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Docket No. 50-346

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Mr. Richard P. Crouse
Vice President, Nuclear
Toledo Edison Company
Edison Plaza - Stop 712
300 Madison Avenue
Toledo, Ohio 43652

Dear Mr. Crouse:

SUBJECT: AMENDMENT NO. 86 TO FACILITY OPERATING LICENSE NO. NPF-3; RADIOACTIVE EFFLUENT TECHNICAL SPECIFICATIONS

SEE →

The Commission has issued Amendment No. 86 to Facility Operating License No. NPF-3 for the Davis-Besse Nuclear Power Station, Unit No. 1. This amendment consists of changes to the Appendix A Technical Specifications (TSs) in response to your application dated March 16, 1979 (No. 488), as supplemented by letters dated December 23, 1982 (No. 887), July 13, 1983 (No. 967), August 18, 1983 (No. 979), March 15, 1984 (No. 1035) and November 1, 1984 (No. 1097).

This amendment revises the TSs to ensure compliance with 10 CFR 50.36a. The amendment updates those portions of the TSs addressing radioactive effluent management including monitoring, reporting and environmental surveillance. This amendment deletes Appendix B, Part I, TSs relating to these matters and adds appropriate Limiting Conditions for Operation, Surveillance Requirements, reporting requirements and environmental monitoring requirements to Appendix A. This amendment is to be effective on October 30, 1985.

Copies of our Safety Evaluation and Franklin Research Center's Technical Evaluation Report (TER) are enclosed. Please note that Section 4, Conclusions, of the TER identifies certain discrepancies in your Offsite Dose Calculation Manual (ODCM) and Process Control Program (PCP) when compared to the criteria of NUREG-0133. These discrepancies should be corrected within 90 days in the next revisions of the ODCM and PCP.

The reporting and/or recordkeeping requirements of this letter affect fewer than ten respondents; therefore, OMB clearance is not required under P. L. 96-511.

A Notice of Issuance will be included in the Commission's next biweekly notice in the Federal Register.

Sincerely,

Original signed by

Albert W. De Agazio, Project Manager
Operating Reactors Branch #4
Division of Licensing

Enclosures:
1. Amendment No. 86 to NPF-3
2. Safety Evaluation

cc w/enclosures:
See next page

ORB#4:DL	ORB#4:DL	ORB#4:DL	OELD	AD:ORB:DL
RIngram	ADe Agazio;	JStolz	M. Rapman	GLainas
6/19/85	6/20/85	6/20/85	6/24/85	6/27/85

Mr. R. P. Crouse
Toledo Edison Company

Davis-Besse Nuclear Power Station, Unit No. 1

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UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

TOLEDO EDISON COMPANY

AND

THE CLEVELAND ELECTRIC ILLUMINATING COMPANY

DOCKET NO. 50-346

DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1

AMENDMENT TO FACILITY OPERATING LICENSE

Amendment No. 86
License No. NPF-3

1. The Nuclear Regulatory Commission (the Commission) has found that:

   A. The application for amendment by the Toledo Edison Company and The Cleveland Electric Illuminating Company (the licensees) dated March 16, 1979, as supplemented by letters dated December 23, 1982, July 13, 1983, August 18, 1983, March 15, 1984, and November 1, 1984, complies with the standards and requirements of the Atomic Energy Act of 1954, as amended (the Act), and the Commission's rules and regulations set forth in 10 CFR Chapter I;

   B. The facility will operate in conformity with the application, the provisions of the Act, and the rules and regulations of the Commission;

   C. There is reasonable assurance (i) that the activities authorized by this amendment can be conducted without endangering the health and safety of the public, and (ii) that such activities will be conducted in compliance with the Commission's regulations;

   D. The issuance of this amendment will not be inimical to the common defense and security or to the health and safety of the public; and

   E. The issuance of this amendment is in accordance with 10 CFR Part 51 of the Commission's regulations and all applicable requirements have been satisfied.

2. Accordingly, the license is amended by changes to the Technical Specifications as indicated in the attachment to this license amendment, and paragraph 2.C.(2) of Facility Operating License No. NPF-3 is hereby amended to read as follows:

Technical Specifications

The Technical Specifications contained in Appendices A and B, as revised through Amendment No. 86 , are hereby incorporated in the license. The Toledo Edison Company shall operate the facility in accordance with the Technical Specifications.

3. This license amendment becomes effective on October 30, 1985.

FOR THE NUCLEAR REGULATORY COMMISSION

John F. Stolz, Chief
Operating Reactors Branch #4
Division of Licensing

Attachment:
Changes to the Technical
Specifications

Date of Issuance: July 2, 1985

ATTACHMENT TO LICENSE AMENDMENT NO. 86

FACILITY OPERATING LICENSE NO. NPF-3

DOCKET NO. 50-346

Replace or add the following pages of the Appendices "A" and "B" Technical Specifications with the enclosed pages. The revised pages are identified by Amendment number and contain vertical lines indicating the area of change. The corresponding overleaf pages are also provided to maintain document completeness.

Appendix A Pages						Appendix B Pages
	I	3/4	11-18		6-22	i
	Ia	3/4	11-19		6-23	iii
	IV	3/4	11-20		6-24	iv
	VIIIa	3/4	12-1			2.1-1
	XIII	3/4	12-2			2.1-2 through 2.1-18 (Delete)
	1-6a	3/4	12-3			3.2-1
	1-6b	3/4	12-4			3.2-2 through 3.2-11 (Delete)
	1-8	3/4	12-5			5.4-1
3/4	3-57	3/4	12-6			5.4-2
3/4	3-58	3/4	12-7			5.4-3
3/4	3-59	3/4	12-8			5.4-4
3/4	3-60	3/4	12-9			5.5-1
3/4	3-61	3/4	12-10			
3/4	3-62	3/4	12-11			
3/4	3-63	3/4	12-12			
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3/4	3-67	B 3/4	11-2			
3/4	11-1	B 3/4	11-3			
3/4	11-2	B 3/4	11-4			
3/4	11-3	B 3/4	11-5			
3/4	11-4	B 3/4	11-6			
3/4	11-5	B 3/4	11-7			
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BASES

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DESIGN FEATURES

SOURCE CHECK

1.29 A SOURCE CHECK shall be the observation of channel upscale response when the channel sensor is exposed to a radioactive source.

