab and submitted to the appropriate lab along with the sample.

The lab performing the analysis will record the data in the appropriate space on the form and return the original copy to the requesting lab. The requesting lab will record the analysis in their Sample Data Legal Log Book. This is depicted schematically in Enclosure 6.20.

4.4 Sample Documentation

The Sample Data Legal Log Book will be the basic document for recording all samples taken and the results of the analysis performed. Each lab will maintain its own Legal Log Book for samples collected by that particular group. Each sample is given a number which consists of the last digit of the present year, the page number, and the line number that the sample is recorded on, in that respective order. An example would be sample number 2608, where 2 is the last digit in 1982, 6 is the log book page the sample is recorded on, and 08 is the line number the sample is recorded on. The results of analysis, date, and time of sample collection are recorded in the appropriate columns along with the technicians initials who performed the analysis. All entries will be made in black ink; the use of "liquid paper" to white out incorrect entries is not permitted. Instead, a single line will be drawn through the incorrect entry and initialed. The correct entry is then written above the incorrect entry. Enclosures 6.21 through 6.26 are copies of a page from each Legal Log Book.

4.5 Document Control

The Station Chemist shall have the responsibility of administratively maintaining the legal ledger and submitting it to the Master File. Copies of chemical and radiochemical records are kept on Master File for a minimum of six (6) years. Copies of records of radioactive releases and waste disposal are kept on Master File for the life of the station.

5.0 REFERENCES

5.1 Oconee Nuclear Station Chemistry Procedures

5.2 McGuire Nuclear Station Chemistry Procedures

5.3 System Power Chemistry Manual

5.4 Catawba Nuclear Station Directives Manual, Volume I

5.5 Westinghouse Chemistry Criteria and Specifications

5.6 NPDES Permit #SC0004278

6.0 ENCLOSURES

6.1 Primary Sampling and Analysis Schedule

6.2 Oil Sampling and Analysis Schedule

6.3 Secondary Sampling and Analysis Schedule - Hot Standby

6.4 Water Treatment Room Sampling and Analysis Schedule

6.5 HVAC Sampling and Analysis Schedule

6.6 Steam Generator Wet-Layup Sampling Schedule

6.7 Environmental Sampling and Analysis Schedule

6.8 Hypochlorite Generator Sampling and Analysis Schedule

6.9 Radwaste Sampling and Analysis Schedule

6.10 Primary Chemistry Operating Specifications

6.11 Oil Analysis Operating Specifications

6.12 Secondary Chemistry Operating Specifications - Hot Standby

6.13 Water Treatment Room Operating Specifications

6.14 HVAC Operating Specifications

6.15 Steam Generator Wet-Layup Specifications

6.16 Environmental Chemistry Operating Specifications

6.17 Hypochlorite Generator Operating Specifications

6.18 Radwaste Chemistry Operating Specifications

6.19 Sample Requisition Form

6.20 Interlaboratory Sample Processing

6.21 Primary Chemistry Legal Log Book

6.22 Oil Analysis Legal Log Book

6.23 Secondary Chemistry Legal Log Book

6.24 HVAC Legal Log Book

6.25 Environmental Chemistry Legal Log Book

6.26 Radwaste Chemistry Legal Log Book

PRIMARY SAMPLING AND ANALYSIS SCHEDULE
CP/0/B/8800/05
ENCLOSURE 6.1

SYSTEM	SAMPLE	Cl^- ppb	F^- ppb	O_2 ppb	Boron ppm	pH @ 25°C	Cond. umho/cm @ 25°C	Susp. Sol. ppb	Turbidity NTU	Nitrogen cc/kg	Hydrogen cc/kg	Fission Gases uCi/ml	Gross β uCi/ml	D. E. I_{131} uCi/ml	γ Isotopic Liq.	γ Isotopic Crud	H_3 uCi/ml	Gross Activity	Sr_{90}	SiO_2 ppb	Mg ppb	Ca ppb	Al ppb	Fe ppb	Li ppm					OTHERS
NC	Loop "A"									3/W	3/W							Q (T)											
NC	Pzr - Liquid	D	D	D	D	D	D						W												W				
NC	Pzr - Gas											W																	
NC	PRT - Liquid			N/S																									
NC	PRT - Gas			W						W	W	W																	
NC	NCDT - Gas			W						W	W	W																	
NV	Letdown Hx Outlet	D (T)	D (T)	D (T)	D	D	D	D					D	3/W (T)	D		3/W		M	W	W	W	W		3/W				
NV	Mixed Bed Outlet	W	W										D		D														
NV	VCT - Gas			W						W	W	W																	
NV	Boric Acid Tanks	W	W		2/W (T)	W	W	W												M	M	M	M	M					
NV	Boric Acid Batch Tanks				N/S																								
NI	Cold Leg Accumulators	M	M		2/M (T)*																								
NI	UHI Accumulator	M	M		2/M (T) **					(T) ***																			
ND	Decay Heat Removal	D (T) #	D (T) #	D (T) #	D # ** **	D #	D #	D #												W #	W #	W #	W #		3/W #				
NB	RMWST	3/W	3/W	3/W		D	D	3/W					W				W			W	W	W	W						

(T) - Denotes Tech. Spec. item; frequency given may be more conserative than actual spec.
*- Also, within 6 hrs. after a solution volume increase of $\geq$ 1% Tank Volume
**- Also, within 6 hrs. after vol. increase of $\geq$138.3 gal
***- Total Dissolved Gas - I/yr.
****- Tech. Spec. item during refueling
*****- Increase frequency if there has been a large change in inhibitor concentration.
N/S - Not scheduled.
- when in service

