TENNESSEE VALLEY AUTHORITY

DIVISION OF NUCLEAR POWER

SEQUOYAH NUCLEAR PLANT

MONTHLY OPERATING REPORT

MARCH 1, 1983 - MARCH 31, 1983

UNIT 1

DOCKET NUMBER 50-327

LICENSE NUMBER DPR-77

UNIT 2

DOCKET NUMBER 50-328

LICENSE NUMBER DPR-79

Submitted By: P.R. Wallace

Power Plant Superintendent

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Operations Summary

March, 1983

The following summary describes the significant operational activities for the month of March. In support of this summary, a chronological log of significant events is included in this report.

Unit 1

Unit 1 was critical for 631.9 hours, produced 713,580 MWH (gross), resulting in an average hourly gross load of 1,133,746 kW during the month. There are 231.25 full power days estimated remaining until the end of cycle 2 fuel. With a capacity factor of 85 percent, the target EOC exposure would be reached December 29, 1983. The capacity factor for the month was 82.5 percent.

There was one reactor scram, no manual shutdowns, and two power reductions during March.

Unit 2

Unit 2 was critical for 744.0 hours, produced 840,220 MWH (gross), resulting in an average hourly gross load of 1,129,328 kW during the month. There are 107.17 full power days estimated remaining until the end of cycle 1 fuel. With a capacity factor of 85 percent the target EOC exposure would be reached August 5, 1983. The capacity factor for the month was 97.1 percent.

There were no reactor scrams, no manual shutdowns, and three power reductions during March.

Significant Operational Events

Unit 1

Date	Time	Event
03/01/83	0001	Reactor in mode 1 at 100% power producing 1170 MWe.
03/11/83	1535	Performed SI-78, Power Range Neutron Flux Channel Calibation by Heat Balance Comparison (Daily). Escalated reactor power from 98.5% to 100% actual.
	2200	Reactor at 100% power producing 1190 MWe.

Significant Operational Events

Unit 1

(Continued)

Date	Time	Event
03/14/83	0218	Began a load reduction to make a containment entry to close the ice condenser doors that blew open when purge was started.
	0525	Reactor at 50% power producing 580 MWe and holding.
	0645	Began reducing power to 30%.
	0850	Reactor at 30% power producing 350 MWe.
	1045	Began power ascension.
03/15/83	1615	Reactor at 100% power producing 1195 MWe.
03/16/83	1116	Ice condenser doors blew open, reducing power to enter lower containment.
	1328	Reactor was at 68% power and decreasing when a procedure error in SMI-0993 caused a reactor trip.
	2010	Began cooling down to repair a bad source range detector.
03/17/83	0540	Reactor entered mode 4.
	1125	Reactor entered mode 5.
03/18/83	1538	Reactor entered mode 4.
	1939	Reactor entered mode 3.
03/19/83	0450	Began depressurizing the reactor coolant system to replace the ruptured UHI diaphram.
03/20/83	2101	Began filling the UHI system.
03/21/83	0535	Reactor take critical.
	0804	Unit tied on line.

Significant Operational Events

Unit 1

(Continued)

Date	Time	Event
03/21/83	1038	Reactor in mode 1 at 30% power and holding for secondary chemistry to come into specification.
03/22/83	0029	Began power ascension.
	0620	Reactor at 52% power and hold to investigate the vibrations of the #11 bearing (turbine).
	0700	Began power ascension.
	1058	Reactor at 90% power and holding for calorimetric measurements.
	1149	Began power ascension.
	1530	Reactor at 100% power producing 1140 MWe. 1C2 water out of service for tube leak testing.
03/23/83	1215	1C2 water returned to service. Reactor at 100% power producing 1190 MWe.
03/25/83	0503	1A2 water box out of service for tube leak testing. Unit load dropped to 1143 MWe.
03/26/83	0950	1A2 water box returned to service. Unit load 1190 MWe.
03/30/83	1345	Began reducing load to take 1A1 water box out of service for tube leak testing.
	1355	Reactor at 94% power producing 1090 MWe. 1B condenser vacuum pump tripped. Began returning 1A1 water box to service.
	1500	Reactor at 100% power producing 1190 MWe.
03/31/83	2359	Reactor in mode 1 at 100% power producing 1190 MWe.