PROCESS CONTROL PROGRAM

1.30 A PROCESS CONTROL PROGRAM (PCP) shall provide details for the sampling, analysis, and evaluation from which SOLIDIFICATION or DEWATERING radioactive wastes from liquid systems is assured.

SOLIDIFICATION

1.31 SOLIDIFICATION shall be the conversion of wet radioactive wastes into a form that meets destination waste disposal site criteria by removal of freestanding water through chemical processes.

OFFSITE DOSE CALCULATION MANUAL (ODCM)

1.32 The OFFSITE DOSE CALCULATION MANUAL (ODCM) shall be a manual containing the methodology and parameters to be used in the calculation of offsite doses due to radioactive gaseous and liquid effluents and in the calculation of gaseous and liquid effluent monitoring instrumentation alarm/trip setpoints. Requirements of the ODCM are provided in Specification 6.14.

GASEOUS RADWASTE TREATMENT SYSTEM

1.33 The GASEOUS RADWASTE TREATMENT SYSTEM is a system that is designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases and providing for decay for the purpose of reducing the total radioactivity prior to release to the environment.

VENTILATION EXHAUST TREATMENT SYSTEM

1.34 A VENTILATION EXHAUST TREATMENT SYSTEM is a system that is designed and installed to reduce radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through HEPA filters for the purpose of removing particulates from the gaseous exhaust stream prior to the release to the environment. Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.

PURGE-PURGING

1.35 PURGE OR PURGING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is required to purify the confinement.

VENTING

1.36 VENTING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating condition, in such a manner that replacement air or gas is not provided or required during VENTING. Vent, used in system names, does not imply a VENTING process.

MEMBER(S) OF THE PUBLIC

1.37 MEMBER(S) OF THE PUBLIC shall include all persons who are not occupationally associated with the plant. This category does not include employees of the utility, its contractors or vendors. Also excluded from this category are persons who enter the site to service equipment or to make deliveries. This category does include persons who use portions of the site for recreational, occupational or other purposes not associated with the plant.

SITE BOUNDARY

1.38 The SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee.

UNRESTRICTED AREA

1.39 An UNRESTRICTED AREA shall be any area at or beyond the SITE BOUNDARY access to which is not controlled by the licensee for purposes of protection of individuals from exposure to radiation and radioactive materials, or any area within the SITE BOUNDARY used for residential quarters or for industrial, commercial, institutional, and/or recreational purposes. The definition of UNRESTRICTED AREA used in implementing the Radiological Effluent Technical Specifications has been expanded over that in 10 CFR 20.3(a)(17). The UNRESTRICTED AREA boundary may coincide with the exclusion (fenced) area boundary, as defined in 10 CFR 100.3(a), but the UNRESTRICTED AREA does not include areas over water bodies. The concept of UNRESTRICTED AREAS, established at or beyond the SITE BOUNDARY, is utilized in the LIMITING CONDITIONS FOR OPERATION to keep levels of radioactive materials in liquid and gaseous effluents as low as is reasonably achievable, pursuant to 10 CFR 50.36a.

DEWATERING

1.40 DEWATERING is the conversion of wet radioactive wastes into a form that meets destination waste disposal site criteria by removal of freestanding water through physical processes.

TABLE 1.1

OPERATIONAL MODES

MODE	REACTIVITY CONDITION, K_{eff}	%RATED THERMAL POWER*	AVERAGE COOLANT TEMPERATURE
1. POWER OPERATION	$\geq$ 0.99	> 5%	$\geq$ 280°F
2. STARTUP	$\geq$ 0.99	$\leq$ 5%	$\geq$ 280°F
3. HOT STANDBY	< 0.99	0	$\geq$ 280°F
4. HOT SHUTDOWN	< 0.99	0	280°F > T_{avg} > 200°F
5. COLD SHUTDOWN	< 0.99	0	$\leq$ 200°F
6. REFUELING**	$\leq$ 0.95	0	$\leq$ 140°F

*Excluding decay heat.

**Reactor vessel head unbolted or removed and fuel in the vessel.

TABLE 1.2

FREQUENCY NOTATION

NOTATION	FREQUENCY
S	At least once per 12 hours.
D	At least once per 24 hours.
W	At least once per 7 days.
M	At least once per 31 days.
Q	At least once per 92 days.
SA	At least once per 6 months.*
R	At least once per 18 months.*
S/U	Prior to each reactor startup.
P	Prior to each release.
N/A	Not applicable.

*In these Technical Specifications, 6 months is defined to be 184 days, and 18 months is defined to be 550 days.

INSTRUMENTATION

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.9 The radioactive liquid effluent monitoring instrumentation channels shown in Table 3.3-15 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.1.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

APPLICABILITY: At all times.

ACTION:

a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, without delay suspend the release of radioactive liquid effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive liquid effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-15. Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.9 Each radioactive liquid effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION AND CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-15.

