ATTACHMENT 2 TO AEP:NRC:0956A

PROPOSED CHANGES TO THE

DONALD C. COOK NUCLEAR PLANT UNIT NOS. 1 AND 2

TECHNICAL SPECIFICATIONS

TABLE 3.3-3 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual	2	1	2	1,2,3,4	18
2) From Safety Injection Automatic Actuation Logic	2	1	2	1,2,3,4	13
b. Phase "B" Isolation					
1) Manual	2	1	2	1,2,3,4	18
2) Automatic Actuation Logic	2	1	2	1,2,3,4	13
3) Containment Pressure-High-High	4	2	3	1,2,3	16
c. Purge and Exhaust Isolation*					
1) Manual	2	1	2	1,2,3,4	17
2) Containment Radioactivity-High Train A (VRS-1101, ERS-1301, ERS-1305)	3	1	2	1,2,3,4	17
3) Containment Radioactivity-High Train B (VRS-1201, ERS-1401, ERS-1405)	3	1	2	1,2,3,4	17

* This specification only applies during purge.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
2. Containment Radioactivity -- High Train A (VRS-1101, ERS-1301, ERS-1305)	See Table 3.3-6	Not Applicable
3. Containment Radioactivity -- High Train B (VRS-1201, ERS-1401, ERS-1405)	See Table 3.3-6	Not Applicable
4. STEAM LINE ISOLATION		
a. Manual	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure -- High-High	$\leq$ 2.9 psig	$\leq$ 3 psig
d. Steam Flow In Two Steam Lines -- High Coincident with T_{avg} Low-Low or Steam Line Pressure Low	1.42×10^6 lbs/hr from 0% load to 20% load. Linear from 1.42×10^6 lbs/hr at 20% load to 3.88×10^6 lbs/hr at 100% load. $T_{avg} \geq 541^{\circ}F$ $\geq$ 600 psig steam line pressure	1.56×10^6 lbs/hr from 0% load to 20% load. Linear from 1.56×10^6 lbs/hr at 20% load to 3.93×10^6 lbs/hr at 100% load. $T_{avg} \geq 539^{\circ}F$ $\geq$ 580 psig steam line pressure
5. TURBINE TRIP AND FEEDWATER ISOLATION		
a. Steam Generator Water Level -- High-High	$\leq$ 67% of narrow-range instrument span each steam generator	$\leq$ 68% of narrow-range instrument span each steam generator

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

OPERATION MODE/INSTRUMENT	MINIMUM CHANNELS OPERABLE	ALARM SETPOINT	TRIP SETPOINT	ACTION
1. Modes 1, 2, 3, & 4				
A) Area Monitors				
i) Upper Containment+ (VRS 1101/1201)	1	N/A	$\leq$ 54 mR/hr	21
B) Process Monitors				
i) Particulate Channel+ (ERS 1301/1401)	1	N/A	$\leq$ 2.52 uCi	20
ii) Noble Gas Channel+ (ERS 1305/1405)	1	N/A	$\leq 4.4 \times 10^{-3} \frac{uCi}{cc}$	20
C) Noble Gas Effluent Monitors				
i) Unit Vent Effluent Monitor				
a) Low Range (VRS 1505)	----------(See T/S Section 3.3.3.10)----------			

TABLE 3.3-6 (Cont'd)

RADIATION MONITORING INSTRUMENTATION
(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

OPERATION MODE/INSTRUMENT	MINIMUM CHANNELS OPERABLE	ALARM SETPOINT	TRIP SETPOINT	ACTION
ii) Gland Steam Condenser Vent Monitor				
a) Low Range (SRA 1805)	----------(See T/S Section 3.3.3.10)----------			
iii) Steam Jet Air Ejector Vent Monitor				
a) Low Range (SRA 1905)	----------(See T/S Section 3.3.3.10)----------			
2. Mode 6				
A) Train A	any 2/3 channels			22
i) Containment Area Radiation[+] Channel (VRS 1101)		N/A	$\leq$ 54 mR/hr	
ii) Particulate Channel[+] (ERS 1301)		N/A	$\leq$ 2.52 uCi	
iii) Noble Gas Channel[+] (ERS 1305)		N/A	$\leq 4.4 \times 10^{-3}$ $\frac{uCi}{cc}$	
B) Train B	any 2/3 channels			22
i) Containment Area[+] Radiation Channel (VRS 1201)		N/A	$\leq$ 54 mR/hr	
ii) Particulate Channel[+] (ERS 1401)		N/A	$\leq$ 2.52 uCi	

TABLE 3.3-6 (Cont'd)

RADIATION MONITORING INSTRUMENTATION
(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

OPERATION MODE/INSTRUMENT	MINIMUM CHANNELS OPERABLE	ALARM SETPOINT	TRIP SETPOINT	ACTION
iii) Noble Gas Channel+ (ERS 1405)		N/A	$\leq 4.4 \times 10^{-3}$ $\frac{uCi}{cc}$	22
3. Mode ***				
A) Spent Fuel Storage (RRC-330)	1	$\leq$ 15 mR/hr	$\leq$ 15 mR/hr	21

*** With fuel in storage pool or building.
+ This specification applies only during purge.

TABLE 3.3-6 (Continued)
TABLE NOTATION

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, comply with the ACTION requirements of Specification 3.4.6.1.

ACTION 21 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per day.

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirements, comply with the ACTION requirements of Specification 3.9.9. This ACTION is not required during the performance of containment integrated leak rate test.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

OPERATION MODE/INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE REQUIRED
1. Modes 1, 2, 3, & 4				
A) Area Monitors				
i) Upper Containment (VRS 1101/1201)	S*	R	M	1, 2, 3, 4
B) Process Monitors				
i) Particulate Channel (ERS 1301/1401)	S*	R	M	1, 2, 3, 4
ii) Noble Gas Channel (ERS 1305/1405)	S*	R	M	1, 2, 3, 4
C) Noble Gas Effluent Monitors				
i) Unit Vent Effluent Monitors				
a) Low Range (VRS 1505) ----------(See Table 4.3-9, Item 3.a, 4a, 5a)----------				