Significant Operational Events

Unit 2

(Continued)

Date	Time	Event
03/01/83	0001	Reactor in mode 1 at 98% power producing 1174 MWe.
03/07/83	0408	All three #3 heater drain tank pumps tripped off when the Lo-Lo level switch shorted out. Initiated a manual turbine roll back.
	0409	Reactor at 75% power producing 900 MWe.
	0630	Lo-Lo level switch repair completed but still holding 73% reactor power due to steam generator chemistry out of specifications.
	0821	Began load reduction due to secondary chemistry.
	1120	Reactor at 60% power producing 720 MWe and holding for secondary chemistry.
	2355	Began power ascension.
03/08/83	0315	Reactor at 83% power producing 1020 MWe and holding to adjust the limit switch on LCV-6-105B.
	0347	Began power ascension.
	0558	Reactor at 98% power producing 1171 MWe.
03/12/83	1150	Began a load reduction to add oil to reactor coolant pump 2.
	1420	Reactor at 32% power producing 358 MWe.
	1900	Began power ascension.
03/13/83	0500	Reactor at 98% power producing 1172 MWe.
03/17/83	0745	Began a load reduction for maintenance on loop PT-1-30.

Significant Operational Events

Unit 2

(Continued)

Date	Time	Event
03/17/83	1000	Reactor at 90% power producing 1095 MWe.
	1340	Began power ascension.
	1800	Reactor at 98% power producing 1170 MWe.
03/30/83	2015	Began reducing power for the incore/excore calibration.
	2200	Reactor at 75% power producing 918 MWe.
03/31/83	2359	Reactor in mode 1 at 75% power producing 918 MWe. Incore/excore calibration in progress.

PORV's and Safety Valves Summary

Unit 1

The steam generator #1 PORV failed open during the reactor trip on March 16, 1983 and had to be closed by manual switch.

Unit 2

No PORV's or safety valves were challenged during the month.

Licensee Events and Special Reports

The following Licensee Event Reports (LER's) were sent during March 1983, to the Assistant Director of Nuclear Power (Operations) for reporting to the Nuclear Regulatory Commission.

Unit 1

LER	SUBJECT
SQRO-50-327/83022	Two of four UHI level switches were inoperable.
SQRO-50-327/83025	The shield building exhaust flow rate monitor 1-FT-30-242 was declared inoperable due to the loss of flow indication. The sense lines became blocked from dirt in the system.

Licensee Events and Special Reports

(Continued)

Unit 1

LER	SUBJECT
SQRO-50-327/83026	During the performance of SI-7.1, ERCW valve 1-FCV-67-66 failed to open due to a dirty contact.
SQRO-50-327/83029	Ice condenser lower inlet door zone D limit switches failed due to being out of adjustment.
SQRO-50-327/83031	RPI for control rod D-14 of shutdown bank A was declared inoperable due to a false indication. The RPI female connectors on the reactor vessel head had their pen sleeves recessed into the connector.
SQRO-50-327/83035	One feedwater flow channel was declared inoperable due to failing low. A permanent comparison fitting on 1-FT-3-48A blew off causing the channel to indicate low.
SQRO-50-327/83036	Auxiliary building gas treatment system B train failed to meet the 99% methly iodine removal efficiency acceptance criteria.
SQRO-50-327/83037	Steam flow channel 1-FT-1-10B declared inoperable due to failing high due to air in the sense line.
SQRO-50-327/83038	Nonconformance report SQNNEB8212 was reissued to indicate the D/G's would become inoperable when the outside temperature is greater than 88°F.
SQRO-50-327/83039	The turbine building sump liquid effluent line radiation monitor was declared inoperable due to a leak in the pump.
SQRO-50-327/83040	Containment internal pressure exceeded 0.3 psid referenced to the annulus.
SQRO-50-327/83041	UHI level switches 1-LS-87-21, -23, and -24 found out of tolerance during SI-196.
SQRO-50-327/83042	The ice condenser inlet doors blew open during damper alignment for an incore instrument room purge.
SQRO-50-327/83043	Four 125v battery channels were declared inoperable because the weekly surveillance was not performed within its required frequency.

Licensee Events and Special Reports

(Continued)

Unit 2

LER	SUBJECT
SQRO-50-328/83017 SQRO-50-328/83027 SQRO-50-328/83033	Containment pressure relative to the annulus was greater than 0.3 psid.
SQRO-50-328/83023	UHI level switches 2-LS-87-21, -23, and -24 were found out of tolerance during SI-196.
SQRO-50-328/83024	Feedwater flow chanel 2-FT-3-103B failed low due to a bad zener diode.
SQRO-50-328/83028	While performing SI-151, the hydrogen recombiner kilowatt meter pegged high because the active filter failed.
SQRO-50-328/83030	Containment sump level channel 2-LT-63-177 failed to meet channel check requirements due to air bubbles in the oil filled sense line.
SQRO-50-328/83032	All ice condenser doors opened when SI-28 was being performed on the containment air return fan.
SQRO-50-328/83034	The subcooling margin monitor was declared inoperable due to the loss of the plant computer.