TABLE 3.3-15

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1. Gross Radioactivity Monitors Providing Alarms and Automatic Termination of Release			
a. Liquid Radwaste Effluent Line (either Miscellaneous or Clean, but not both simultaneously)	1	(1)	18
2. Flow Rate Measurement Devices			
a. Liquid Radwaste Effluent Line	1	(1)	19
b. Dilution Flow to Collection Box	1	(1)	19
3. Gross Beta or Gamma Radioactivity Monitors Providing Alarm But Not Providing Automatic Termination of Release			
a. Turbine Building/Storm Sewer Drain	1	(1)	19, 20

TABLE 3.3-15 (Continued)

TABLE NOTATION

(1) During radioactive releases via this pathway

ACTION 18 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may be resumed, provided that prior to initiating a release:

1. At least two independent samples are analyzed in accordance with Specification 4.11.1.1.1 for analyses performed with each batch;

2. At least two independent verifications of the release rate calculations are performed;

3. At least two independent verifications of the discharge valving are performed;

Otherwise, suspend release of radioactive effluents via this pathway.

ACTION 19 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 4 hours during actual releases. Pump curves may be used to estimate flow.

ACTION 20 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided that, at least once per 12 hours, grab samples are collected and analyzed for gross radioactivity (beta or gamma) at a lower limit of detection no greater than 10^{-7} µCi/ml.

TABLE 4.3-15

RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Gross Beta or Gamma Radioactivity Monitors Providing Alarm and Automatic Isolation				
a. Liquid Radwaste Effluents Line	D(1)	P	R(3)	Q(2)
2. Flow Rate Monitors				
a. Liquid Radwaste Effluent Line	D(4)	N.A.	R	Q
b. Dilution Flow to Collection Box	D(4)	N.A.	R	Q

TABLE 4.3-15 (Continued)

TABLE NOTATION

(1) During releases via this pathway.

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if the instrument indicates measured levels above the alarm/trip setpoint.

(3) The initial CHANNEL CALIBRATION for radioactivity measurement instrumentation shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards should permit calibrating the system over its intended range of energy and rate capabilities. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration should be used, at intervals of at least once per eighteen months. For high range monitoring instrumentation, where calibration with a radioactive source is impractical, an electronic calibration may be substituted for the radiation source calibration.

(4) CHANNEL CHECK shall consist of verifying indication of flow during periods of release. CHANNEL CHECK shall be made at least once daily on any day on which continuous, periodic, or batch releases are made.

INSTRUMENTATION

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

LIMITING CONDITION FOR OPERATION

3.3.3.10 The radioactive gaseous effluent monitoring instrumentation channels shown in Table 3.3-16 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of Specification 3.11.2.1 are not exceeded. The alarm/trip setpoints of these channels shall be determined and adjusted in accordance with the methodology and parameters in the ODCM.

APPLICABILITY: As shown in Table 3.3-16.

ACTION:

a. With a radioactive gaseous effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above Specification, without delay suspend the release of radioactive gaseous effluents monitored by the affected channel, or declare the channel inoperable, or change the setpoint so it is acceptably conservative.

b. With less than the minimum number of radioactive gaseous effluent monitoring instrumentation channels OPERABLE, take the ACTION shown in Table 3.3-16. Exert best efforts to return the instruments to OPERABLE status within 30 days and, if unsuccessful, explain in the next Semiannual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.10 Each radioactive gaseous effluent monitoring instrumentation channel shall be demonstrated OPERABLE by performance of the CHANNEL CHECK, SOURCE CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations at the frequencies shown in Table 4.3-16.

TABLE 3.3-16

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	PARAMETER	ACTION
1. Waste Gas Decay System (provides automatic isolation)				
a. Noble Gas Activity Monitor	1	(1)	Radioactivity Measurement	25
b. Effluent System Flow Rate Measuring Device	1	(1)	System Flow Rate Measurement	26
2. Waste Gas System (provides alarm function)				
a. Oxygen Monitor	1	(2)	% Oxygen	28
3. Containment Purge Monitoring System (provides automatic isolation)				
a. Noble Gas Activity Monitor	1	(1)	Radioactivity Measurement	27

TABLE 3.3-16 (Continued)

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	PARAMETER	ACTION
4. Station Vent Stack (provides alarm function)				
a. Noble Gas Activity Monitor	1	(1)	Radioactivity Measurement	27
b. Iodine Sampler Cartridge	1	(1)	Verify Presence of Cartridge	29
c. Particulate Sampler Filter	1	(1)	Verify Presence of Filter	29
d. Effluent System Flow Rate Measuring Device	1	(1)	System Flow Rate Measurement	26
e. Sampler Flow Rate Measuring Device	1	(1)	Sampler Flow Rate Measurement	26

TABLE 3.3-16 (Continued)

TABLE NOTATION

(1) During radioactive waste gas releases via this pathway.

(2) During additions to the waste gas surge tank

ACTION 25 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the tank may be released to the environment provided that prior to initiating the release:

1. At least two independent samples are analyzed in accordance with Specification 4.11.2.1.1 for analyses performed with each batch;

2. At least two independent verifications of the release rate calculations are performed;

3. At least two independent verifications of the discharge valving are performed.

ACTION 26 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided the flow rate is estimated at least once per 12 hours.

ACTION 27 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided grab samples are taken at least once per 8 hours and these samples are analyzed for gross activity within 24 hours.

ACTION 28 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, additions to the waste gas surge tank may continue provided another method for ascertaining oxygen concentrations, such as grab sample analysis, is implemented to provide measurements at least once per four (4) hours during degassing and daily during other operations.

ACTION 29 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided samples are continuously collected with auxiliary sampling equipment, as required in Table 4.11-2.