TABLE 4.3-3 (Cont'd)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

OPERATION MODE/INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE REQUIRED
ii) Gland Steam Condenser Vent Monitor				
a) Low Range (SRA 1805)	(See Table 4.3-9 Item 6.a)			
iii) Steam Jet Air Ejector Vent Monitor				
a) Low Range (SRA 1905)	(See Table 4.3-9, Item 2.a)			
2. Mode 6				
A) Train A				6
i) Containment Area Radiation Channel (VRS 1101)	S*	R	M	
ii) Particulate Channel (ERS 1301)	S*	R	M	
iii) Noble Gas Channel (ERS 1305)	S*	R	M	
B) Train B				6
i) Containment Area Radiation Channel (VRS 1201)	S*	R	M	
ii) Particulate Channel (ERS 1401)	S*	R	M	

TABLE 4.3-3 (Cont'd)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

OPERATION MODE/INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE REQUIRED
iii) Noble Gas Channel (ERS 1405)	S*	R	M	6
2. Mode**				
A) Spent Fuel Storage (RRC-330)	S	R	M	**

* To include SOURCE CHECK per T/S Section 1.27.
** With fuel in storage pool or building.

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

Radiation Monitoring Instrumentation (Continued)

Table 3.3-6 is based on the following Alarm/Trip Setpoints and Measurement Ranges for each instrument listed.

INSTRUMENT	ALARM/TRIP SETPOINT	MEASUREMENT RANGE*
1) Area Monitor-Upper Containment (VRS 1101/1201)	The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate.	10^{-4} R/hr to 10R/hr.
2) Process Monitor Particulate (ERS 1301/1401)	The monitor trip setpoint is based on 10 CFR 20 The setpoint was determined using the Noble gas setpoint and historical monitor data of the ratio of particulates to Noble gases.	1.5×10^{-4} uCi to 7.5 uCi.
3) Process Monitor Noble Gas (ERS 1305/1405)	The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate.	1×10^{-7} uCi/cc to 4×10^{-2} uCi/cc

* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

Radiation Monitoring Instrumentation (Continued)

INSTRUMENT	ALARM/TRIP SETPOINT	MEASUREMENT RANGE*
4) Noble Gas Unit Vent Monitors		
a) Low Range (VRS 1505)	See Bases Section 3/4.3.3.10	$1x10^{-7}$uCi/cc to $4x10^{-2}$ uCi/cc.
5) Gland Steam Condenser Vent Noble Gas Monitor		
a) Low Range (SRA 1805)	See Bases Section 3/4.3.3.10	$1x10^{-7}$uCi/cc to $4x10^{-2}$ uCi/cc.
6) Steam Jet Air Ejector Vent Noble Gas Monitor		
a) Low Range (SRA 1905)	See Bases Section 3/4.3.3.10	$1x10^{-7}$uCi/cc to $4x10^{-2}$ uCi/cc.

* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

Radiation Monitoring Instrumentation (Continued)

INSTRUMENT	ALARM/TRIP SETPOINT	MEASUREMENT RANGE*
7) Spent Fuel Storage (RRC-330)	The monitor setpoint is selected to alarm and trip consistent with 10 CFR 70.24(a)(2)	$1x10^{-1}$ mR/hr to $1x10^{4}$ mR/hr

The Radiation Monitoring Instrumentation Surveillance Requirements per Table 4.3-3 are based on the following interpretation:

1) The CHANNEL FUNCTIONAL TEST is successfully accomplished by the injection of a simulated signal into the channel, as close to the detector as practical, to verify the channel's alarm and/or trip function only.

2) The CHANNEL CALIBRATION as defined in T/S Section 1.9 permits the "known values" generated from radioactive calibration sources to be substituted with "known values" represented by simulated signals for that subset of "known values" required for calibration and not practical to generate using the radioactive calibration sources.

* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

3/4.3.3.2 MOVABLE INCORE DETECTORS

The OPERABILITY of the movable incore detectors with the specified minimum complement of equipment ensures that the measurements obtained form use of this system accurately represent the spatial neutron flux distribution of the reactor core.

3/4.3.3.3 SEISMIC INSTRUMENTATION

The OPERABILITY of the seismic instrumentation ensures that sufficient capability is available to promptly determine the magnitude of a seismic event and evaluate the response of those features important to safety. This capability is required to permit comparison of the measured response to that used in the design basis for the facility.

3/4.3.3.4 METEOROLOGICAL INSTRUMENTATION

The OPERABILITY of the meteorological instrumentation ensures that sufficient meteorological data is available for estimating potential radiation doses to the public as a result of routine or accidental release of radioactive materials to the atmosphere. This capability is required to evaluate the need for initiating protective measures to protect the health and safety of the public.

3/4.3.3.5 REMOTE SHUTDOWN INSTRUMENTATION

The OPERABILITY of the remote shutdown instrumentation ensures that sufficient capability is available to permit shutdown and maintenance of HOT STANDBY of the facility from locations outside of the control room. This capability is required in the event control room habitability is lost and is consistent with General Design Criteria 19 of 10 CFR 50.

TABLE 3.3-12

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Instrument	Minimum Channels Operable	Applicability	Action
1. Gross Radioactivity Monitors Providing Automatic Release Termination			
a. Liquid Radwaste Effluent Line (1-R-18)	(1)	At times of release	23
b. Steam Generator Blowdown Line (1-R-19)	(1)	At times of release	24
c. Steam Generator Blowdown Treatment Effluent (1-R-24)	(1)	At times of release	24
2. Gross Radioactivity Monitors Not Providing Automatic Release Termination			
a. Service Water System Effluent Line (1-R-20, 1-R-28)	(1) per train	At all times	25
3. Continuous Composite Sampler Flow Monitor			
a. Turbine Building Sump Effluent Line	(1)	At all times	25
4. Flow Rate Measurement Devices			
a. Liquid Radwaste Line (RFI-285)	(1)	At times of release	26
b. Discharge Pipes*	(1)	At all times	NA
c. Steam Generator Blowdown Treatment Effluent (1-DFI-353)	(1)	At times of release	26

* Pump curves and valve settings may be utilized to estimate flow; in such cases, Action Statement 26 is not applicable.

