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VICE-PRESIDENT AND GROUP EXECUTIVE
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May 8, 1980

Mr. Harold R. Denton, Director
Office of Nuclear Reactor Regulation
U. S. Nuclear Regulatory Commission
Washington, D. C. 20555

Subject: Virgil C. Summer Nuclear Station
Additional Seismic Information
Docket No. 50/395

Dear Mr. Denton:

South Carolina Electric & Gas Company, acting for itself and as agent for South Carolina Public Service Authority, herewith submits for your information a description of the Virgil C. Summer Nuclear Station program to monitor and control the secondary water chemistry. This information is provided in response to Mr. Robert L. Baer's letter of 8/24/79. The control of secondary water chemistry in accordance with this program will provide adequate assurance of steam generator tube integrity.

Due to the continuing evolution of chemistry control technology the procedures and administrative controls described in this program are subject to modification. Any modifications will be designed in accordance with the operating experience of the Virgil C. Summer Nuclear Station as well as new developments in technology. The program's objective of inhibiting steam generator corrosion and tube degradation will not change.

Very truly yours,

E. H. Crews, Jr.

RBC:EHC:rh

cc: H. T. Babb
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SUMMER NUCLEAR STATION

SECONDARY WATER CHEMISTRY

MONITORING AND CONTROL PROGRAM

The aim of the Secondary Water Chemistry Control Program is to inhibit steam generator corrosion, tube degradation, and overall system corrosion. To this end, all necessary secondary water chemistry parameters are monitored and controlled. ATTACHMENT I consists of copies of the daily monitoring reports to be used for secondary system manual sample points during operation. The reports list the sample points, parameters monitored, frequency of sampling, and specification to be maintained. Other system samples are monitored continuously by on-line analytical instrumentation in a turbine cycle sampling panel. ATTACHMENT II is a summary listing of sample points and parameters monitored. Manual samples are analyzed according to the appropriate procedure listed in ATTACHMENT III.

Recording and management of data from manual samples is accomplished through the use of ATTACHMENT I. The data is routed to both the shift supervisor and the chemistry group supervisory personnel in a timely manner for review and evaluation. Procedures under development will specify monitoring and administrative measures for continuously monitored samples. Further details governing overall Chemistry Group activities are contained in Virgil C. Summer Nuclear Station Administrative Procedure, AP-600, "Chemistry Operations Manual".

Corrective actions for Out of Specification conditions are formally controlled by Chemistry Procedure CHP-612, "Out of Specification Handling and Reporting". The Chemistry Group is responsible for evaluating and recommending to the shift supervisor the appropriate corrective action.

DAILY CHEMISTRY REPORT
STEAM GENERATOR _____

*Tech. Spec. Item (2)

SAMPLE	ANALYSIS	FREQUENCY	LIMITS (1)	RESULT	COMMENTS
	pH	5 days/week	8.5 - 9.0		
	Cat. Conductivity	5 days/week	≤ 2 μmhos		
	Free OH^-	5 days/week	≤ 1.5 ppm as $CaCO_3$		
	Chloride	5 days/week	≤ .15 ppm		
	Ammonia	5 days/week			
	Susp. Solids	5 days/week	≤ 1 ppm		
	Silica	Mon-Wed-Fri	≤ 1 ppm		
	15 Min. Act. *	Mon-Wed-Fri	< .1 μci/gm (3)		
	Sodium	Mon-Wed-Fri	≤ .1 ppm		
	I-131 (DE) *	1/6 months (4)	< .1 μci/gm		

(1) The limits given refer to normal power operation. Other plant conditions may have other limits. Refer to CHP-602, ATTACHMENT V, for the limits pertaining to other plant conditions.
(2) See CHP-602, ATTACHMENT III for Tech. Spec. frequencies and limits.
(3) In this analysis, all of the activity is assumed to be Iodine.
(4) Frequencies increase to monthly whenever gross activity is greater than .01 μci/gm.

POOR ORIGINAL

DAILY CHEMISTRY REPORT
SECONDARY

SAMPLE	ANALYSIS	FREQUENCY	LIMITS	RESULT	COMMENTS
FEEDWATER (1)	Hydrazine	5 days/week	(O_2) + .005 ppm		
	Oxygen	5 days/week	< 5 ppb		
	pH	5 days/week	8.8 - 9.2		
	Conductivity	5 days/week	≤ 4 μmhos		
	Ammonia	5 days/week	≤ .5 ppm		
	Iron	Mon-Wed-Fri	< 10 ppb		
	Copper	Mon-Wed-Fri	< 5 ppb		
CONDENSATE (1)	pH	5 days/week			
	Cat. Conductivity	5 days/week			
	Sodium	5 days/week			
	Ammonia	Weekly - Wed			
CONDENSATE MAKEUP	pH	Weekly - Tues	6.0 - 8.0		
	Cat. Conductivity	Weekly - Tues	< 1.0 μmho		
	Free OH^-	Weekly - Tues	N/D		
	Oxygen	Weekly - Tues	< .1 ppm		
	Sodium	Weekly - Tues	< .01 ppm		
	Silica	Weekly - Tues	< .2 ppm		
	Susp. Solids	Weekly - Tues	< .1 ppm		

(1) Frequencies and limits apply during operation only.