TABLE 4.3-16

RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Waste Gas Decay System				
a. Noble Gas Activity Monitor	P(1)	P	R(5)	Q(3)
b. Effluent System Flow Rate	P (1)	N/A	R	Q
2. Waste Gas System				
a. Oxygen Monitor	D(2)	N/A	Q(6)	N/A
3. Containment Purge Vent System				
a. Noble Gas Activity Monitor	D(1)	P(7);M(8)	R(5)	Q(3)
4. Station Vent Stack				
a. Noble Gas Activity Monitor	D(1)	M	R(5)	Q(4)
b. Iodine Sampler	W(1)	N/A	N/A	N/A
c. Particulate Sampler	W(1)	N/A	N/A	N/A
d. System Effluent Flow Rate Measurement Device	D(1)	N/A	R	N/A
e. Sampler Flow Rate Measurement Device	W(1)	N/A	R	N/A

TABLE 4.3-16 (Continued)

TABLE NOTATION

(1) During radioactive waste gas releases via this pathway.

(2) During additions to the waste gas surge tank.

(3) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and control room alarm annunciation occurs if the instrument indicates measured levels above the alarm/trip setpoint.

(4) The CHANNEL FUNCTIONAL TEST shall also demonstrate that control room alarm annunciation occurs if the instrument indicates measured levels above the alarm/trip setpoint.

(5) The initial CHANNEL CALIBRATION for radioactivity measurement instrumentation shall be performed using one or more of the reference standards certified by the National Bureau of Standards or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS. These standards should permit calibrating the system over its intended range of energy and rate capabilities. For subsequent CHANNEL CALIBRATION, sources that have been related to the initial calibration should be used, at intervals of at least once per eighteen months. For high range monitoring instrumentation, where calibration with a radioactive source is impractical, an electronic calibration may be substituted for the radiation source calibration.

(6) The CHANNEL CALIBRATION shall include the use of standard gas samples containing a nominal:

1. One volume percent oxygen, balance nitrogen; and

2. Four volume percent oxygen, balance nitrogen.

(7) During containment purges.

(8) When used in a continuous mode.

3/4.11 RADIOACTIVE EFFLUENTS

3/4.11.1 LIQUID EFFLUENTS

CONCENTRATION

LIMITING CONDITION FOR OPERATION

3.11.1.1 The concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS (see Figure 3.11-1) shall be limited to the concentrations specified in 10 CFR Part 20.106 for radionuclides other than dissolved or entrained noble gases. For dissolved or entrained noble gases, the concentration shall be limited to 2×10^{-4} microcuries/ml.

APPLICABILITY: At all times.

ACTION:

a. With the concentration of radioactive material released in liquid effluents to UNRESTRICTED AREAS exceeding the above limits, without delay restore the concentration to within the above limits.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.1.1 Radioactive liquid wastes shall be sampled and analyzed according to the sampling and analysis program of Table 4.11-1.

4.11.1.1.2 The results of the radioactivity analyses shall be used in accordance with the methodology and parameters in the ODCM to assure that the concentrations at the point of release are maintained within the limits of Specification 3.11.1.1.

TABLE 4.11-1

RADIOACTIVE LIQUID WASTE SAMPLING AND ANALYSIS PROGRAM

Liquid Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (μCi/ml)[a]
A. Batch Waste Release Tanks[d]	P Each Batch	P Each Batch	Principal Gamma Emitters[f]	5×10^{-7} [b]
			I-131[f]	1×10^{-6}
	P One Batch/M	M	Dissolved and Entrained Gases	1×10^{-5}
	P Each Batch	M Composite[c]	H-3	1×10^{-5}
			Gross Alpha	1×10^{-7}
	P Each Batch	Q Composite[c]	Sr-89, Sr-90	5×10^{-8}
			Fe-55	1×10^{-6}
B. Turbine Building Sump/Storm Sewer Drain	Continuous	S[e]	Principal Gamma Emitters[f]	5×10^{-7} [b]
			I-131[f]	1×10^{-6}
C. Condensate Demineralizer Backwash	P Each Batch	P Each Batch	Principal Gamma Emitters[f]	5×10^{-7} [b]
			I-131[f]	1×10^{-6}

TABLE 4.11-1 (Continued)

TABLE NOTATION

a. The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95% probability with 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radio-chemical separation):

$$LLD = \frac{4.66\ s_b}{E \cdot V \cdot 2.22 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

where

LLD is the lower limit of detection as defined above (as pCi per unit mass or volume);

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute);

E is the counting efficiency (as counts per transformation);

V is the sample size (in units of mass or volume);

2.22 is the number of transformations per minute per picocurie;

Y is the fractional radiochemical yield (when applicable);

λ is the radioactive decay constant for the particular radionuclide;

Δt for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as an a posteriori (after the fact) limit for a particular measurement.

TABLE 4.11-1 (Continued)

TABLE NOTATION

b. The principal gamma emitters for which the LLD specification will apply are exclusively the following radionuclides: Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, and Ce-141. For Ce-144, the LLD is 2.0×10^{-6} μCi/ml. Other peaks which are measured and identified shall also be reported.

Nuclides which are below the LLD for the analysis should not be reported as being present at the LLD level. When unusual circumstances result in LLD's higher than required, the reasons shall be documented in the Semi-annual Radioactive Effluent Release Report.

c. A composite sample is one in which the method of sampling employed results is a specimen which is representative of the liquids released.

d. A batch release is the discharge of liquid wastes of a discrete volume.

e. When the monitor is out of service, a grab sample shall be taken and analyzed once every 12 hours if the condensate pump discharge exceeds 1×10^{-5} μCi/ml gross beta or gamma.

f. If an isotopic analysis is unavailable, gross beta or gamma measurement of batch release may be substituted provided the concentration released to the unrestricted area does not exceed 1×10^{-7} μCi/ml and a composite sample is analyzed for principal gamma emitters when instrumentation is available.