TABLE 3.3-13

Radioactive Gaseous Effluent Monitoring Instrumentation

	Instrument (Instrument #)	Minimum Channels Operable	Applicability	Action
1.	Waste Gas Holdup System Explosive Gas Monitoring System			
	a. Hydrogen Monitor (QC-31)	(1)	**	30
	b. Oxygen Monitor (QC-31, QC-370)	(2)	**	29
2.	Condenser Evacuation System			
	a. Noble Gas Activity Monitor (SRA-1905)	(1)	****	28
	b. Flow Rate Monitor (SFR-401)	(1)	****	27
	(1-MR-0543 and/or SRA-1910)	(1)	****	27
3.	Unit Vent, Auxiliary Building Ventilation System			
	a. Noble Gas Activity Monitor (VRS-1505)	(1)	*	28
	b. Iodine Sampler Cartridge for VRS-1503	(1)	*	32
	c. Particulate Sampler Filter for VRS-1501	(1)	*	32
	d. Effluent System Flow Rate Measuring Device (VFR-315)	(1)	*	27
	(1-MR-054 and/or VRS-1510)	(1)	*	27
	e. Sampler Flow Rate Measuring Device (VFS-1521)	(1)	*	27
4.	Containment Purge System			
	a. Aux. Building Vent. System Noble Gas Activity Monitor (VRS-1505)	(1)	****[1]	31
	b. Aux. Building Vent. System Particulate Sampler for VRS-1501	(1)	****	32
5.	Waste Gas Holdup System			
	a. Noble Gas Activity Monitor Providing Alarm and Termination of Gas Decay Tank Releases (VRS-1505)	(1)	****[2]	33
6.	Gland Seal Exhaust			
	a. Noble Gas Activity Monitor (SRA-1805)	(1)	****	28
	b. Flow Rate Monitor (SFR-201)	(1)	****	27
	(1-MR-054 and/or SRA-1810)	(1)	****	27

TABLE 3.3-13 (Cont)

* At all times
** During waste gas holdup system operation (treatment for primary system gases)
**** During releases via this pathway.

[1] For purge purposes only. See Technical Specifications 3.3.3.10, Table 3.3-13 and Table 4.3-9 (Items 3a, 5a) for other requirements associated with this instrument.

[2] For gas decay tank releases only, see Item 3 (Unit Vent, Auxiliary Building Ventilation System) for additional requirements.

TABLE 4.3-9

Radioactive Gaseous Effluent Monitoring Instrumentation

Surveillance Requirements

Instrument (Instrument #)	Channel Check	Source Check	Channel Calibration	Channel Functional Test
1. Waste Gas Holdup System Explosive Gas Monitoring System				
a. Hydrogen Monitor (QC-31)	D***	NA	Q(3)	M
b. Oxygen Monitor (QC-31)	D***	NA	Q(4)	M
c. Oxygen Monitor (Alt. (QC-370)	D***	NA	Q(4)	M
2. Condenser Evacuation System				
a. Noble Gas Activity Monitor (SRA-1905)	D**	M	R(2)	Q(1)
b. System Effluent Flow Rate (SFR-401, 2-MR-054, SRA-1910)	D**	NA	R	Q
3. Auxiliary Building Ventilation System				
a. Noble Gas Activity Monitor (VRS-1505)	D*	M	R(2)	Q(1)
b. Iodine Sampler (For VRS-1505)	W*	NA	NA	NA
c. Particulate Sampler (For VRS-1501)	W*	NA	NA	NA
d. System Effluent Flow Rate Measurement Device (VFR-315, 2-MR-054, VRS-1510)	D*	NA	R	Q
e. Sampler Flow Rate Measurement Device (VFS-1521)	D*	NA	R	Q
4. Containment Purge System				
a. Aux. Building Vent. System Noble Gas Activity Monitor (VRS-1505)	D**	P	R(2)	Q(5)
b. Aux. Building Vent. System Particulate Sampler (For VRS-1501)	W**	NA	NA	NA
5. Waste Gas Holdup System				
a. Noble Gas Activity Monitor Providing Alarm & Termination of Gas Decay Tank Release (VRS-1505)	P**	P	R(2)	Q(5)

TABLE 4.3-9 (Cont)

Instrument (Instrument #)	Channel Check	Source Check	Channel Calibration	Channel Functional Test
6. Gland Seal Exhaust				
a. Noble Gas Activity (SRA-1805)	D**	M	R(2)	Q(1)
b. System Effluent Flow Rate (SFR-201, 1-MR-054, SRA-1810)	D**	NA	R	Q

* At all times
** During release via this pathway
*** During waste gas holdup system operation (treatment for primary system offgases)

6.11 RADIATION PROTECTION PROGRAM

Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure.

6.12 HIGH RADIATION AREA

6.12.1 In lieu of the "control device" or "alarm signal" required by paragraph 20.203(c)(2) of 10 CFR 20, each high radiation area in which the intensity of radiation is 1000 mrem/hr or less shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit*. Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

a. A radiation monitoring device which continuously indicates the radiation dose rate in the area.

b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate level in the area has been established and personnel have been made aware of it.

c. An individual qualified in radiation protection procedures who is equipped with a radiation dose rate monitoring device. This individual shall be responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the facility Health Physicist in the Radiation Work Permit.

6.12.2 The requirements of 6.12.1 shall also apply to each high radiation area in which the intensity of radiation is greater than 1000 mrem/hr. In addition, locked doors shall be provided to prevent unauthorized entry into such areas, and the keys shall be maintained under the administrative control of the Shift Supervisor on duty and/or the Plant Health Physicist (Plant Radiation Protection Supervisor).

* Health Physics (Radiation Protection) personnel shall be exempt from the RWP issuance requirement during the performance of their assigned radiation protection duties, provided they comply with approved radiation protection procedures for entry into high radiation areas.