PRIMARY SAMPLING AND ANALYSIS SCHEDULE
CP/O/B/8800/05
ENCLOSURE 6.1

SYSTEM	SAMPLE	Cl^- ppb	F^- ppb	O_2 ppb	Boron ppb	pH @ 25°C	Cond. umho/cm @ 25°C	Susp. Sol. ppb	Turbidity NTU	Nitrogen cc/kg	Hydrogen cc/kg	Fission Gases μCi/ml	Gross β μCi/ml	D.E. I^{131} μCi/ml	γ Isotopic Liq	γ Isotopic Crud	H_3 μCi/ml	Gross Activity	Glycol %	SiO_2 ppb	Mg/ppb	Ca ppb	Al ppb	Inhibitor ppm	BZT ppm	Bacteria col/ml	Chromates ppm	Phosphates ppm	OTHERS
NR	Demineralizer Outlet	W #	W #		D #	D #							3/W #																
FW	FWST	W	W		2/W (T)	W		W					W							M	M	M	M						
KF	Spent Fuel Pool	W	W		3/W	W			U				W		M						** M	** M	** M						
KF	SFP IX Outlet	W	W												W														
NF	Glycol Mix Tank					2/M		2/M											2/M										
NF	Glycol Pump Disch					2/M		2/M											2/M										
NF	Ice Making Solution Mix Tank				N/S	N/S																							
NF	Ice Condenser				Q (T)	Q (T)																							
KC	Component Cooling	W	W			W	W		W				W											W	M *****	M			
NR	Chiller Hx Shell	W	W			W	W		W				W											W	M *****	M			
KD	D/G Eng. Cool. Water					2/M																					2/M	2/M	
WZ	Groundwater Drng. Sump												W																

(T)-Denotes Tech. Spec. item; frequency given may be more conservative than actual spec.
*-Also, within 6 hrs. after a solution volume increase of ≥ 1% Tank Volume
**-Also, within 6 hrs. after vol. increase of 2138.3 gal.
***-Total Dissolved Gas - 1/yr.
****-Tech. Spec. Item during refueling
*****-Increase frequency if there has been a large change in inhibitor concentration.
N/S-Not scheduled.
-when in service

OIL SAMPLING AND ANALYSIS SCHEDULE
CP/O/B/8800/05
ENCLOSURE 6.2

Table 1 - Analysis at Station

System	Sample	Viscosity	Neut. #	% Water	Water and Sediment	Specific Gravity	Particle Count					
LT	Main Turbine Lube Oil	M	M		M		M	M	M	M	M	M
LF	FWPT (A&B) Lube Oil	M	M		M		M	M	M	M	M	M
NC	NC Pump Motor Oil (A,B,C,D)	SD	SD		SD							
NC	NC Pump Motor Oil (Spare)		2/y		2/y							
	Fuel Oil Tank Truck	PTA (T)			PTA (T)	PTA (T)	See Table 2 also; no anaylsis necessary if fuel is for AD diesel only.					
FD	Fuel Oil Storage Tanks (A1,A2,B1,B2)						See Table 2					
	Lube Oil Tank Truck	PTA ***	Each Load ***	Each Load ***								
LD	Clean Lube Oil Storage Tank	M	M	M								
LD	Lube Oil Sump Tank	M	M	M								
AD	Fuel Oil Storage Tank	Q			Q							
AD	Oil Pan	Q	Q	Q								

Table 2 - Analysis by Consultant

System	Sample	Viscosity	Distillation Temp	Water and Sediment	Carbon Residue on 10% Residuum	Copper Strip Corrosion	Flash Point	Cloud Point	Pour Point	Ash	Sulfur	Cetane Number	Insoluble	Specific Gravity
	Fuel Oil Tank Truck		*(T)		*(T)	*(T)	*(T)	*(T)	*(T)	*(T)	*(T)	*(T)	**(T)	
FD	Fuel Oil Storage Tanks(A1,A2,B1,B2)	BM *(T)	BM *(T)	BM *(T)	BM *(T)	BM *(T)	BM *(T)	BM *(T)	BM *(T)	BM *(T)	BM *(T)	BM *(T)	BM **(T)	BM *(T)

BM - Bi-monthly
M - Monthly
Q - Quarterly
Y - Yearly
SD - Shutdown
PTA - Prior to Addition
T - Tech Spec

* - Must be verified within 2 weeks of sampling
** - Must be verified within 1 week of sampling
*** - Viscosity must be within specification prior to addition to the tank; other analysis may be done later

SECONDARY CHEMISTRY SAMPLING AND ANALYSIS SCHEDULE -
HOT STANDBY
CP/0/B/8800/05
ENCLOSURE 6.3

	pH	Cond umhos	Cat. Cond.	O_2 ppb	Na ppb	N_2H_4 ppb	Cl ppb	Sus. S. ppb	SiO_2 ppb	Tot. Fe ppb	Cu ppb	Pb ppb	NH_3 ppb	
Steam Generator Blowdown A-D	S		C	S	C		S	S	S	3/W	3/W		3/W	
Main Steam A-D	S	S			D*				D					
Hotwell Pump Discharge	S	C	C	C	C		D	S	S	3/W	3/W			
Polisher (Main) Influent	D	D	C					S						
Polisher (Main) Effluent	S		C		C			S	S	3/W	3/W			
Polisher Cell Effluent A-E			C											
Main Feedwater	S	S	C	C	S	C	D	S	S	3/W	3/W		3/W	
Upper Surge Tank	D	D						D						
Condensate Storage Tank	D	D							D					