RADIOACTIVE EFFLUENTS

DOSE

LIMITING CONDITION FOR OPERATION

3.11.1.2 The dose or dose commitment to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released to UNRESTRICTED AREAS (see Figure 3.11-1) shall be limited:

a. During any calendar quarter to less than or equal to 1.5 mrems to the total body and to less than or equal to 5 mrems to any organ, and

b. During any calendar year to less than or equal to 3 mrems to the total body and to less than or equal to 10 mrems to any organ.

APPLICABILITY: At all times.

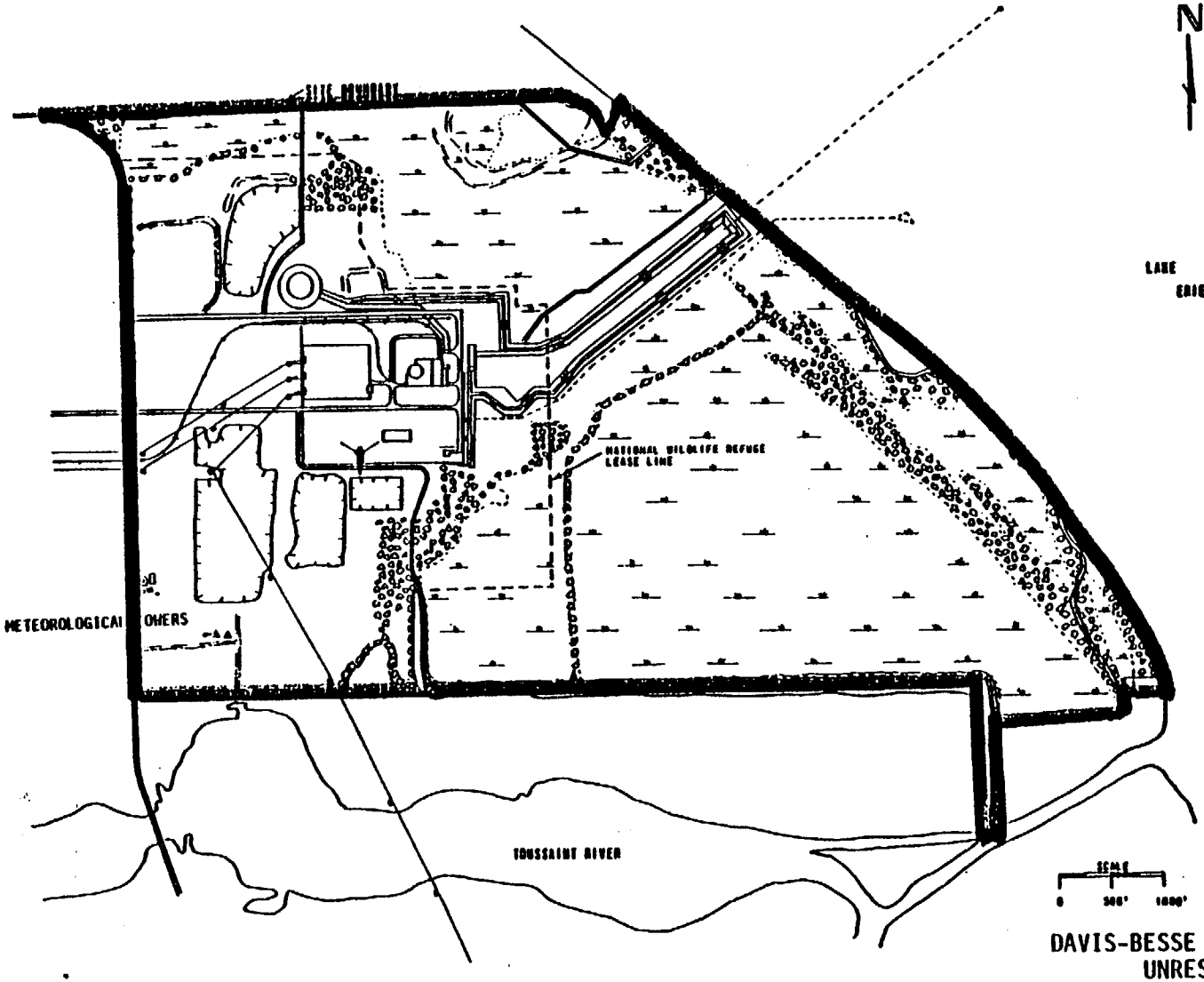
ACTION:

a. With the calculated dose from the release of radioactive materials in liquid effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.2 Cumulative dose contributions from liquid effluents for the current calendar quarter and the current calendar year shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.



DAVIS-BESSE NUCLEAR POWER STATION
UNRESTRICTED AREA
BOUNDARY FOR LIQUID EFFLUENTS
Fig. 3.11-1

RADIOACTIVE EFFLUENTS

LIQUID RADWASTE TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.11.1.3 The liquid radwaste treatment system shall be used to reduce the radioactive materials in liquid wastes prior to their discharge when the projected doses due to the liquid effluent to UNRESTRICTED AREAS (see Figure 3.11-1) would exceed 0.06 mrem to the total body or 0.2 mrem to any organ in a 31 day period.

APPLICABILITY: At all times.

ACTION:

a. With radioactive liquid waste being discharged without treatment and in excess of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2,a Special Report that includes the following information:

   1. Explanation of why liquid radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reason for the inoperability,

   2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and

   3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.3 In any month in which radioactive liquid effluent is being discharged without treatment, doses due to liquid releases to UNRESTRICTED AREAS shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM.

RADIOACTIVE EFFLUENTS

LIQUID HOLDUP TANKS*

LIMITING CONDITION FOR OPERATION

3.11.1.4 The quantity of radioactive material contained in each of the following unprotected outdoor tanks shall be limited to less than or equal to 10 curies, excluding tritium and dissolved or entrained noble gases.

a. Outside temporary tank.