TABLE 4.11-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (uci/ml)[a]
a. Waste Gas Storage Tank	P Each Tank Grab Sample	P Each Tank	Principal Gamma Emitters[e]	1×10^{-4}
b. Containment Purge	P Each Purge Grab Sample[b]	P Each Purge[b]	Principal Gamma Emitters[e]	1×10^{-4}
			H-3	1×10^{-6}
c. Condenser Evacuation System and Gland Seal Exhaust	W Grab Sample[b]	M[b] Particulate Sample	Principal Gamma Emitters[e]	1×10^{-4}
		M[b]	H-3	1×10^{-6}
		M[b] Iodine Adsorbing/ Media	I-131	1×10^{-12}
	Continuous[d]	Noble Gas Monitor	Noble Gases	1×10^{-6}
d. Auxiliary Building Vent	Continuous[d]	W[c] Iodine Adsorbing/ Media	I-131	1×10^{-12}
	Continuous[d]	W[c] Particulate Sample	Principal Gamma Emitters[e]	1×10^{-11}
	Continuous[d]	M Composite Particulate Sample	Gross Alpha	1×10^{-11}
	Continuous[d]	M Composite	H-3	1×10^{-6}
	Continuous[d]	Q Composite Particulate Sample	Sr-89, Sr-90	1×10^{-11}
	Continuous[d]	Noble Gas Monitor	Noble Gases	1×10^{-6}

3/4.11 RADIOACTIVE EFFLUENTS

BASES

3/4.11.1 LIQUID EFFLUENTS

3/4.11.1.1 CONCENTRATION. This specification is provided to ensure that the concentration of radioactive materials released in liquid waste effluents from the site to UNRESTRICTED AREAS will be less than the concentration levels specified in 10 CFR part 20, Appendix B, Table II. This limitation provides additional assurance that the levels of radioactive materials in bodies of water outside the site will not result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to an individual and (2) the limits of 10 CFR Part 20.106(e) to the population. The concentration limit for noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its MPC in air (submersion) was converted to an equivalent concentration in water using the methods described in the International Commission on Radiological protection (ICRP) Publication 2.

3/4.11.1.2 DOSE. This specification is provided to implement the requirements of Sections II.A, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Condition for Operation implements the guides set forth in Section II.A of Appendix I. The ACTION statements provide the required operating flexibility and at the same time releases of radioactive material in liquid effluents will be kept "as low as is reasonable achievable." Also, for fresh water sites with drinking water supplies which can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR 141.

The dose calculations in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses due to the actual release rates of radioactive materials in liquid effluents will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977, and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guide 1.109 and 1.113.

This specification applies to the release of liquid effluents from each reactor at the site. The liquid effluents from the shared system are proportioned among the units sharing the system.

3/4.11.1.3 LIQUID WASTE TREATMENT. The OPERABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment prior to release to the environment. The requirements that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonable achievable." This specification implements the requirements of 10 CFR Part 50.36a, General Design Criteria Section 11.1 of the Final Safety Analysis Report for the Donald C. Cook Nuclear Plant, and design objective Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents.

3/4.11.1.4 LIQUID HOLDUP TANKS. Restricting the quantity of radioactive material contained in the specified tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting concentrations would be less than the limits of 10 CFR Part 20, Appendix B, Table II, Column 2, at the nearest potable water supply and the nearest surface water supply in an UNRESTRICTED AREA.

3/4.11.2 GASEOUS EFFLUENTS

3/4.11.2.1 DOSE RATE. This specification is provided to ensure that the dose rate any time at the SITE BOUNDARY from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR Part 20 for UNRESTRICTED AREAS. The annual dose limits are the doses associated with the concentrations of 10 CFR Part 20, Appendix B, Table II. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of an individual in an UNRESTRICTED AREA, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20.106(b)). For individuals who may at times be within the SITE BOUNDARY, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the SITE BOUNDARY. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the site boundary to less than or equal to 500 mrem/year to the total body or to less than or equal to 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk-infant pathway to 1500 mrem/year for the nearest cow to the Plant. Iodine adsorbing media refers to silver zeolite cartridges in Table 4.11-2 or the industry standard.

This specification applies to the release of gaseous effluents from all reactors at the site. The gaseous effluents from the shared system are proportioned among the units sharing that system.

TABLE 3.12-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Samples	Sample Locations	Sampling and Collection Frequency	Type & Frequency of Analysis
1. Airborne a. Radioiodine & Particulates	A1-A6 (Site) New Buffalo South Bend, Dowagiac, and Coloma are Background	Continuous operation of sampler with Sample Collection as required by Dust Loading but at least once per 7 days	Radioiodine canister Analyze: Weekly for I-131 Particulate sample Gross Beta Radioactivity following Filter Change[a] composite (by location) for gamma isotopic quarterly
2. Direct Radiation	a) T1-T9 (Site) b) New Buffalo South Bend Dowagiac Coloma c) 10 TLD Monitor Locations in the Five Mile Radius	At least once per 92 days	Gamma Dose. At least once per 92 days
3. Waterborne a. Surface	L1, L2, L3	Composite* sample over one-month period	Gamma Isotopic Analysis monthly. Composite for tritium analysis-quarterly.
b. Ground	W1-W7	Quarterly	Gamma Isotopic and Tritium analysis quarterly.
c. Drinking	St. Joseph Lake Township	Composite* sample collected over a period of ≤31 days Composite* sample over a 2-week period if I-131 analysis is performed	Gross Beta and Gamma Isotopic Analysis of each composite sample. Tritium Analysis of composite Quarterly. I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year.

* Composite samples shall be collected by collecting an aliquot at intervals not exceeding 24 hours.

TABLE 3.3-3 (Continued)
ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION

FUNCTIONAL UNIT	TOTAL NO. OF CHANNELS	CHANNELS TO TRIP	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	ACTION
3. CONTAINMENT ISOLATION					
a. Phase "A" Isolation					
1) Manual	2	1	2	1,2,3,4	18
2) From Safety Injection Automatic Actuation Logic	2	1	2	1,2,3,4	13
b. Phase "B" Isolation					
1) Manual	2	1	2	1,2,3,4	18
2) Automatic Actuation Logic	2	1	2	1,2,3,4	13
3) Containment Pressure-High-High	4	2	3	1,2,3	16
c. Purge and Exhaust Isolation*					
1) Manual	2	1	2	1,2,3,4	17
2) Containment Radioactivity-High Train A (VRS-2101, ERS-2301, ERS-2305)	3	1	2	1,2,3,4	17
3) Containment Radioactivity-High Train B (VRS-2201, ERS-2401, ERS-2405)	3	1	2	1,2,3,4	17

* This specification only applies during purge.