Special Reports

There were no special reports transmitted during the month of March.

Offsite Dose Calculation Manual Changes

Changes in the Sequoyah Nuclear Plant ODCM are described in this section in accordance with Sequoyah Technical Specification 6.14.2.

These changes were officially approved by RARC on February 22, 1983. See Appendix A at the end of this report for the approved ODCM changes.

OPERATING DATA REPORT

DOCKET NO. 50-327
DATE APRIL 5,1983
COMPLETED BY H.G.EDDINGS
TELEPHONE (615)870-6543

OPERATING STATUS

1. UNIT NAME: SEQUOYAH NUCLEAR PLANT, UNIT 1 NOTES:
2. REPORT PERIOD: MARCH 1,1983 MARCH 31,1983
3. LICENSED THERMAL POWER(MWT): 3411.0
4. NAMEPLATE RATING (GROSS MWE): 1220.6
5. DESIGN ELECTRICAL RATING (NET MWE): 1148.0
6. MAXIMUM DEPENDABLE CAPACITY (GROSS MWE): 1163.0
7. MAXIMUM DEPENDABLE CAPACITY (NET MWE): 1128.0
8. IF CHANGES OCCUR IN CAPACITY RATINGS(ITEMS NUMBERS 3 THROUGH 7)SINCE LAST REPORT, GIVE REASONS:_____
9. POWER LEVEL TO WHICH RESTRICTED,IF ANY(NET MWE):_____
10. REASONS FOR RESTRICTIONS,IF ANY:_____

	THIS MONTH	YR.-TO-DATE	CUMULATIVE
11. HOURS IN REPORTING PERIOD	744.00	2160.00	15037.00
12. NUMBER OF HOURS REACTOR WAS CRITICAL	631.90	1621.85	9157.55
13. REACTOR RESERVE SHUTDOWN HOURS	0.00	0.00	0.00
14. HOURS GENERATOR ON-LINE	629.40	1542.70	8862.20
15. UNIT RESERVE SHUTDOWN HOURS	0.00	0.00	0.00
16. GROSS THERMAL ENERGY GENERATED (MWH)	1992987.27	4809881.09	28092623.09
17. GROSS ELECTRICAL ENERGY GEN. (MWH)	713580.00	1665190.00	9422726.00
18. NET ELECTRICAL ENERGY GENERATED (MWH)	685956.00	1599367.00	9035371.00
19. UNIT SERVICE FACTOR	84.60	71.42	57.78
20. UNIT AVAILABILITY FACTOR	84.60	71.42	57.78
21. UNIT CAPACITY FACTOR(USING MDC NET)	81.74	65.64	52.23
22. UNIT CAPACITY FACTOR(USING DER NET)	80.31	64.50	51.32
23. UNIT FORCED OUTAGE RATE	15.40	9.02	16.41

24. SHUTDOWNS SCHEDULED OVER NEXT 6 MONTHS (TYPE, DATE, AND DURATION OF EACH):
25. IF SHUTDOWN AT END OF REPORT PERIOD, ESTIMATED DATE OF STARTUP:

NOTE THAT THE THE YR.-TO-DATE AND CUMULATIVE VALUES HAVE BEEN UPDATED.

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO.	50-327
UNIT	One
DATE	April 1, 1983
COMPLETED BY	M. Eddings
TELEPHONE	(615) 870-6543

MONTH March, 1983

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	1126	17	Unit Was Down
2	1126	18	Unit Was Down
3	1122	19	Unit Was Down
4	1121	20	Unit Was Down
5	1127	21	226
6	1128	22	934
7	1126	23	1138
8	1126	24	1138
9	1128	25	1096
10	1129	26	1166
11	1129	27	1140
12	1144	28	1139
13	1143	29	1140
14	698	30	1136
15	1132	31	1138
16	628		

INSTRUCTIONS

On this format, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt.

(9/77)

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO. 50-327
UNIT NAME Sequoyah One
DATE April 1, 1983
COMPLETED BY M. Eddings
TELEPHONE (615) 870-6543

REPORT MONTH March, 1983

No.	Date	Type[1]	Duration (Hours)	Reason[2]	Method Of Shutting Down Reactor[3]	Licensee Event Report #	System Code[4]	Component Code[5]	Cause & Corrective Action to Prevent Recurrence
12	83/03/14	F		H	5				While attempting to purge containment ΔP of upper and lower containment caused ice condenser doors to blow open. Unit had to be derated to allow personnel to enter containment and close doors.
13	83/03/16	F		H	5				Same as above. Air leaks were found on missile shield and repaired.
14	83/03/16	F	114.6	H	3				Inst Mech's performance test on solid state protection system. The procedure called for them to hook up a ground to the ground circuit that was shown on the print. Westinghouse had modified this ground circuit and removed the ground circuit and as soon as the Inst. Mech. grounded it picked up a 1 out of 1 trip logic and tripped the reactor.