S = 1/Shift
D = 1/day

C = Continuous
3/W = 3/week

*To be run on AA

WATER TREATMENT ROOM SAMPLING AND ANALYSIS SCHEDULE
CP/O/B/8800/05
ENCLOSURE 6.4

Sample	Turb.	Cond.	Mill Susp. Solids	SiO_2	Cl^-	F^-	Free Cl_2	TSS	Color	pH	TOC	Total Coliform	O_2
Raw Water	D	D		W				D	D	D		D*	
YF "A" Eff.	D	D		W			D	D		D			
YF "B" EFF.	D	D		W			D	D		D			
Finished YD	D						D		D	D		D*	
YM Carbon Filters Inf.											W*		
YM Carbon Filter "A" Eff.							W				W*		
YM Carbon Filter "B" Eff.							W				W*		
YM Demin. "A" Eff.		D	D	S	D	D				D			
YM Demin. "B" Eff.		D	D	S	D	D				D			
YD Carbon Filter Inf.											W*		
YD Carbon Filter "A" Eff.							W				W*		
YD Carbon Filter "B" Eff.							W				W*		

WATER TREATMENT ROOM SAMPLING AND ANALYSIS SCHEDULE
CP/O/B/8800/05
ENCLOSURE 6.4

* - Off site analyses (a) - Dissolved Oxygen monitored as operation requires

Sample	Turb.	Cond.	Mill Susp. Solids	SiO_2	Cl^-	F^-	Free Cl_2	TSS	Color	pH	TOC	Total Coliform	O_2
Finished YD Distribution	D						D		D	D		* 8/M	
YM Deaerator "A"													(a)
YM Deaerator "B"													(a)

ENCLOSURE 6.5
CP/O/B/8800/05
HVAC SAMPLING AND ANALYSIS SCHEDULE

SAMPLE	pH	CONDUCTIVITY	TURBIDITY	INHIBITOR	BACTERIA	BZT	
YB, YC, YH (Admin. Bldg.) YJ, YK, YR, YV, YW, YN	1/W	1/W	1/W	1/W	1/M		
KR	1/W	1/W	1/W	1/W	1/M	1/M	

SAMPLE	CONDUCTIVITY	GLYCOL	SUSPENDED SOLIDS				
YH (Service Turbine, and Auxiliary Bldg. Loops)		2/M	2/M				

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
CHEMISTRY PROCEDURE FOR THE
RECORDING AND MANAGEMENT OF DATA
CP/0/B/8800/05
ENCLOSURE 6.6

Steam Generator Wet Lay-Up Sampling Schedule

1. Generators are to be sampled and all analysis run three (3) times per week until stable, then once (1) a week.

ENVIRONMENTAL SAMPLING AND ANALYSIS SCHEDULE
CP/0/B/8800/05
ENCLOSURE 6.7

RL	Ambient Temp. O_2/O_3	Flow MGD	pH at 25°C	Spec Cond umhos/cm	Turb NTU	Total Cl_2 ppm	Free Cl_2 ppm	DO ppm	BOD ppm	TSS ppm	Volatile Solids c/o	Alk ppm $CaCO_3$	Acidity ppm $CaCO_3$	Solu.ble Silica ppm	Oil and Grease ppm	Fecal Coliform Colonies/ 100 ml	Boron ppm	Hydrazine ppm	Settleable Solids ml/l	Ca & Mg ppm
Intake (Lake Wylie)	D		W	W	W	D				W		W	W	W						
Discharge	D		W																	
WC																				
Initial Holdup Pond			D																	
Settling Basin A			D																	
Settling Basin B			D																	
Final Holdup Pond			D																	
CHP In Sys Out Pit			D		D	D				D							D	D		
System Discharge		D	W							W					2/M*					
WT																				
Influent			D						3/W										W	
Cell A			D					D		D		W	W						W	
Cell B			D					D		D		W	W						W	
Cell C			D					D		D		W	W						W	
Cell D	D		D					D	3/W	D		W	W						W	
Effluent Polishing Basin			D					D	3/W	D		W	W							
System Discharge		D	W			D	D		M*	W						M*				
RC																				
Unit 1 Cooling Towers	D		D	D	D	D	D			D		W	W	D						W