TABLE 3.3-4 (Continued)

ENGINEERED SAFETY FEATURE ACTUATION SYSTEM INSTRUMENTATION TRIP SETPOINTS

FUNCTIONAL UNIT	TRIP SETPOINT	ALLOWABLE VALUES
2. CONTAINMENT SPRAY		
a. Manual Initiation	Not Applicable	Not Applicable
b. Automatic Actuation Logic	Not Applicable	Not Applicable
c. Containment Pressure-High-High	$\leq$ 2.9 psig	$\leq$ 3.0 psig
3. CONTAINMENT ISOLATION		
a. Phase "A" Isolation		
1. Manual	Not Applicable	Not Applicable
2. From Safety Injection Automatic Actuation Logic		
b. Phase "B" Isolation		
1. Manual	Not Applicable	Not Applicable
2. Automatic Actuation Logic	Not Applicable	Not Applicable
3. Containment Pressure-High-High	$\leq$ 2.9 psig	$\leq$ 3.0 psig
c. Purge and Exhaust Isolation		
1. Manual	Not Applicable	Not Applicable
2. Containment Radioactivity --High Train A (VRS-2101, ERS-2301, ERS-2305)	See Table 3.3-6	Not Applicable
3. Containment Radioactivity --High Train B (VRS-2201, ERS-2401, ERS-2405)	See Table 3.3-6	Not Applicable

TABLE 3.3-6

RADIATION MONITORING INSTRUMENTATION

(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

OPERATION MODE/INSTRUMENT	MINIMUM CHANNELS OPERABLE	ALARM SETPOINT	TRIP SETPOINT	ACTION
1. Modes 1, 2, 3, & 4				
A) Area Monitors				
i) Upper Containment+ (VRS 2101/2201)	1	N/A	$\leq$ 54 mR/hr	21
B) Process Monitors				
i) Particulate Channel+ (ERS 2301/2401)	1	N/A	$\leq$ 2.52 uCi	20
ii) Noble Gas Channel+ (ERS 2305/2405)	1	N/A	$\leq 4.4 \times 10^{-3} \frac{uCi}{cc}$	20
C) Noble Gas Effluent Monitors				
i) Unit Vent Effluent Monitor				
a) Low Range (VRS 2505)	----------(See T/S Section 3.3.3.10)----------			

TABLE 3.3-6 (Cont'd)

RADIATION MONITORING INSTRUMENTATION
(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

OPERATION MODE/INSTRUMENT	MINIMUM CHANNELS OPERABLE	ALARM SETPOINT	TRIP SETPOINT	ACTION
ii) Gland Steam Condenser Vent Monitor				
a) Low Range (SRA 2805)	----------(See T/S Section 3.3.3.10)----------			
iii) Steam Jet Air Ejector Vent Monitor				
a) Low Range (SRA 2905)	----------(See T/S Section 3.3.3.10)----------			
2. Mode 6				
A) Train A	any 2/3 channels			22
i) Containment Area Radiation+ Channel (VRS 2101)		N/A	$\leq$ 54 mR/hr	
ii) Particulate Channel+ (ERS 2301)		N/A	$\leq$ 2.52 uCi	
iii) Noble Gas Channel+ (ERS 2305)		N/A	$\leq 4.4 \times 10^{-3}$ $\frac{uCi}{cc}$	
B) Train B	any 2/3 channels			22
i) Containment Area+ Radiation Channel (VRS 2201)		N/A	$\leq$ 54 mR/hr	
ii) Particulate Channel+ (ERS 2401)		N/A	$\leq$ 2.52 uCi	

TABLE 3.3-6 (Cont'd)

RADIATION MONITORING INSTRUMENTATION
(OPERABILITY BASES DISCUSSED IN BASES SECTION 3/4.3.3.1)

OPERATION MODE/INSTRUMENT	MINIMUM CHANNELS OPERABLE	ALARM SETPOINT	TRIP SETPOINT	ACTION
iii) Noble Gas Channel+ (ERS 2405)		N/A	$\leq 4.4 \times 10^{-3}$ $\frac{uCi}{cc}$	22
3. Mode ***				
A) Spent Fuel Storage (RRC-330)	1	$\leq$ 15 mR/hr	$\leq$ 15 mR/hr	21

*** With fuel in storage pool or building.
+ This specification applies only during purge.

TABLE 4.3-3

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

OPERATION MODE/INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE REQUIRED
1. Modes 1, 2, 3, & 4				
A) Area Monitors				
i) Upper Containment (VRS 2101/2201)	S*	R	M	1, 2, 3, 4
B) Process Monitors				
i) Particulate Channel (ERS 2301/2401)	S*	R	M	1, 2, 3, 4
ii) Noble Gas Channel (ERS 2305/2405)	S*	R	M	1, 2, 3, 4
C) Noble Gas Effluent Monitors				
i) Unit Vent Effluent Monitors				
a) Low Range (VRS 2505) ----------(See Table 4.3-9, Item 3.a. 4a. 5a)----------				

TABLE 4.3-3 (Cont'd)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

OPERATION MODE/INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE REQUIRED
ii) Gland Steam Condenser Vent Monitor				
a) Low Range (SRA 2805)	(See Table 4.3-9 Item 6.a)			
iii) Steam Jet Air Ejector Vent Monitor				
a) Low.Range (SRA 2905)	(See Table 4.3-9, Item 2.a)			
2. Mode 6				
A) Train A				6
i) Containment Area Radiation Channel (VRS 2101)	S*	R	M	
ii) Particulate Channel (ERS 2301)	S*	R	M	
iii) Noble Gas Channel (ERS 2305)	S*	R	M	
B) Train B				6
i) Containment Area Radiation Channel (VRS 2201)	S*	R	M	
ii) Particulate Channel (ERS 2401)	S*	R	M	

TABLE 4.3-3 (Cont'd)

RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

OPERATION MODE/INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES FOR WHICH SURVEILLANCE REQUIRED
iii) Noble Gas Channel (ERS 2405)	S*	R	M	6
2. Mode**				
A) Spent Fuel Storage (RRC-330)	S	R	M	**

* To include SOURCE CHECK per T/S Section 1.27.
** With fuel in storage pool or building.

TABLE 3.3-6 (Continued)
TABLE NOTATION

ACTION 20 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, comply with the ACTION requirements of Specification 3.4.6.1.

ACTION 21 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirement, perform area surveys of the monitored area with portable monitoring instrumentation at least once per day.

ACTION 22 - With the number of channels OPERABLE less than required by the Minimum Channels Operable requirements, comply with the ACTION requirements of Specification 3.9.9. This ACTION is not required during the performance of containment integrated leak rate test.