1
F: Forced
S: Scheduled

2
Reason:
A-Equipment Failure (Explain)
B-Maintenance or Test
C-Refueling
D-Regulatory Restriction
E-Operator Training & License Examination
F-Administrative
G-Operational Error (Explain)
H-Other (Explain)

3
Method:
1-Manual
2-Manual Scram.
3-Automatic Scram.
4-Cont. of Existing Outage
5-Reduction
9-Other

4
Exhibit G-Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5
Exhibit I-Same Source

(9/77)

OPERATING DATA REPORT

DOCKET NO. 50-328
DATE APRIL 5,1983
COMPLETED BY D.C.DUPREE
TELEPHONE (615)870-6543

OPERATING STATUS

1. UNIT NAME: SEQUOYAH NUCLEAR PLANT, UNIT 2 NOTES:
2. REPORT PERIOD: MARCH 1 TO 31,1983
3. LICENSED THERMAL POWER(MWT): 3411.0
4. NAMEPLATE RATING (GROSS MWE): 1220.6
5. DESIGN ELECTRICAL RATING (NET MWE): 1148.0
6. MAXIMUM DEPENDABLE CAPACITY (GROSS MWE): 1163.0
7. MAXIMUM DEPENDABLE CAPACITY (NET MWE): 1128.0
8. IF CHANGES OCCUR IN CAPACITY RATINGS(ITEMS NUMBERS 3 THROUGH 7)SINCE LAST REPORT, GIVE REASONS:_____
9. POWER LEVEL TO WHICH RESTRICTED,IF ANY(NET MWE):_____
10. REASONS FOR RESTRICTIONS,IF ANY:_____

	THIS MONTH	YR.-TO-DATE	CUMULATIVE
11. HOURS IN REPORTING PERIOD	744.00	2160.00	7297.00
12. NUMBER OF HOURS REACTOR WAS CRITICAL	744.00	2147.22	6035.92
13. REACTOR RESERVE SHUTDOWN HOURS	0.00	0.00	0.00
14. HOURS GENERATOR ON-LINE	744.00	2112.40	5919.15
15. UNIT RESERVE SHUTDOWN HOURS	0.00	0.00	0.00
16. GROSS THERMAL ENERGY GENERATED (MWH)	2422685.99	6866836.07	19021426.87
17. GROSS ELECTRICAL ENERGY GEN. (MWH)	840220.00	2373400.00	6455250.00
18. NET ELECTRICAL ENERGY GENERATED (MWH)	810443.00	2289290.00	6215580.60
19. UNIT SERVICE FACTOR	100.00	97.80	81.12
20. UNIT AVAILABILITY FACTOR	100.00	97.80	81.12
21. UNIT CAPACITY FACTOR(USING MDC NET)	96.57	93.96	75.51
22. UNIT CAPACITY FACTOR(USING DER NET)	94.89	92.32	74.20
23. UNIT FORCED OUTAGE RATE	0.00	2.20	12.17

24. SHUTDOWNS SCHEDULED OVER NEXT 6 MONTHS (TYPE, DATE, AND DURATION OF EACH):
Refueling/modification outage to begin on approximately August 5, 1983 for approximately 90 days.

25. IF SHUTDOWN AT END OF REPORT PERIOD, ESTIMATED DATE OF STARTUP:

NOTE THAT THE THE YR.-TO-DATE AND CUMULATIVE VALUES HAVE BEEN UPDATED.

UNIT SHUTDOWNS AND POWER REDUCTIONS

DOCKET NO.	50-328
UNIT NAME	Sequoyah Two
DATE	April 3, 1983
COMPLETED BY	David Dupree
TELEPHONE	(615) 870-6543

REPORT MONTH March, 1983

No.	Date	Type[1]	Duration (Hours)	Reason[2]	Method Of Shutting Down Reactor[3]	Licensee Event Report #	System Code[4]	Component Code[5]	Cause & Corrective Action to Prevent Recurrence
7	83/03/07	F	0	A	5				Manual runback to 73%. All #3 H.D.T. pumps tripped. Lo-Lo level switch shorted.
8	83/03/12	F	0	B	5				Reduced load to 32%. Add oil to #2 R.C.P.
9	83/03/30	F	0	B	5				Incore/excore calibration. Reactor at 75%.