*Off-site Analysis

ENCLOSURE 6.8
CP/O/B/8800/05

To Be Added Later

ENCLOSURE 6.9
CP/O/B/8800/05

To Be Added Later

PRIMARY CHEMISTRY OPERATING SPECIFICATIONS
CP/0/B/3800/05
ENCLOSURE 6.10

SYSTEM	SAMPLE	Cl^- ppb	F^- ppb	O_2 ppb	Boron ppm	pH @ 25°C	Cond. umho/cm @ 25°C	Susp. Sol. ppb	Turbidity NTU	Nitrogen cc/kg	Hydrogen cc/kg	Fission Gases μCi/ml	Gross β μCi/ml	D. E. I^{131} μCi/ml	γ Isotopic Liq.	γ Isotopic Crud	H_3 μCi/ml	Gross Activity	Sr_{90}	SiO_2 ppb	Mg ppb	Ca ppb	Al ppb	Fe ppb	Li ppm				OTHERS
NC	Loop "A"									N/S	25-50							<100 μCi/ml											
NC	Pzr - Liquid	≤150	≤150	F	A	4.2-10.5	N/S						N/S												See Page 3				
NC	Pzr - Gas											N/S																	
NC	PRT - Liquid			≤100																									
NC	PRT - Gas			<4.5%						N/S	N/S	N/S																	
NC	NCDT - Gas			<4.5%																									
NV	Letdown Hx Outlet	≤150 (T)	≤150 (T)	F (T)	0-2000	4.2-10.5	N/S	≤100					N/S	≤1.0 (T)	S/S		N/S		N/S	≤200	G	G	≤30		See Page 3				
NV	Mixed Bed Outlet	B	B										B		B														
NV	VCT - Gas			C						H/S	N/S	N/S																	
NV	Boric Acid Tanks	≤150	≤150		7000-7700 (T)	N/S	N/S	≤200					N/S							≤600	≤5	≤10	≤ 30	≤150					
NV	Boric Acid Batch Tanks				7000-7700																								
NI	Cold Leg Accumulators	≤150	≤150		1900-2100 (T)																								
NI	UHI Accumulator	≤150	≤150		1900-2100 (T)					D (T)																			
ND	Decay Heat Removal	(T) ≤150	(T) ≤150	(T) F	N/S E	4.2-10.5	N/S	≤200					N/S							≤200	≤10	≤20	≤60		See Page 3				
NB	RMWST	≤50	≤50	≤100		6.0-8.0	≤2.0	≤5					≤0.005				≤1.0			≤50	≤2	≤2	≤15						

N/S-No Spec.
(T)-denotes Tech. Spec. item; value given may be lower than actual spec.
A -within 50 ppm of NV Letdown Hx Outlet boron concentration
B - ≤ IX inlet
C - < minimum detectable amount
D - < 80 Std. Cu. Ft. Total dissolved gas/1800 cu. ft. H_2O
E - Tech. Spec. Item during refueling; ≥ 2000
F - No Spec. @ < 180°F; ≤ 100 between 180°F and 250°F
G - Ca ≤10 and Mg ≤ 5 @ ≤ 85% power
Ca and Mg combined ≤ 5 @ > 85% power

PRIMARY CHEMISTRY OPERATING SPECIFICATIONS
CP/O/B/8800/05
ENCLOSURE 6.10

SYSTEM	SAMPLE	Cl^- ppb	F^- ppb	O_2 ppb	Boron ppb	pH @ 25°C	Cond. µmho/cm @ 25°C	Susp. Sol. ppb	Turbidity NTU	Nitrogen cc/kg	Hydrogen cc/kg	Fission Gases µCi/ml	Gross β µCi/ml	D.E. I^{131} µCi/ml	γ Isotopic Liq	γ Isotopic Crud	H_3 µCi/ml	Gross Activity	Glycol %	SiO_2 ppb	Mg/ppb	Ca ppb	Al ppb	Inhibitor ppm	BZT ppm	Bacteria col/ml	Chromates ppm	Phosphates ppm	OTHERS
NR	Demineralizer Outlet	≤150	≤150		N/S	N/S							N/S																
FW	FWST	≤150	≤150		2000-2100 (T)	4.0-4.7		≤200					N/S		NS					≤200	≤10	≤20	≤60						
KF	Spent Fuel Pool	≤150	≤150		>2000	4.0-4.7			≤10				N/S		B						≤50	≤100	≤300						
KF	SFP IX Outlet	B	B										N/S																
NF	Glycol Mix Tank					>7.5		N/S											49-59										
NF	Glycol Pump Disch					>7.5		N/S											49-59										
NF	Ice Making Solution Mix Tank				1950-2250	9.0-9.5																							
NF	Ice Condenser				>1800 (T)	9.0-9.5 (T)																							
KC	Component Cooling	≤1000	≤1000			8.2-10	≤5000		≤30				N/S											2000-3000	20-80	≤250,000			
NR	Chiller Hx Shell	≤1000	≤1000			8.2-10	≤5000		≤30				N/S											2000-3000	20-80	≤250,000			
KD	D/G Eng. Cool. Water					8.25-9.75																					700-1700	100-300	
WZ	Groundwater Drng. Sump												C																

N/S - No Spec.
(T) - denotes Tech. Spec. item; value given may be lower than actual spec.
A - within 50 ppm of NV letdown Hx Outlet boron concentration
B - ≤ IX inlet

C - < minimum dectable amount
D - < 80 Std. Cu. Ft. Total dissolved gas/1800 cu. ft. H_2O
E - Tech. Spec. Item during refueling; ≥ 2000