3/4.3 INSTRUMENTATION

BASES

3/4.3.1 and 3/4.3.2 PROTECTIVE AND ENGINEERED SAFETY FEATURES (ESF) INSTRUMENTATION

The OPERABILITY of the protective and ESF instrumentation systems and interlocks ensure that 1) the associated ESF action and/or reactor trip will be initiated when the parameter monitored by each channel or combination thereof exceeds its setpoint, 2) the specified coincidence logic is maintained, 3) sufficient redundancy is maintained to permit a channel to be out of service for testing or maintenance, and 4) sufficient system functional capability is available for protective and ESF purposes from diverse parameters.

The OPERABILITY of these systems is required to provide the overall reliability, redundancy and diversity assumed available in the facility design for the protection and mitigation of accident and transient conditions. The integrated operation of each of these systems is consistent with the assumptions used in the accident analyses.

The surveillance requirements specified for these systems ensure that the overall system functional capability is maintained comparable to the original design standards. The periodic surveillance tests performed at the minimum frequencies are sufficient to demonstrate this capability.

The measurement of response time at the specified frequencies provides assurance that the protective and ESF action function associated with each channel is completed within the time limit assumed in the accident analyses. No credit was taken in the analyses for those channels with response times indicated as not applicable.

Response time may be demonstrated by any series of sequential, overlapping or total channel test measurements provided that such tests demonstrate the total channel response time as defined. Sensor response time verification may be demonstrated by either 1) in place, onsite or offsite test measurements or 2) utilizing replacement sensors with certified response times.

3/4.3.3 MONITORING INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that 1) the radiation levels are continually measured in the areas served by the individual channels and 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded.

Radiation Monitoring Instrumentation (Continued)

Table 3.3-6 is based on the following Alarm/Trip Setpoints and Measurement Ranges for each instrument listed.

INSTRUMENT	ALARM/TRIP SETPOINT	MEASUREMENT RANGE*
1) Area Monitor-Upper Containment (VRS 2101/2201)	The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate.	10^{-4} R/hr to 10R/hr.
2) Process Monitor Particulate (ERS 2301/2401)	The monitor trip setpoint based on 10 CFR 20 limits. The setpoint was determined using the Noble gas setpoint and historical monitor data of the ratio of particulate to Noble gases.	1.5×10^{-4} uCi to 7.5 uCi.
3) Process Monitor Noble Gas (ERS 2305/2405)	The monitor trip setpoint is based on 10 CFR 20 limits. A homogeneous mixture of the containment atmosphere is assumed. The setpoint value is defined as the monitor reading when the purge is operating at the maximum flow rate.	1×10^{-7} uCi/cc to 4×10^{-2} uCi/cc

* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

Radiation Monitoring Instrumentation (Continued)

INSTRUMENT	ALARM/TRIP SETPOINT	MEASUREMENT RANGE*
4) Noble Gas Unit Vent Monitors a) Low Range (VRS 2505)	See Bases Section 3/4.3.3.10	$1x10^{-7}$uCi/cc to $4x10^{-2}$ uCi/cc.
5) Gland Steam Condenser Vent Noble Gas Monitor a) Low Range (SRA 2805)	See Bases Section 3/4.3.3.10	$1x10^{-7}$uCi/cc to $4x10^{-2}$ uCi/cc.
6) Steam Jet Air Ejector Vent Noble Gas Monitor a) Low Range (SRA 2905)	See Bases Section 3/4.3.3.10	$1x10^{-7}$uCi/cc to $4x10^{-2}$ uCi/cc.

* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

Radiation Monitoring Instrumentation (Continued)

INSTRUMENT	ALARM/TRIP SETPOINT	MEASUREMENT RANGE*
7) Spent Fuel Storage (RRC-330)	The monitor setpoint is selected to alarm and trip consistent with 10 CFR 70.24(a)(2)	$1x10^{-1}$ mR/hr to $1x10^{4}$ mR/hr

The Radiation Monitoring Instrumentation Surveillance Requirements per Table 4.3-3 are based on the following interpretation:

1) The CHANNEL FUNCTIONAL TEST is successfully accomplished by the injection of a simulated signal into the channel, as close to the detector as practical, to verify the channel's alarm and/or trip function only.

2) The CHANNEL CALIBRATION as defined in T/S Section 1.9 permits the "known values" generated from radioactive calibration sources to be substituted with "known values" represented by simulated signals for that subset of "known values" required for calibration and not practical to generate using the radioactive calibration sources.

* This is the minimum required sensitivity of the instrument. Indicated values on these instruments above or below these minimum sensitivity ranges are acceptable and indicate existing conditions not instrument inoperability.

TABLE 3.3-12

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Instrument	Minimum Channels Operable	Applicability	Action
1. Gross Radioactivity Monitors Providing Automatic Release Termination			
a. Liquid Radwaste Effluent Line (2-R-18)	(1)	At times of release	23
b. Steam Generator Blowdown Line (2-R-19)	(1)	At times of release	24
c. Steam Generator Blowdown Treatment Effluent (2-R-24)	(1)	At times of release	24
2. Gross Radioactivity Monitors Not Providing Automatic Release Termination			
a. Service Water System Effluent Line (2-R-20, 2-R-28)	(1) per train	At all times	25
3. Continuous Composite Sampler Flow Monitor			
a. Turbine Building Sump Effluent Line	(1)	At all times	25
4. Flow Rate Measurement Devices			
a. Liquid Radwaste Line (RFI-285)	(1)	At times of release	26
b. Discharge Pipes*	(1)	At all times	NA
c. Steam Generator Blowdown Treatment Effluent (2-DFI-353)	(1)	At times of release	26

* Pump curves and valve settings may be utilized to estimate flow; in such cases, Action Statement 26 is not applicable.