POOR ORIGINAL

DAILY CHEMISTRY REPORT
PRIMARY

SAMPLE	ANALYSIS	FREQUENCY	LIMITS	RESULT	COMMENTS
DEMIN (1) WATER STORAGE TANK	pH	Weekly	6.0 - 8.0		
	Conductivity	Weekly	≤ 2 μmhos		
	Chloride	Weekly	≤ .15 ppm		
	Fluoride	Weekly	≤ .15 ppm		
	Silica	Weekly	≤ .2 ppm		
	Sodium	Weekly	≤ .01 ppm		
	Susp. Solid	Weekly	≤ .1 ppm		
REACTOR MAKEUP WATER	pH	5 days/week	6.0 - 8.0		
	Cat. Conductivity	5 days/week	< 1.0 μmhos		
	Oxygen	Mon-Wed-Fri	< 0.1 ppm (2)		
	Chloride	Mon-Wed-Fri	Total < .1 ppm		
	Fluoride	Mon-Wed-Fri			
	Total Solids	Mod-Wed-Fri	< 1.0 ppm		
	Sodium	Weekly - Thurs	< .01 ppm		
	Tritium	Weekly - Thurs			
	Silica	Weekly - Thurs	< 0.1 ppm		
	Aluminum	Weekly - Thurs	< .02 ppm		
	Calcium	Weekly - Thurs	< .02 ppm		
	Magnesium	Weekly - Thurs	< .02 ppm		

(1) Frequencies applicable when demineralized water storage tank is in service.
(2) Applicable when reactor coolant temperature is greater than 180°F.

POOR ORIGINAL

6.. TURBINE CYCLE SAMPLING LIST

SAMPLE #	NAME OF SAMPLE	SAMPLE CONDITIONS PRESSURE PSIG	TEMP. °F	TOTAL FLOW CC/MIN	DRAWING NO.	SAMPLE COORD.	COOLING COIL PRIM	COOLING COIL CONST 77F	HIGH PRESS. RED. ELEMENT	GRAB SAMPLE	SAMPLE EXCHANGE BOARD	pH	CONV. COND (c)	CATION COND (cc)	DISSOLVED OXYGEN (o)	HYDRAZINE (H)	SODIUM (S)	INDICATOR	RECORDER	CONTROLLER	COMMENTS
1	DEMINERALIZED WATER MAKEUP T.P.	100	90	1000	-163	F-2				X	X	1	1						pH-1 CC-2		
2 A-C	HIGH PRESSURE CONDENSER	1.5 psia	115	600	-181	A-12		X		X	X			1				SA	CC-1 SA		SA = ALARM FOR LOSS OF SAMPLE PRESSURE
2 D-F	HIGH PRESSURE CONDENSER	1.5 psia	115	600	-181	A-11		X		X	X			2				SA	CC-1 SA		
3 A-C	LOW PRESSURE CONDENSER	1.05 psia	103	500	-181	A-9		X		X	X			3				SA	CC-1 SA		
3 D-F	LOW PRESSURE CONDENSER	1.05 psia	103	600	-181	A-8		X		X	X			4				SA	CC-1 SA		
4	CONDENSATE PUMP DISCHARGE	196	106	2100	-101	H-6		X		X	X	2	2	5	1		1		pH-1 CC-2 S,O		D.O. samples cooled to 86F.
5	DEAERATOR INLET	145	297	1350	-101	A-1	X	X		X	X	3	3			1		C	pH-1 H	C H	N_2H_4 samples cooled to 90F.
6/7	DEAERATOR HEATER/STORAGE	122	338	1250	-081	B-2, C-1	X	X		X	X				2				O		NORMAL SAMPLE-6
8	FEEDWATER BOOSTER PUMP DISCHARGE	338	338	600	-081	F-7	X	X		X	X			6					CC-2		
9/10	2A/2B HP HTR DRAIN	190	349	900	-112	J-8, 6	X	X		X	X	4		7					pH-1 CC-2		
11/11A	STM GEN INLET/ EMERG. FD. PUMP DISCH.	1039 1350	435 60	900	-082 -085	A-8 E-4	X	X	X	X	X	5	4	8					pH-1 CC-2		NORMAL SAMPLE-11
12 A,B,C	MAIN STEAM	949	540	600	-012	C,E,H-11	X	X	X	X	X			9					CC-2		NORMAL SAMPLE-12A
13 A,B	AUX. BOILER A/ STEAM-B	150	365	400	-051	F-4,D-10	X	X		X	X										NORMAL SAMPLE-13A NOT CONTINUOUS
14 A,B,C	AUX. CDSR. A,B & C	2.5 psia ABS.	100	600	-102	C-12,8,4		X		X	X			10					CC-1		NOT CONTINUOUS
15 A,B,C	STEAM GENERATOR BLOWDOWN	15	100	750 EACH	-771	J-7,7,8		ONCE THRU				1 2 3	1 2 3			1 2 3	1 2 3	pH-1,2,3 CC-1,2,3 S-1,2,3 H-1,2,3	pH-2 CC-3 S		INDIVIDUAL SAMPLES SAMPLES IN NUCLEAR SAMPLE ROOM. REMOTE RECORDERS. HYDRAZINE SAMPLE -NOT CONTINUOUS AND SAMPLE COOLED TO 90F SODIUM SAMPLE COOLED TO 77F

SECONDARY CHEMISTRY PROCEDURE TITLES

1. CHP-101, pH Determination
2. CHP-102, Conductivity Determination.
3. CHP-123, Fluoride Determination.
4. CHP-108, Chloride Determination.
5. CHP-110, Silica Determination.
6. CHP-116, Determination of Suspended, Dissolved and Total Solids.
7. CHP-125, Determination of Ammonia.
8. CHP-126, Hydrazine Determination.
9. CHP-131, Determination of Free Hydroxide.
10. CHP-152, Determination of Dissolved O_2 by O_2 Meter and by Portable Test Kit.
11. CHP-502, Operation of Atomic Absorption Spectrophotometer for Low Level Metals Analysis.
12. Activity procedures are under development.