F - No Spec. @ <180°F; ≤100 between 180°F and 250°F

G - Ca ≤ 10 and Mg ≤5 @ ≤85% power
Ca and Mg combined ≤5 @ >85% power

RECOMMENDED LI CONCENTRATION RANGE AS A FUNCTION OF BORON CONCENTRATION

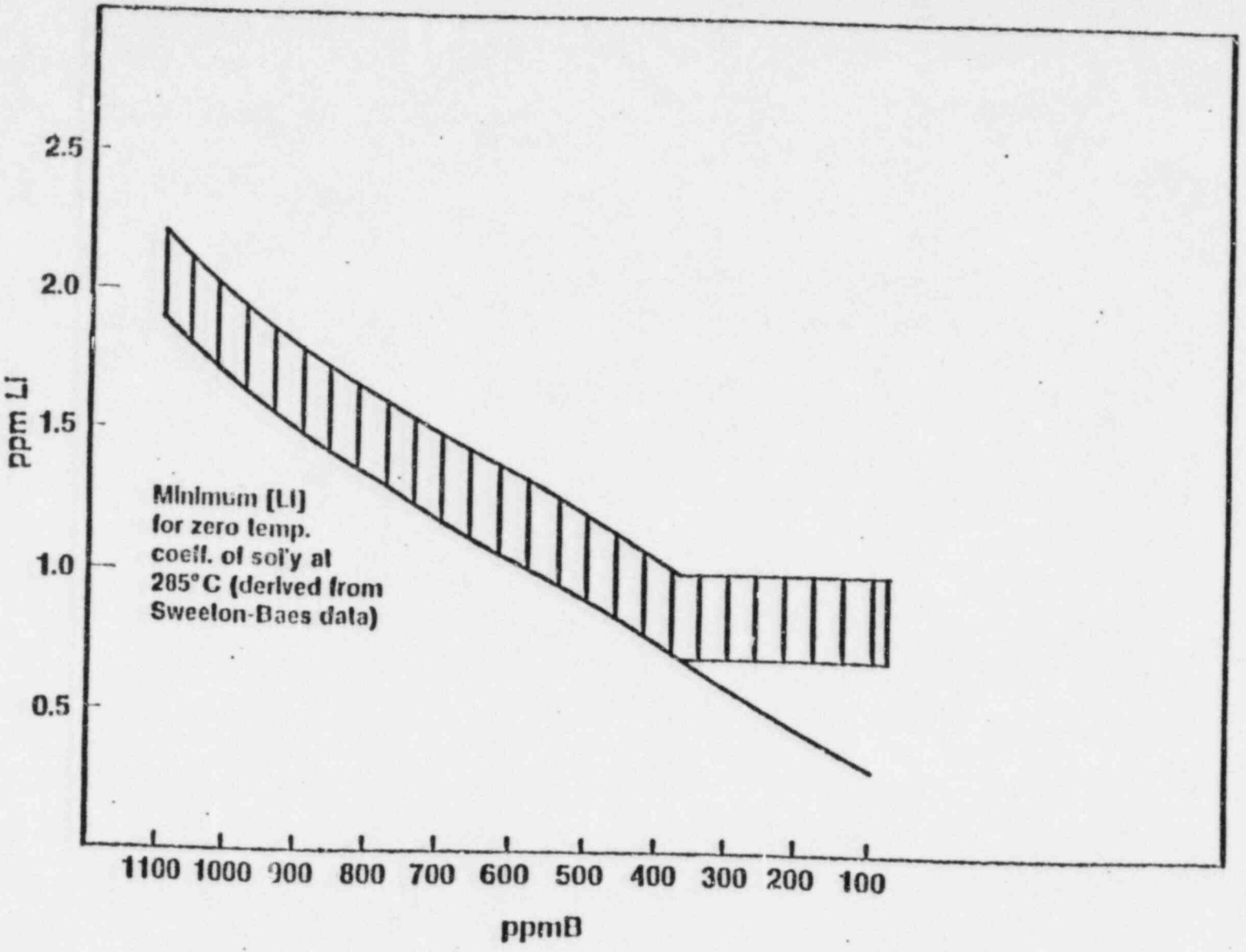


FIGURE 1

OIL ANALYSIS OPERATING SPECIFICATIONS
CP/O/B/8800/05
ENCLOSURE 6.11

Table 1 - Analysis at Station

System	Sample	Viscosity Sus @ 100°F	Neut. # mg KOH/gm	Water v/v%	Water and Sediment v/v%	Specific Gravity	Particle Count					
							6-11 μ	12-20 μ	21-60 μ	61-105 μ	106-250 μ	>250 μ
LT	Main Turbine Lube Oil	140-170	<0.2		<0.2		210,000	6500	2370	112	18	0
LF	FWPT (A & B) Lube Oil	140-170	<0.2		<0.2		210,000	6500	2370	112	18	0
NC	NC Pump Motor Oil (A, B, C, D)	143-175	<0.4*		nil							
NC	NC Pump Motor Oil (Spare)		<0.4*		nil							
	Fuel Oil Tank Truck	(T) 32.6-40.1			(T) ≤0.05	(T) 0.83-0.89	See Table 2 also.					
FD	Fuel Oil Storage Tanks (A1, A2, B1, B2)						See Table 2.					
	Lube Oil Tank Truck	649-812	later	≤0.1								
LD	Clean Lube Oil Storage Tank	649-812	later	≤0.1								
LD	Lube Oil Sump Tank	649-812	later	≤0.1								
AD	Fuel Oil Storage Tank	30-45			≤0.1							
AD	Oil Pan	459-702			≤0.1							