TABLE 3.3-13

Radioactive Gaseous Effluent Monitoring Instrumentation

	Instrument (Instrument #)	Minimum Channels Operable	Applicability	Action
1.	Waste Gas Holdup System Explosive Gas Monitoring System			
	a. Hydrogen Monitor (QC-31)	(1)	**	30
	b. Oxygen Monitor (QC-31, QC-370)	(2)	**	29
2.	Condenser Evacuation System			
	a. Noble Gas Activity Monitor (SRA-2905)	(1)	****	28
	b. Flow Rate Monitor (SFR-401)	(1)	****	27
	(2-MR-054 and/or SRA-2910)	(1)	****	27
3.	Unit Vent, Auxiliary Building Ventilation System			
	a. Noble Gas Activity Monitor (VRS-2505)	(1)	*	28
	b. Iodine Sampler Cartridge for VRS-2503	(1)	*	32
	c. Particulate Sampler Filter for VRS-2501	(1)	*	32
	d. Effluent System Flow Rate Measuring Device (VFR-315)	(1)	*	27
	(2-MR-054 and/or VRS-2510)	(1)	*	27
	e. Sampler Flow Rate Measuring Device (VFS-2521)	(1)	*	27
4.	Containment Purge System			
	a. Aux. Building Vent. System Noble Gas Activity Monitor (VRS-2505)	(1)	****[1]	31
	b. Aux. Building Vent. System Particulate Sampler for VRS-2501	(1)	****[1]	32
5.	Waste Gas Holdup System			
	a. Noble Gas Activity Monitor Providing Alarm and Termination of Gas Decay Tank Releases (VRS-2505)	(1)	****[2]	33
6.	Gland Seal Exhaust			
	a. Noble Gas Activity Monitor (SRA-2805)	(1)	****	28
	b. Flow Rate Monitor (SFR-201)	(1)	****	27
	(2-MR-054 and/or SRA-2810)	(1)	****	27

TABLE 3.3-13 (Cont)

* At all times
** During waste gas holdup system operation (treatment for primary system gases)
**** During releases via this pathway.

[1] For purge purposes only. See Technical Specifications 3.3.3.10, Table 3.3-13 and Table 4.3-9 (Item 3a, 5a) for other non purging requirements associated with this instrument..

[2] For gas decay tank releases only, see Item 3 (Unit Vent, Auxiliary Building Ventilation System) for additional requirements.

TABLE 4.3-9

Radioactive Gaseous Effluent Monitoring Instrumentation

Surveillance Requirements

Instrument (Instrument #)	Channel Check	Source Check	Channel Calibration	Channel Functional Test
1. Waste Gas Holdup System Explosive Gas Monitoring System				
a. Hydrogen Monitor (QC-31)	D***	NA	Q(3)	M
b. Oxygen Monitor (QC-31)	D***	NA	Q(4)	M
c. Oxygen Monitor (Alt. (QC-370)	D***	NA	Q(4)	M
2. Condenser Evacuation System				
a. Noble Gas Activity Monitor (SRA-2905)	D**	M	R(2)	Q(1)
b. System Effluent Flow Rate (SFR-401, 2-MR-054, SRA-2910)	D**	NA	R	Q
3. Auxiliary Building Ventilation System				
a. Noble Gas Activity Monitor (VRS-2505)	D*	M	R(2)	Q(1)
b. Iodine Sampler (For VRS-2505)	W*	NA	NA	NA
c. Particulate Sampler (For VRS-2501)	W*	NA	NA	NA
d. System Effluent Flow Rate Measurement Device (VFR-315, 2-MR-054, VRS-2510)	D*	NA	R	Q
e. Sampler Flow Rate Measurement Device (VFS-2521)	D*	NA	R	Q
4. Containment Purge System				
a. Aux. Building Vent. System Noble Gas Activity Monitor (VRS-2505)	D**	P	R(2)	Q(5)
b. Aux. Building Vent. System Particulate Sampler (For VRS-2501)	W**	NA	NA	NA
5. Waste Gas Holdup System				
a. Noble Gas Activity Monitor Providing Alarm & Termination of Gas Decay Tank Release (VRS-2505)	P**	P	R(2)	Q(5)

TABLE 4.3-9 (Cont)

Instrument (Instrument #)	Channel Check	Source Check	Channel Calibration	Channel Functional Test
6. Gland Seal Exhaust				
a. Noble Gas Activity (SRA-2805)	D**	M	R(2)	Q(1)
b. System Effluent Flow Rate (SFR-201, 2-MR-054, SRA-2810)	D**	NA	R	Q

* At all times
** During release via this pathway
*** During waste gas holdup system operation (treatment for primary system offgases)

TABLE 4.11-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (uci/ml)[a]
a. Waste Gas Storage Tank	P Each Tank Grab Sample	P Each Tank	Principal Gamma Emitters[e]	1×10^{-4}
b. Containment Purge	P Each Purge Grab Sample[b]	P Each Purge[b]	Principal Gamma Emitters[e]	1×10^{-4}
			H-3	1×10^{-6}
c. Condenser Evacuation System and Gland Seal Exhaust	W Grab Sample[b]	M[b] Particulate Sample	Principal Gamma Emitters[e]	1×10^{-4}
		M[b]	H-3	1×10^{-6}
		M[b] Iodine Adsorbing/ Media	I-131	1×10^{-12}
	Continuous[d]	Noble Gas Monitor	Noble Gases	1×10^{-6}
d. Auxiliary Building Vent	Continuous[d]	W[c] Iodine Adsorbing/ Media	I-131	1×10^{-12}
	Continuous[d]	W[c] Particulate Sample	Principal Gamma Emitters[e]	1×10^{-11}
	Continuous[d]	M Composite Particulate Sample	Gross Alpha	1×10^{-11}
	Continuous[d]	M Composite	H-3	1×10^{-6}
	Continuous[d]	Q Composite Particulate Sample	Sr-89, Sr-90	1×10^{-11}
	Continuous[d]	Noble Gas Monitor	Noble Gases	1×10^{-6}

6.11 RADIATION PROTECTION PROGRAM

Procedures for personnel radiation protection shall be prepared consistent with the requirements of 10 CFR Part 20 and shall be approved, maintained and adhered to for all operations involving personnel radiation exposure.

6.12 HIGH RADIATION AREA

6.12.1 In lieu of the "control device" or "alarm signal" required by paragraph 20.203(c)(2) of 10 CFR 20, each high radiation area in which the intensity of radiation is 1000 mrem/hr or less shall be barricaded and conspicuously posted as a high radiation area and entrance thereto shall be controlled by requiring issuance of a Radiation Work Permit*. Any individual or group of individuals permitted to enter such areas shall be provided with or accompanied by one or more of the following:

a. A radiation monitoring device which continuously indicates the radiation dose rate in the area.

b. A radiation monitoring device which continuously integrates the radiation dose rate in the area and alarms when a preset integrated dose is received. Entry into such areas with this monitoring device may be made after the dose rate level in the area has been established and personnel have been made aware of it.

c. An individual qualified in radiation protection procedures who is equipped with a radiation dose rate monitoring device. This individual shall be responsible for providing positive control over the activities within the area and shall perform periodic radiation surveillance at the frequency specified by the facility Health Physicist in the Radiation Work Permit.