1
F: Forced
S: Scheduled

2
Reason:
A-Equipment Failure (Explain)
B-Maintenance or Test
C-Refueling
D-Regulatory Restriction
E-Operator Training & License Examination
F-Administrative
G-Operational Error (Explain)
H-Other (Explain)

3
Method:
1-Manual
2-Manual Scram.
3-Automatic Scram.
4-Cont. of Existing Outage
5-Reduction
9-Other

4
Exhibit G-Instructions for Preparation of Data Entry Sheets for Licensee Event Report (LER) File (NUREG-0161)

5
Exhibit I-Same Source

(9/77)

Plant Maintenance Summary

The following significant maintenance items were completed during the month of March 1983:

Mechanical Maintenance

1. Changed out the 1A vacuum pump.
2. Installed ductwork to the #3 heater drain tank motors.
3. Disassembled the boric acid transfer pump to replace the casing.
4. Changed out reactor coolant filter.
5. Installed a rupture disk in boric acid evaporator "A".
6. Changed out the UHI rupture disk.
7. Replaced drain papers in Unit 1 ice condenser bays #3 and #4.
8. Excavating the hypochlorite line to the new ERCW station for trouble-shooting.

Electrical Maintenance

1. Continued installation of the Dimension 2000 phone system.
2. Continued systematic walk down and inspection of the E-field wiring and made necessary repairs.
3. Continued repairs on paging system to fulfill INPO commitment.
4. Replaced the motor on Unit 2 steam generator blow down pump.
5. Inspected Unit 1 pressurizer heater control banks.
6. Disassembled the RCP spare motor.
7. Functionally checked undervoltage coil operation on the Unit 1 and Unit 2 reactor trip bypass breakers A and B.
8. Performed functional check of the Unit 2 system 6 level switches.
9. Inspected 0-FCV-67-67 control circuit.
10. Added oil to Unit 1 RCP motors.
11. Checked the CRDM and RPI connector on Unit 1 reactor head, disassembled and checked connectors on P4 and D14 RPI's.
12. Checked RTD's on Unit 1 RCP motors.

AVERAGE DAILY UNIT POWER LEVEL

DOCKET NO. 50-328
UNIT Two
DATE March, 1983
COMPLETED BY David Dupree
TELEPHONE (615) 870-6543

MONTH March, 1983

DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)	DAY	AVERAGE DAILY POWER LEVEL (MWe-Net)
1	1123	17	1096
2	1122	18	1120
3	1122	19	1122
4	860	20	1122
5	1123	21	1123
6	1124	22	1123
7	801	23	1122
8	1072	24	1121
9	1120	25	1119
10	1121	26	1120
11	1121	27	1122
12	875	28	1124
13	1106	29	1122
14	1121	30	1092
15	1122	31	869
16	1122		

INSTRUCTIONS

On this format, list the average daily unit power level in MWe-Net for each day in the reporting month. Compute to the nearest whole megawatt.

(9/77)

Electrical Maintenance

(Continued)

13. Inspected B CSST 6.9 kV bus connections to start board.

14. Repaired filter network on Unit 2 hydrogen recombiner.

Instrument Maintenance

1. Performed a special test on Unit 1 solid state protection system input circuit due to a possible undetectable failure that could have existed. This caused a reactor trip when some unused logic associated with the reactor coolant pump breakers was actuated when a ground path was completed through the test equipment being used. Unit 2 was not tested.

2. Unit 1 NIS source range channel N-31 failed high. This required Mode 5 and replacement of the detector. The channel was recalibrated and returned to service within 24 hours.

3. Recalibrated Unit 1 and 2 UHI level switches using the new procedure. Found three out of four switches out of cal on Unit 1 and four out of four on Unit 2 out of cal. One engineer from Westinghouse and two from McGuire Nuclear Plant observed the calibration on Unit 2. Westinghouse has submitted a new evaluation to relax the tolerance on the setpoints. An evaluation is being done as to the possibility of replacing the switches with a different type.

4. Discussed reactor trip breaker response times with NRC and committed to test both units at the next available outage. This was in response to an incident at Salem Nuclear Plant.