Table 2 - Analysis by Consultant

System	Sample	Viscosity Sus @ 100°F		Distillation Temp °C(°F) 90% Point		Water and Sediment v/v%	Carbon Residue on 10% Residuum %	Copper Strip Corrosion	Flash Point °C(°F)	Cloud Point °F	Pour Point °F	Ash w/w%	Sulfur w/w%	Cetane Number	Insolubles mg/100ml	Specific Gravity	
		Min	Max	Min	Max											Min	Max
	Fuel Oil Tank Truck			(T) 283(540)	(T) 338(640)		(T) ≤0.35	(T) ≤3	(T) ≥52(125)	(T) ≤24	(T) ≤13	(T) ≤0.01	(T) ≤0.50	(T) ≥40	(T) <2		
FD	Fuel Oil Storage Tanks (A1, A2, B1, B2)	(T) 32.6	(T) 40.1	(T) 283(540)	(T) 338(640)	(T) <0.05	(T) ≤0.35	(T) ≤3	(T) ≥52(125)	(T) ≤24	(T) ≤13	(T) ≤0.01	(T) ≤0.50	(T) ≥40	(T) <2	(T) 0.83	(T) 0.89

T - Tech Spec

* - Difference from new oil

SECONDARY CHEMISTRY OPERATING SPECIFICATIONS -
HOT STANDBY
CP/O/B/8800/05
ENCLOSURE 6.12

	pH	Cond. µmho	Cat. Cond.	O_2 ppb	Na ppb	N_2H_4 ppb	Cl ppb	Sus. Sol. ppb	SiO_2 ppb	Tot. Fe	Cu ppb	Pb ppb	NH_3 ppb	
Steam Generator Blowdown A-D	8.5-9.3		≤2.0	≤5	≤100		≤100	<1000	<1000	<1000	<100		<750	
Main Steam A-D	8.8-9.3	2-7			<3				<20					
Hotwell Pump Discharge	8.8-9.3	2-7	<0.8	<100	<20			<100	<300	<100	<5			
Polisher (Main) Influent	8.8-9.3	2-7	<0.8					<100						
Polisher (Main) Effluent	8.8-9.3		<0.8		<20			<100	<300	<100	<5			
Polisher Cell Effluent A-E			<0.8											
Main Feedwater	8.8-9.3	2-7	<0.8	<100	≤20	≥3 X DO or >50	<25	<100	<300	<100	<5		100-750	
Upper Surge Tank	8.8-9.3	2-7						<100						
Condensate Storage Tank	6.0-9.3	1-7							<300					

WATER TREATMENT ROOM OPERATING SPECIFICATIONS
CP/O/B/8800/05
ENCLOSURE 6.13

Sample	NTU Turb.	umhos Cond.	ppb Mill Susp. Solids	ppb SiO_2	ppb Cl^-	ppb F	ppm Free Cl_2	ppm TSS	C.U. COLOR	pH	TOC	Total Coliform	ppb O_2
Raw Water	N/S	N/S		N/S				N/S	N/S	N/S		N/S	
YF Filter Eff. "A"	<1.0	N/S		N/S			0.5-2.0	N/S		N/S			
YF Filter Eff. "B"	<1.0	N/S		N/S			0.5-2.0	N/S		N/S			
Finished YD	5/Two Day avg. 1/mo. avg.						<2.0		<15	6.5-8.5		0	
YM Carbon Filters Inf.											N/S		
YM Carbon Filter "A" Eff.							<0.1				N/S		
YM Carbon Filter "B" Eff.							<0.1				N/S		
YM Demin "A" Eff.		<0.2	<100	<20	<100	<100				5.8-8.0			
YM Demin "B" Eff.		<0.2	<100	<20	<100	<100				5.8-8.0			
YD Carbon Filter Inf.											N/S		
YD Carbon Filter "A" Eff.							<0.1				N/S		
YD Carbon Filter "B" Eff.							<0.1				N/S		

WATER TREATMENT ROOM OPERATING SPECIFICATIONS
CP/0/B/8800/05
ENCLOSURE 6.13

Sample	NTU Turb.	umhos Cond.	ppb Mill Susp. Solids	ppb SiO_2	ppb Cl^-	ppb F^-	ppm Free Cl_2	ppm TSS	C.U. Color	pH	TOC	Total Coliform	ppb O_2
Finished YD Distribution	5/Two Day avg. 1/mo. avg.						<2.0		<15	6.5-8.5		0	
YM Deaerator "A"		1											<100
YM Deaerator "B"													<100

ENCLOSURE 6.14
CP/O/B/8800/05
HVAC SAMPLING AND ANALYSIS SPECIFICATIONS

SAMPLE	pH @ 25°C	CONDUCTIVITY µmhos/cm	TURBIDITY NTU	INHIBITOR ppm	BACTERIA Colonies/ml	BZT ppm	
YB, YC, YH (Admin. Bldg.) YJ, YK, YR, YV, YW, YN	8.2 - 10	<5000	<30	2000 - 3000	<250,000		
KR	8.2 - 10	<5000	<30	2000 - 3000	<250,000	>20	

SAMPLE	CONDUCTIVITY µmhos/cm	GLYCOL wt. %	SUSPENDED SOLIDS				
YH (Service, Turbine, and Aux. Bldg. Loops)		35-60	<2000				

DUKE POWER COMPANY
CATAWBA NUCLEAR STATION
CHEMISTRY PROCEDURE FOR THE
RECORDING AND MANAGEMENT OF DATA
CP/0/B/8800/05
ENCLOSURE 6.15

Steam Generator Wet Lay-Up Specifications

	pH	Na ppb	Cat. Con. µmhos	Cl^- ppb	N_2H_4 ppm	D.O. ppb	Sus. Solids ppb	NH_3 ppb	REMARKS
Steam Generators A-D	9.8-10.5	<1000	≤10	<500	75-200	<100	<100	5-30	