APPLICABILITY: At all times.

ACTION:

a. With the quantity of radioactive material in any of the above listed tanks exceeding the above limit, immediately suspend all additions of radioactive material to the tank and within 48 hours reduce the tank contents to within the limit, and describe the event leading to this condition in the next Semiannual Radioactive Effluent Release Report.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.4 The quantity of radioactive material contained in each of the above listed tanks shall be determined to be within the above limit by analyzing a representative sample of the tank contents at least once per 7 days when radioactive materials are being added to the tank.

*Tanks included in this specification are those outdoor tanks that are not surrounded by liners, dikes, or walls capable of holding the tank contents or that do not have tank overflows and surrounding area drains connected to the liquid radwaste treatment system.

RADIOACTIVE EFFLUENTS

3/4.11.2 GASEOUS EFFLUENTS

DOSE RATE

LIMITING CONDITION FOR OPERATION

3.11.2.1 The dose rate due to radioactive materials released in gaseous effluents from the site to areas at and beyond the SITE BOUNDARY (see Figure 3.11-2) shall be limited to the following:

a. For noble gases: Less than or equal to 500 mrems/year to the total body and less than or equal to 3000 mrems/year to the skin, and

b. For iodine-131, for tritium, and for all radionuclides in particulate form with half lives greater than 8 days: Less than or equal to 1500 mrems/yr to any organ.

APPLICABILITY: At all times.

ACTION:

a. With the dose RATE(s) exceeding the above limits, without delay restore the release rate to within the above limit(s).

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.1.1 The dose rate due to noble gases in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM.

4.11.2.1.2 The dose rate due to iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents shall be determined to be within the above limits in accordance with the methodology and parameters in the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in Table 4.11-2.

TABLE 4.11-2

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

Gaseous Release Type	Sampling Frequency	Minimum Analysis Frequency	Type of Activity Analysis	Lower Limit of Detection (LLD) (μCi/ml)[a]
Waste Gas Decay	P Each Release Grab Sample	P Each Release	Principal Gamma Emitters[c]	1×10^{-4}
			H-3	1×10^{-6}
Containment Purge	P Each Purge Grab Sample	P Each Purge	Principal Gamma Emitters[c]	1×10^{-4}
			H-3	1×10^{-6}
Station Vent Stack	M Grab Sample	M	Principal Gamma Emitters[c]	1×10^{-4}
			H-3	1×10^{-6}
	Continuous[b]	W Charcoal Sample	I-131	1×10^{-12}
	Continuous[b]	W Particulate Sample	Principal Gamma Emitters[c]	1×10^{-11}
	Continuous[b]	M Composite Particulate Sample	Gross Alpha	1×10^{-11}
	Continuous[b]	Q Composite Particulate Sample	Sr-89, Sr-90	1×10^{-11}
	Continuous[b]	Noble Gas Monitor	Noble Gases Gross Beta or Gamma	1×10^{-6}

TABLE 4.11-2 (Continued)

TABLE NOTATION

a. The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95% probability with 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radio-chemical separation):

$$LLD = \frac{4.66\ s_b}{E \cdot V \cdot 2.22 \cdot Y \cdot \exp(-\lambda\Delta t)}$$

where

LLD is the lower limit of detection as defined above (as pCi per unit mass or volume);

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute);

E is the counting efficiency (as counts per transformation);

V is the sample size (in units of mass or volume);

2.22 is the number of transformations per minute per picocurie;

Y is the fractional radiochemical yield (when applicable);

λ is the radioactive decay constant for the particular radionuclide;

Δt for plant effluents is the elapsed time between the midpoint of sample collection and time of counting.

It should be recognized that the LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as a posteriori (after the fact) limit for a particular measurement.

b. The ratio of the sample flow rate to the sampled stream flow rate shall be known for the time period covered by each dose or dose rate calculation made in accordance with Specifications 3.11.2.1 and 3.11.2.3.

TABLE 4.11-2 (Continued)

TABLE NOTATION

c. The principal gamma emitters for which the LLD specification will apply are exclusively the following radionuclides: Kr-87, Kr-88, Xe-133, Xe-133m, Xe-135, and Xe-138 for gaseous emissions and Mn-54, Fe-59, Co-58, Co-60, Zn-65, Mo-99, Cs-134, Cs-137, Ce-141 and Ce-144 for particulate emissions. This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measured and identified, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses should be reported as "less than" the nuclide's LLD and should not be reported as being present at the LLD level for that nuclide. The "less than" values shall not be used in the required dose calculations. When unusual circumstances result in LLD's higher than required, the reasons shall be documented in the Semiannual Radioactive Effluent Release Report.

RADIOACTIVE EFFLUENTS

DOSE - NOBLE GASES

LIMITING CONDITION FOR OPERATION

3.11.2.2 The air dose due to noble gases released in gaseous effluents to areas at and beyond the SITE BOUNDARY (see Figure 3.11-2) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 5 mrads for gamma radiation and less than or equal to 10 mrads for beta radiation , and

b. During any calendar year: Less than or equal to 10 mrads for gamma radiation and less than or equal to 20 mrads for beta radiation.

APPLICABILITY: At all times.

ACTION:

a. With the calculated air dose from radioactive noble gases in gaseous effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.2 Cumulative dose contributions for the current calendar quarter and current calendar year for noble gases shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.

RADIOACTIVE EFFLUENTS

DOSE - IODINE-131, TRITIUM, AND RADIONUCLIDES IN PARTICULATE FORM

LIMITING CONDITION FOR OPERATION

3.11.2.3 The dose to a MEMBER OF THE PUBLIC from iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days in gaseous effluents released to areas at and beyond the SITE BOUNDARY (see Figure 3.11-2) shall be limited to the following:

a. During any calendar quarter: Less than or equal to 7.5 mrems to any organ and,

b. During any calendar year: Less than or equal to 15 mrems to any organ.