6.12.2 The requirements of 6.12.1 shall also apply to each high radiation area in which the intensity of radiation is greater than 1000 mrem/hr. In addition, locked doors shall be provided to prevent unauthorized entry into such areas, and the keys shall be maintained under the administrative control of the Shift Supervisor on duty and/or the Plant Health Physicist (Plant Radiation Protection Supervisor).

* Health Physics (Radiation Protection) personnel shall be exempt from the RWP issuance requirement during the performance of their assigned radiation protection duties, provided they comply with approved radiation protection procedures for entry into high radiation areas.

3/4.11 RADIOACTIVE EFFLUENTS

BASES

3/4.11.1 LIQUID EFFLUENTS

3/4.11.1.1 CONCENTRATION. This specification is provided to ensure that the concentration of radioactive materials released in liquid waste effluents from the site to UNRESTRICTED AREAS will be less than the concentration levels specified in 10 CFR part 20, Appendix B, Table II. This limitation provides additional assurance that the levels of radioactive materials in bodies of water outside the site will not result in exposures within (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to an individual and (2) the limits of 10 CFR Part 20.106(e) to the population. The concentration limit for noble gases is based upon the assumption that Xe-135 is the controlling radioisotope and its MPC in air (submersion) was converted to an equivalent concentration in water using the methods described in the International Commission on Radiological protection (ICRP) Publication 2.

3/4.11.1.2 DOSE. This specification is provided to implement the requirements of Sections II.A, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Condition for Operation implements the guides set forth in Section II.A of Appendix I. The ACTION statements provide the required operating flexibility and at the same time releases of radioactive material in liquid effluents will be kept "as low as is reasonable achievable." Also, for fresh water sites with drinking water supplies which can be potentially affected by plant operations, there is reasonable assurance that the operation of the facility will not result in radionuclide concentrations in the finished drinking water that are in excess of the requirements of 40 CFR 141.

The dose calculations in the ODCM implement the requirements in Section III.A of Appendix I that conformance with the guides of Appendix I be shown by calculational procedures based on models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The equations specified in the ODCM for calculating the doses due to the actual release rates of radioactive materials in liquid effluents will be consistent with the methodology provided in Regulatory Guide 1.109, "Calculation of Annual Doses to Man from Routine Releases of Reactor Effluents for the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I," Revision 1, October 1977, and Regulatory Guide 1.113, "Estimating Aquatic Dispersion of Effluents from Accidental and Routine Reactor Releases for the Purpose of Implementing Appendix I," April 1977. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guide 1.109 and 1.113.

This specification applies to the release of liquid effluents from each reactor at the site. The liquid effluents from the shared system are proportioned among the units sharing the system.

BASES

3/4.11.1.3 LIQUID WASTE TREATMENT. The OPERABILITY of the liquid radwaste treatment system ensures that this system will be available for use whenever liquid effluents require treatment prior to release to the environment. The requirements that the appropriate portions of this system be used when specified provides assurance that the releases of radioactive materials in liquid effluents will be kept "as low as is reasonable achievable." This specification implements the requirements of 10 CFR Part 50.36a, General Design Criteria Section 11.1 of the Final Safety Analysis Report for the Donald C. Cook Nuclear Plant, and design objective Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents.

3/4.11.1.4 LIQUID HOLDUP TANKS. Restricting the quantity of radioactive material contained in the specified tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting concentrations would be less than the limits of 10 CFR Part 20, Appendix B, Table II, Column 2, at the nearest potable water supply and the nearest surface water supply in an UNRESTRICTED AREA.

3/4.11.2 GASEOUS EFFLUENTS

3/4.11.2.1 DOSE RATE. This specification is provided to ensure that the dose rate any time at the SITE BOUNDARY from gaseous effluents from all units on the site will be within the annual dose limits of 10 CFR Part 20 for UNRESTRICTED AREAS. The annual dose limits are the doses associated with the concentrations of 10 CFR Part 20, Appendix B, Table II. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of an individual in an UNRESTRICTED AREA, to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20.106(b)). For individuals who may at times be within the SITE BOUNDARY, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the SITE BOUNDARY. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the site boundary to less than or equal to 500 mrem/year to the total body or to less than or equal to 3000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background to an infant via the cow-milk-infant pathway to 1500 mrem/year for the nearest cow to the Plant. Iodine adsorbing media refers to silver zeolite cartridges in Table 4.11-2 or the industry standard.

This specification applies to the release of gaseous effluents from all reactors at the site. The gaseous effluents from the shared system are proportioned among the units sharing that system.

TABLE 3.12-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Samples	Sample Locations	Sampling and Collection Frequency	Type & Frequency of Analysis
1. Airborne a. Radioiodine & Particulates	A1-A6 (Site) New Buffalo South Bend, Dowagiac, and Coloma are Background	Continuous operation of sampler with Sample Collection as required by Dust Loading but at least once per 7 days	Radioiodine canister Analyze: Weekly for I-131 Particulate sample Gross Beta Radioactivity following Filter Change[a] composite (by location) for gamma isotopic quarterly
2. Direct Radiation	a) T1-T9 (Site) b) New Buffalo South Bend Dowagiac Coloma c) 10 TLD Monitor Locations in the Five Mile Radius	At least once per 92 days	Gamma Dose. At least once per 92 days
3. Waterborne a. Surface	L1, L2, L3	Composite* sample over one-month period	Gamma Isotopic Analysis monthly. Composite for tritium analysis-quarterly.
b. Ground	W1-W7	Quarterly	Gamma Isotopic and Tritium analysis quarterly.
c. Drinking	St. Joseph Lake Township	Composite* sample collected over a period of $\leq$31 days Composite* sample over a 2-week period if I-131 analysis is performed	Gross Beta and Gamma Isotopic Analysis of each composite sample. Tritium Analysis of composite Quarterly. I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year.

*Composite samples shall be collected by collecting an aliquot at intervals not exceeding 24 hours.