ENVIRONMENTAL CHEMISTRY OPERATING SPECIFICATIONS
CP/O/B/8800/05
ENCLOSURE 6.16

RL	Ambient Temp. °C/°F	Flow MGD	pH at 25°C	Spec Cond umhos/cm	Turb NTU	Total Cl_2 ppm	Free Cl_2 ppm	DO ppm	BOD ppm	TSS ppm	Volatile Solids %	Alk ppm $CaCO_3$	Acidity ppm $CaCO_3$	Soluble Silica ppm	Oil and Grease ppm	Fecal Coliform Colonies/100 ml	Boron ppm	Hydrazine ppm	Settleable Solids ml/l	Li & Mg ppm
Intake (Lake Wylie)	NS		NS	NS	NS	NS				NS		NS	NS	NS						
Discharge	KS		6-9																	
WC																				
Initial Holdup Pond			NS																	
Settling Basin A			6-9																	
Settling Basin B			6-9																	
Final Holdup Pond			6-9																	
*RP In Sys Out Pit			6-9		NS	<.02				<30										
System Discharge		NS	6-9							<30					<15		<10		<.43	
WT																				
Influent			NS						NS											
Cell A			NS					1-3		NS		NS	NS						NS	
Cell B			NS					2-4		NS		NS	NS						NS	
Cell C			NS					3-5		NS		NS	NS						NS	
Cell D	NS		NS					4-6	NS	NS		NS	NS						NS	
Effluent Polishing Basin			6-9					5-7	<30	<90		NS	NS							
System Discharge		NS	6-9			NS	.5		<30	<90						200				
RC																				
Unit 1 Cooling Tower*	NS		7.5-7.8	12XRL	NS	NS	>.5 1 hr/day			<150		NS	NS	<100						<50
Cooling Tower Blowdown			6-9			0 (1)	0 (2)													

(1) 2 hr/24 hr exception
(2) 2 hr/24 hr exception of 0.2 average

ENCLOSURE 6.17
CP/0/B/8800/05

To Be Added Later

ENCLOSURE 6.18
CP/O/B/8800/05

To Be Added Later

FORM 18675

ENCLOSURE 6.19
CP/0/B/8800/05
CATAWBA NUCLEAR STATION
SAMPLE REQUISITION

HEALTH PHYSICS' SAMPLE NUMBER _____
CHEMISTRY'S SAMPLE NUMBER _____
DATE/TIME SAMPLE TAKEN __/__/__ __:__
DATE/TIME RESULTS RECEIVED __/__/__ __:__
GWR # _____ LWR # _____ RWP # _____

REQUISITION SUBMITTED BY:

	PHONE EXT.
PERSON _____	_____
RADWASTE CHEM	_____
ENVIRON CHEM	_____
SECONDARY CHEM	_____
PRIMARY CHEM	_____
CONTROL ROOM	_____
HEALTH PHYSICS	_____
OTHER GROUP	_____

SUBMIT REQUISITION TO:

HOT LAB	_____	( )
COLD LAB	_____	( )
AA LAB	_____	( )
CT LAB	_____	( )
RADWASTE BENCH	_____	( )
WATER TRT. LAB	_____	( )
HP LAB REQUEST (SAMPLE TO BE TAKEN)	_____	( )
HP COUNT ROOM (ANALYSIS ONLY)	_____	( )

PRIORITY: _____

(1) Personnel Safety, Reactor Safety, Secondary Operational Requirement
(2) High Radwaste Subsystem Inventory
(3) Results in 4 Hours
(4) Results in 8 Hours
(5) Results in 24 Hours
(6) Information - Specify Results in _____ Hours

SAMPLE TYPE/ORIGIN _____
SAMPLE PREPARED BY _____
FOR AA SAMPLES, SPECIFY FLAME ( ) OR FURNACE ( )

DETERMINE CONFORMANCE TO SPECIFICATIONS FOR _____
DISCHARGE DOCUMENTATION REQUESTED YES ( ) NO ( )

SERVICES REQUESTED

CHECK BOX ABOVE APPROPRIATE ITEM. THE LABORATORY WILL ENTER RESULTS IN THE BOX BELOW THE ITEM OR ATTACH RESULTS AS REQUIRED.

ANALYSIS PERFORMED BY CHEMISTRY

TAKE SAMPLE	O_2 ppb/I	Cl ppb	F ppb	B ppm	pH	Cu ppb	Fe ppb	Na ppb	Al ppb	Pb ppb	SiO_2 ppb	Ca ppb	Mg ppb

OXID ORG ppm	APPROX I uCi/ml	FILT $\alpha+\gamma$ uCi/ml	ADS $\alpha+\gamma$ uCi/ml	IX $\alpha+\gamma$ uCi/ml	CAUS ADD (gal)

ANALYSIS PERFORMED BY HEALTH PHYSICS

TAKE SAMPLE AND ROUTE TO HP LAB

GeLi SPECTRUM _____ (Attach Results)
JOB STREAM INITIATED _____
PERSON ANALYZING SAMPLE _____
COUNTING TIME _____
TIME SAMPLE BEGAN COUNTING _____

GROSS β _____
GROSS γ _____
GROSS α _____
TRITIUM _____
OTHER _____ (Attach Results)