5. Removed status monitoring system internals for installation of the tech support center computer.

6. Changed out the Unit 1 gross failed fuel detector, recalibrated the instrument and returned to service.

Field Services Group

1. ECNs 2780/5200--Post-Accident Sampling Facility (Units 1 and 2)

   The installation of coduit and junction boxes is continuing on elevation 706 and elevation 714 in the auxiliary building. Core drilling in the auxiliary building along the A-5 line wall is in progress and prefabrication of HVAC ductwork is continuing. Fabrication and installation of supports is in progress. Tubing tie-on for solenoid valves was compleed for Unit 1. Installation of tubing from the solenoid valves to the panels in PASF Room is in progress. Panels were set into the PASF Room of Unit 2. Demineralized water and component cooling water piping are being installed for the Unit 2 PASF.

2. ECN 5429--Containment Hydrogen Mitigation System (Unit 2)

Cable pulling and termination of igniters in the dome of Unit 2 as well as post modification testing of the igniter circuits were completed. Fabrication of seismic supports is continuing with approximately 10% complete.

3. ECN 5009--ERCW Piping Changeout (Units 1 and 2)

Pre-fabrication of stainless steel piping for penetration room coolers 2A2 and 2B2 on elevation 690 was completed this month. Fabrication of piping for penetration room coolers 2A1 and 2B1 on elevation 669 is in progress with work about 5% complete.

4. ECN 5417--Diesel Generator Air Start System Dryers

This ECN is complete with the exception of an FCR to add mufflers to the air dryers. Mufflers have been ordered and scheduled for delivery in May 1983.

5. ECN 5451--Diesel Generator Engine Lube Oil System

All work has been completed with the exception of the functional testing of the pumps and pressure switches. This should be complete without the next reporting period.

6. ECN 5106--Reactor Vessel Level Indication System (Units 1 and 2)

Conduit and hanger installation in the auxiliary building is continuing. Conduit and hanger installation is in progress in the annulus of Unit 1. Conduit and hangers are being installed on elevation 685, 701, and 732 of the control building. Cable pulling will begin in the near future.

7. ECN 5580--Plant Emergency Evacuation System Sirens

All work has been completed on this ECN.

8. ECN 2456--Seismically Qualify H_2 Lines In Auxiliary Building To Maintain Pressure Boundary During An SEE IJ No. 338 (Units 1 and 2)

This ECN entails replacing existing deadload-type pipe supports. To date, 17 supports are complete (including painting) out of a total of approximately 60.

9. ECN 5198--Locate and Design A Technical Support Center

Conduit and hangers for the new lighting fixtures have been installed and the installation of the HVAC ductwork has been completed. The fire protection sprinkler system has been installed and sufficient work has been completed to allow outside contractor to begin the ceiling installation in April.

10. ECN 5460--Reroute Auxiliary Feedwater Pump Seal Water Plant (Units 1 and 2)

    During this reporting period, the installation of hangers and drain lines for reroute of seal leakage from the auxiliary feedwater pumps continued for Unit 1 with work being approximately 90% complete.

11. ECN 5726--Reroute Feedwater Flow Sense Lines (Units 1 and 2)

    Painting of Unit 2 hangers continued. No other work was performed during this period.

12. ECN 5119--Radiation Monitors For Containment Isolation Waste Disposal System (Unit 1)

    Installation of conduit and cable pulling has begun on this ECN. Core drilling for sleeves is in progress.

13. ECN 2773--Instalation of Radiation Detectors - Unit 2

    The instalation of conduit and hangers was completed in the Unit 2 spreading room. QA has inspected the work in the auxiliary building, spreading room and the annulus.

14. ECN 2923--RHR Lines Radiation Monitors - Unit 2

    The installation of conduit and hangers in the Unit 2 spreading room to panels M-30 and M-31 was completed. Cable pulling is in progress for the RHR pump room radiation monitors.

APPENDIX A

DOCUMENTATION FOR ODCM CHANGES

APPENDIX A

Change 1

Pages affected: 19 and 20

Description of Change:	Factor for estimating dilution credit in diffuser pond is increased from 2.4×10^{-6} to 9.9×10^{-5}.
Analysis or Evaluation Justifying Change:	Incorporation of a more recent analysis of flow experiments at the Sequoyah Nuclear Plant (SQN) diffuser pond.
Evaluation of Accuracy of Dose Calculation or Setpoint Determination	The change will have no impact on dose calculations, but will increase the accuracy of set-point determinations.

Change 2

Pages affected: 1 and 14

Description of Change:	References to licensing meterology are deleted from the ODCM.
Analysis or Evaluation Justifying Change:	It was noticed that the meterological data used for ODCM calculations are not from the same time period as those used in the Final Safety Analysis Report. The ODCM data are from a more recent time period. It is believed that the ODCM data are more appropriate, based on review of 1972-1980 data; therefore, the references to licensing data were deleted and the data retained.
Evaluation of Accuracy of Dose Calculation or Setpoint Determination	No impact on dose calculations or set-point determinations.