APPLICABILITY: At all times.

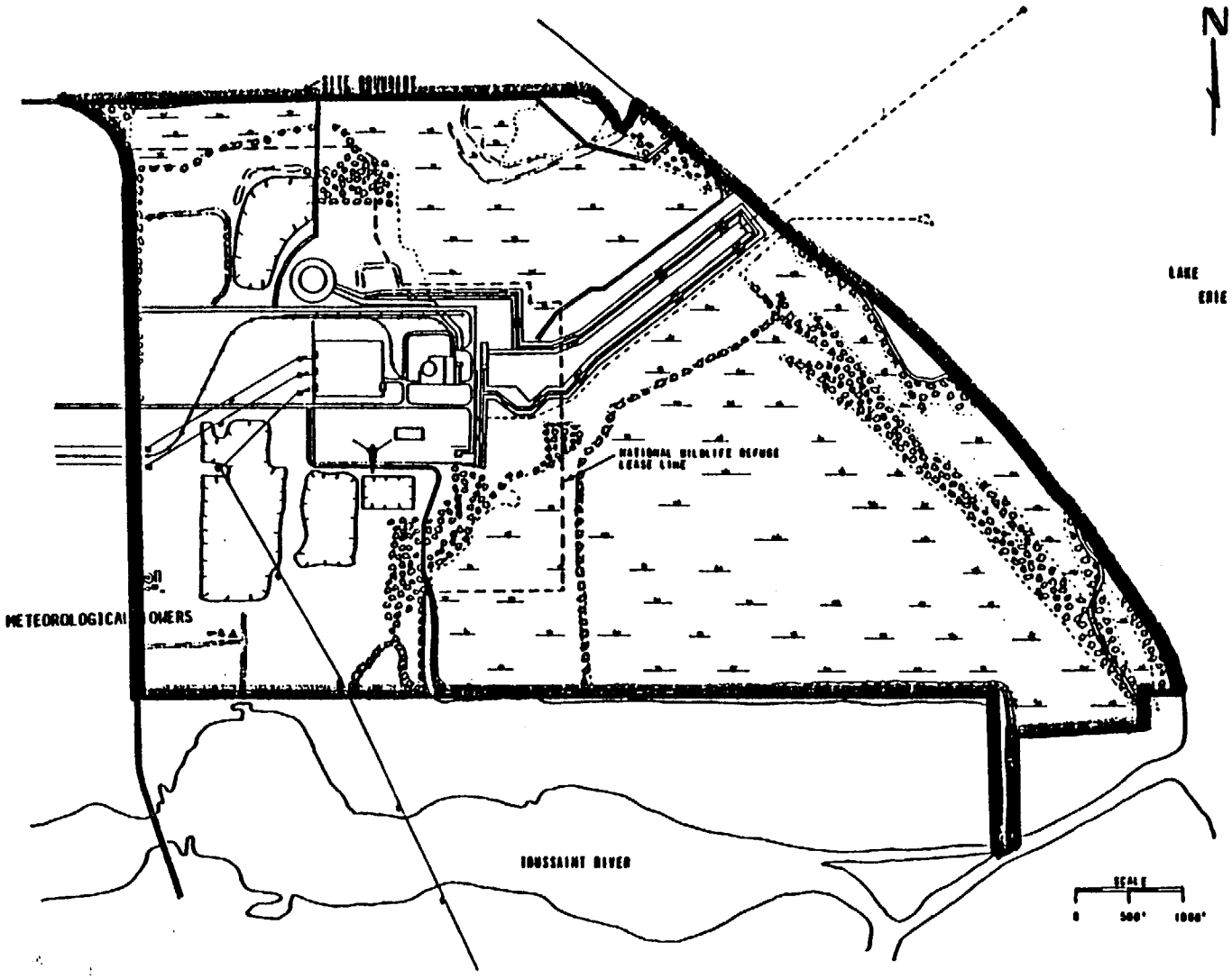
ACTION:

a. With the calculated dose from the release of iodine-131, tritium, and radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluents exceeding any of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit and defines the corrective actions that have been taken to reduce the releases and the proposed corrective actions to be taken to assure that subsequent releases will be in compliance with the above limits.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.3 Cumulative dose contributions for the current calendar quarter and current calendar year for iodine-131, tritium, and radionuclides in particulate form with half-lives greater than 8 days shall be determined in accordance with the methodology and parameters in the ODCM at least once per 31 days.



DAVIS-BESSE NUCLEAR POWER STATION
UNRESTRICTED AREA

BOUNDARY FOR GASEOUS EFFLUENTS
Fig. 3.11-2

RADIOACTIVE EFFLUENTS

GASEOUS RADWASTE TREATMENT SYSTEM

LIMITING CONDITION FOR OPERATION

3.11.2.4 The GASEOUS RADWASTE TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected gaseous effluent air doses due to gaseous effluent releases to areas at and beyond the SITE BOUNDARY (see Figure 3.11-2) would exceed 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation in a 31 day period. The VENTILATION EXHAUST TREATMENT SYSTEM shall be used to reduce radioactive materials in gaseous waste prior to their discharge when the projected doses due to gaseous effluent releases to areas at and beyond the SITE BOUNDARY (see Figure 3.11-2) would exceed 0.3 mrem to any organ in a 31 day period.

APPLICABILITY: At all times.