SAMPLE VOLUME _____

FOR AIR ANALYSIS
VOLUME = TIME X FLOW
_____ = _____ X _____

RELEASE RATE (gpm or cfm) _____

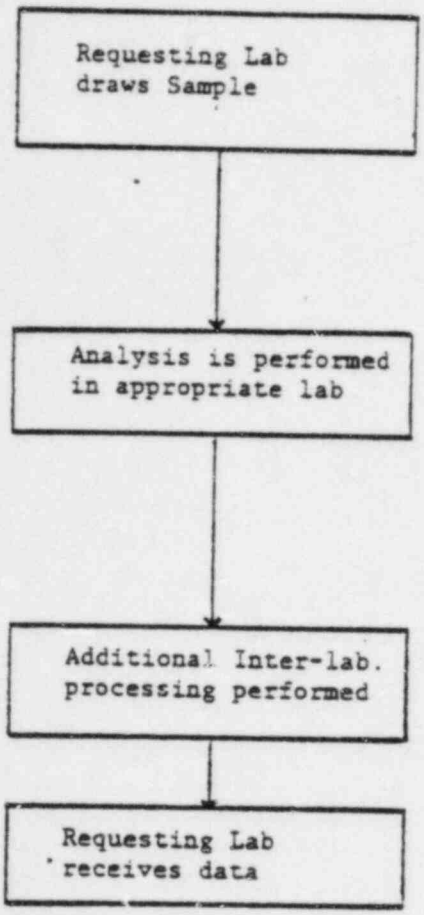
REMARKS/ADDITIONAL SAMPLE REQUEST:

PERFORMED BY: _____ DATE _____ TIME COMPLETED _____

REVIEWED BY LAB SUPERVISOR(s) _____ CONTROL ROOM NOTIFIED YES ( ) NO ( )

ENCLOSURE 6.20
CP/O/B/8800/05

INTERLABORATORY SAMPLE PROCESSING



1) Requesting Lab draws sample and assigns sample number.

2) Sample Requisition Form is filled out.

3) Sample and Form routed to appropriate lab.

4) The lab receives form and sample and performs requested analysis.

5) Results are recorded in appropriate space on Sample Requisition Form.

6) If additional interlaboratory analyses required, sample and form are routed to next requested lab, where additional analysis performed.

7) Once all analyses completed, original copy of Requisition Form with all required data entered is returned to Requesting Lab.

8) Requesting Lab transfers data into their Lab Log Book; appropriate actions as indicated by results are initiated.

Form 18728

CATAWBA NUCLEAR STATION – PRIMARY CHEMISTRY

Sample No.	Sample	Tech	Date/Time	pH	Spec Con Umho/cm	B ppm	Cl^- ppb	F^- ppb	O_2 ppb	Sus. Solids ppb	H_2 cc/kg	Tg cc/kg

Page

Li^+ ppm	Al^{+3} ppb	Ca^{+2} ppb	Mg^{+2} ppb	Na^+ ppb	SiO_2 ppb	NO_2^- ppm	Gross Alpha uCi/ml	Gross Beta uCi/ml	Gamma Spectral	H^3 uCi/ml	Remarks

Form 34727 (10-81)

PETROLIUM PRODUCTS

Page No.

Sample No.	Sample	Tech.	Date	Time	Viscos. Sus. @ 100°F	Neut. No. mgKOH/g	% Water	Color Astm-1500	% Ash	Sedim ppm
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
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31										
32										
33										
34										
35										
36										
37										
38										
39										

Form 34721 (10-81)

PARTICULATE COUNT MICRONS

Page No.

Line No.	5 - 10	10 - 25	25 - 50	50 - 100	> 100	6 - 11	12 - 20	21 - 60	61 - 105	105 - 250	> 250
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
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37											
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39											

Form 3472? (11-81)

CATAWBA NUCLEAR STATION SECONDARY CHEMISTRY

Page No.

Sample No.	Sample	Tech.	Date	Time	Na^+ ppb	N_2H_4 ppb	pH @ 25°C	Spec. Cond. umhos/cm	Cat. Cond. umhos/cm	Turbid. NTU	D.O. ppb
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
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16											
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39											

Form 34727 (11-81)

Page No.

	Cl^- ppb	F^- ppb	Total Iron ppb	Suspended Solids ppb	Copper ppb	NH_3 ppb	Lead ppb	SiO_2 ppb	Residual Cl_2 ppm	Fe^{+++} ppb	
1											
2											
3											
4											
5											
6											
7											
8											
9											
10											
11											
12											
13											
14											
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30											
31											
32											
33											
34											
35											
36											
37											
38											
39											

CATAWBA NUCLEAR STATION – CLOSED COOLING SYSTEMS

SAMPLE NO.	SAMPLE	TECH.	DATE	TIME	INHIBITOR ppm	TURBIDITY FTU	pH @°C	CONDUCTIVITY umhos	

PAGE #

	BACTERIAL COUNT	SUSPENDED SOLIDS ppm	INHIBITOR ADDITION	MICROBIOCIDE ADDITION	

CATAWBA NUCLEAR STATION WASTEWATER CHEMISTRY

SAMPLE NO.	SAMPLE	TECH.	DATE	TIME	TEMP °C	FLOW GPM	pH	SPEC. COND. umhos	TURBID. FTU	RESID. Cl2 ppm	D.O. ppm

PAGE #

	BOD ppm	FECAL COLI. Col./100 ml	SET. MATTER	SUSPEND. SOLIDS ppm	VOLATILE SOLIDS ppm	ALK. ppm	ACIDITY ppm	Cu ppm	Mg ppm	Ca ppm	OIL & GREASE ppm	

ENCLOSURE 6.26
CP/O/B/8800/05

To Be Added Later