Change 3

Page affected: 2

Description of Change:	The assumed midpoint for the highest wind speed category is decreased from 13.00 to 10.95.
Analysis or Evaluation Justifying Change	Most observations in the upper wind speed category are actually just over the cutoff of 10.95.
Evaluation of Accuracy of Dose Calculation or Setpoint Determination	Any impact should be very slight due to the comparatively small number of high wind speed observations. However, the new values will be more accurate for dose calculations and set-point determinations.

Change 4

Pages affected: 2, 14, and 20

Description of Change:	Typographical errors corrected.

1. Gaseous Effluents

1.1 Alarm/Trip Setpoints

Specification 3.11.2.1 requires that the dose rate in unrestricted areas due to gaseous effluents from the site shall be limited at all times to the following values:

1. 500 mrem/y to the total body and 3,000 mrem/y to the skin from noble gases.

2. 1,500 mrem/y to any organ from radioiodines and particulates.

Specification 3.3.3.10 requires gaseous effluent monitors to have alarm/trip setpoints to ensure that the above dose rates are not exceeded. This section of the ODCM describes the methodology that will be used to determine these setpoints.

The methodology for determining alarm/trip setpoints is divided into two major parts. The first consists of backcalculating from a dose rate to a release rate limit, in Ci/s, for each nuclide and release point. The second consists of using the release rate limits to determine the physical settings on the monitors.

1.1.1 Release Rate Limit Methodology - μCi/s

Step 1

The first step involves calculating a dose rate based on the design objective source term mix used in the licensing of the plant. Doses are determined for (1) noble gases and (2) iodines and particulates. Depending on the pathway involved, either air concentrations or ground concentrations are calculated. | 6

A. Equations and assumptions for calculating doses from noble gases are as follows:

Assumptions:

1. Doses to be calculated are total body and skin.

2. Exposure pathway is submersion within a cloud of noble gases.

3. Noble gas radionuclide mix is based on the design objective source term given in Table 1.1.

4. Basic radionuclide data are given in Table 1.2.

5. All releases are treated as ground level.

6. Meteorological data are expressed as a joint-frequency distribution of wind speed, wind direction, and atmospheric stability for the period January 1972 to December 1975 (Table 1.3).

7. Raw meteorological data consist of wind speed and direction measurements at 10m and temperature measurements at 9m and 46m.

8. Dose is to be evaluated at the offsite exposure point where maximum concentrations are expected to exist.

9. Potential maximum-exposure points (Table 1.4) considered are the nearest site boundary points in each sector.

10. A semi-infinite cloud model is used.

11. No credit is taken for shielding by residence.

12. Plume depletion and radioactive decay are considered.

13. Building wake effects on effluent dispersion are considered.

14. A sector-average dispersion equation is used.

15. The wind speed classes that are used are as follows:

Number	Range (m/s)	Midpoint (m/s)
1	<0.3	0.13
2	0.3-0.6	0.45
3	0.7-1.5	1.10
4	1.6-2.4	1.99
5	2.5-3.3	2.88
6	3.4-5.5	4.45
7	5.6-8.2	6.91
8	8.3-10.9	9.59
9	>10.9	10.95

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16. The stability classes that will be used are the standard A through G classifications. The stability classes 1-7 will correspond to A=1, B=2, . . ., G=7.

17. Terrain effects are not considered.

18. Environmental transfer data is consistent with NUREG/CR-1004.

Equations

To calculate the dose for any one of the 16 potential maximum-exposure points, the following equations are used.

For determining the air concentration of any radionuclide:

For determining the beta dose to air:

$$D\beta_n = t_m \sum_i x_{ni} \, DF\beta_i \qquad (1.17)$$

where:

$D\beta_n$ = beta dose to air for sector n, mrad.

X_{ni} = air concentration of radionuclide i in sector n, $\mu Ci/m^3$

$DF\beta_i$ = beta to air dose factor for radionuclide i, mrad/yr per $\mu Ci/m^3$

t_m = time period considered, yr

The sector having the highest total dose is then used to check compliance with specification 3.11.2.2.

1.2.2 Iodines and Particulates

Step 1

Doses will be calculated using the methodology described in this step. If any limits are exceeded, step 2 will be performed.

Equations and assumptions for calculating doses from releases of iodines and particulates are as follows:

Assumptions

1. Doses are to be calculated for the infant thyroid from milk ingestion and for the child bone from vegetable ingestion.

2. Real cow locations are considered for the milk pathway and nearest resident-locations with home-use gardens are considered for the vegetable pathway.

3. The highest annual-average D/Q based on 1972 to 1975 meteorological data for ground level releases will be used for I-131 and Sr-90 doses.

4. No credit is taken for radioactive decay.

5. Releases of I-131 are considered for the milk pathway. Sr-90 releases are considered for the vegetable pathway.

6. The calculations extrapolate doses assuming that only 90 percent of the total dose was contributed.

7. The cow is assumed to graze on pasture grass for the whole year.

The results, from field tests conducted in September 1979, are expressed in terms of relative concentration r:

$$r = 9.9 \times 10^{-5} \quad (F + f_1 + f_2 + f_3 + f_4)$$

Equations 2.3 then becomes

$$9.9 \times 10^{-5} \quad (F + f_1 + f_2 + f_3 + f_4) \left[f_1 (R_1 - 1) + f_2 (R_2 - 1) + f_3 (R_3 - 1) + f_4 (R_4 - 1) \right] \leq F \qquad (2.3a)$$

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2.2 Instrument Setpoints

2.2.1 Setpoint Determination

The setpoint for each liquid effluent monitor will be established using plant instructions. Concentration, flow rate, dilution, principal gamma emitter, geometry, and detector efficiency are combined to give an equivalent setpoint in counts per minute (cpm). The physical and technical description location and identification number for each liquid effluent radiation detector is contained in plant documentation.

The respective alarm/trip setpoints at each release point will be set such that the sum of the ratios at each point, as calculated by Equation 2.2, will not be exceeded. The R_j is directly related to the total concentration calculated by Equation 2.1. An increase in the concentration would indicate an increase in the respective R_j. A large increase would cause the limits specified in Section 2.1.1 to be exceeded. The minimum alarm/trip setpoint value is equal to the release concentration, but for ease of operation it may be desired that the setpoint(s) be set above the effluent concentration (C_j). That is,

$$S_j = b_j \times C_j \qquad (2.4)$$

or

$$b_j = \frac{S_j}{C_j}$$

where:

S_j = desired alarm/trip setpoint at release point j.

b_j = scaling factor to prevent alarms/trips due to variations in the effluent concentrations at release point j.

C_j = total concentration in the liquid effluent at release point j specified by Equation 2.1, μCi/ml.

The R_j used in Equation 2.3a must also be scaled by the corresponding scale factor. Equation 2.3 and the corresponding alarm/trip setpoints become 2

$$9.9\times10^{-5} \quad (F + f_1 + f_2 + f_3 + f_4) \left[f_1 (b_1 R_1 - 1) + f_2 (b_2 R_2 - 1) + f_3 (b_3 R_3 - 1) + f_4 (b_4 R_4 - 1) \right] \leq F \qquad (2.5)$$ 3

$$b_1 = \frac{S_1}{C_1} \qquad (2.6)$$

$$b_2 = \frac{S_2}{C_2} \qquad (2.7)$$

$$b_3 = \frac{S_3}{C_3} \qquad (2.8)$$

$$b_4 = \frac{S_4}{C_4} \qquad (2.9)$$

For example, for 2 release points, minimum dilution flow and no diffuser pond dilution this becomes,

$$f_1\left[\left(\frac{S_1}{C_1} \times R_1\right) - 1\right] + f_2\left[\left(\frac{S_2}{C_2} \times R_2\right) - 1\right] < 15{,}000 \qquad (2.10)$$

2.2.2 Post-Release Analysis

A post-release analysis will be done using actual release data to ensure that the limits specified in Section 2.1.1 were not exceeded.

A composite list of concentrations (C_i), by isotope, will be used with the actual liquid radwaste (f) and dilution (F) flow rates (or volumes) during the release. The data will be substituted into Equation 2.3 to demonstrate compliance with the limits in Section 2.1.1. This data and setpoints will be recorded in auditable records by plant personnel.

2.3 Dose

2.3.1 RETS Requirements

Specification 3.11.1.2 of the Radiological Effluent Technical Specification (RETS) requires that the dose or dose commitment to an individual from radioactive materials in liquid effluents released to unrestricted areas from each reactor (see Figure 2.2.1-1) shall be limited:

a. During any calendar quarter to $\leq$1.5 mrem to the total body and to $\leq$5 mrem to any organ, and

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APR 14 1983

Nuclear Regulatory Commission
Office of Management Information
and Program Control
Washington, DC 20555

Gentlemen:

Enclosed is the March 1983 Monthly Operating Report for Sequoyah Nuclear Plant.

Very truly yours,

TENNESSEE VALLEY AUTHORITY

P.R. Wallace

for C. C. Mason
Power Plant Superintendent

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