ACTION:

a. With the gaseous waste being discharged without treatment and in excess of the above limits, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that includes the following information:

   1. Explanation of why gaseous radwaste was being discharged without treatment, identification of any inoperable equipment or subsystems, and the reasons for the inoperability,

   2. Action(s) taken to restore the inoperable equipment to OPERABLE status, and

   3. Summary description of action(s) taken to prevent a recurrence.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.4 When systems are not being utilized, doses due to gaseous releases to areas at and beyond the SITE BOUNDARY shall be projected at least once per 31 days in accordance with the methodology and parameters in the ODCM.

RADIOACTIVE EFFLUENTS

EXPLOSIVE GAS MIXTURE (Hydrogen rich systems not designed to withstand a hydrogen explosion)

LIMITING CONDITION FOR OPERATION

3.11.2.5 The concentration of oxygen in the waste gas system shall be limited to less than or equal to 2% by volume whenever the hydrogen concentration exceeds 4% by volume.

APPLICABILITY: At all times.

ACTION:

a. With the concentration of oxygen in the waste gas system greater than 2% by volume but less than or equal to 4% by volume, reduce the oxygen concentration to the above limits, within 48 hours.

b. With the concentration of oxygen in the waste gas system greater than 4% by volume and the hydrogen concentration greater than 4% by volume, immediately suspend all additions of waste gases to the system and reduce the concentration of oxygen to less than or equal to 2% by volume without delay.

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.5 The concentrations of oxygen in the waste gas system shall be determined to be within the above limits by monitoring the waste gases in the waste gas system as required by Table 3.3-16 of Specification 3.3.3.10.

3/4.11.3 SOLID RADIOACTIVE WASTE

LIMITING CONDITION FOR OPERATION

3.11.3 The solid radwaste system shall be used in accordance with a PROCESS CONTROL PROGRAM to process wet radioactive wastes to meet shipping and destination burial ground requirements.

APPLICABILITY: At all times.

ACTION:

a. With the provisions of the PROCESS CONTROL PROGRAM not satisfied, suspend shipments of defectively processed or defectively packaged solid radioactive wastes from the site.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.3 THE PROCESS CONTROL PROGRAM shall be used to verify the SOLIDIFICATION or DEWATERING of at least one representative test specimen from at least 10% of the batches of each type of wet radioactive waste (e.g., filter sludges, spent resins, evaporator bottoms, boric acid solutions, and sodium sulfate solutions).

a. If any test specimen fails to verify SOLIDIFICATION, the SOLIDIFICATION of the batch under test shall be suspended until such time as additional test specimens can be obtained, alternative SOLIDIFICATION parameters can be determined in accordance with the PROCESS CONTROL PROGRAM, and a subsequent test verifies SOLIDIFICATION. SOLIDIFICATION of the batch may then be resumed using the alternative SOLIDIFICATION parameters determined by the PROCESS CONTROL PROGRAM.

b. If the initial test specimen from a batch of waste fails to verify SOLIDIFICATION, the PROCESS CONTROL PROGRAM shall provide for the collection and testing of representative test specimens from each consecutive batch of the same type of wet waste until at least 3 consecutive initial test specimens demonstrate SOLIDIFICATION. The PROCESS CONTROL PROGRAM shall be modified as required, as provided in Specification 6.14, to assure SOLIDIFICATION of subsequent batches of waste.

3/4.11.3 SOLID RADIOACTIVE WASTE

SURVEILLANCE REQUIREMENTS (Continued)

c. If any test specimen fails to verify DEWATERING, the DEWATERING of that batch under test shall be suspended. Alternate DEWATERING parameters can be determined using the PROCESS CONTROL PROGRAM. If a subsequent test verifies DEWATERING, DEWATERING of the batch may be resumed using the alternative parameters determined by the PROCESS CONTROL PROGRAM.

d. If the test specimen fails to verify DEWATERING, the PROCESS CONTROL PROGRAM shall provide for the testing of a representative specimen of the same type wet waste from consecutive batches until at least 3 test specimens demonstrate DEWATERING. The PROCESS CONTROL PROGRAM shall be modified as provided in Specification 6.14 to assure DEWATERING of subsequent batches of waste.

3/4.11.4 TOTAL DOSE

LIMITING CONDITION FOR OPERATION

3.11.4 The annual (calendar year) dose or dose commitment to any MEMBER OF THE PUBLIC due to releases of radioactivity and to radiation from uranium fuel cycle sources shall be limited to less than or equal to 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

APPLICABILITY: At all times.

ACTION:

a. With the calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding twice the limits of Specification 3.11.1.2.a, 3.11.1.2.b, 3.11.2.2.a, 3.11.2.2.b, 3.11.2.3.a, or 3.11.2.3.b, evaluations should be made including direct radiation contributions from the reactor units and from outside storage tanks to determine whether the above limits of Specification 3.11.4 have been exceeded. If such is the case, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that defines the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the above limits and includes the schedule for achieving conformance with the above limits. This Special Report, as defined in 10 CFR Part 20.405c, shall include an analysis that estimates the radiation exposure (dose) to a MEMBER OF THE PUBLIC from uranium fuel cycle sources, including all effluent pathways and direct radiation, for the calendar year that includes the release(s) covered by this report. It shall also describe levels of radiation and concentrations of radioactive material involved, and the cause of the exposure levels or concentrations. If the estimated dose(s) exceeds the above limits, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, the Special Report shall include a request for a variance in accordance with the provisions of 40 CFR Part 190. Submittal of the report is considered a timely request, and a variance is granted until staff action on the request is complete.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.4. Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with Specifications 4.11.1.2, 4.11.2.2, and 4.11.2.3, and in accordance with the methodology and parameters in the ODCM.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.1 MONITORING PROGRAM

LIMITING CONDITIONS FOR OPERATIONS

3.12.1 The radiological environmental monitoring program shall be conducted as specified in Table 3.12-1.

APPLICABILITY: At all times.

ACTION:

a. With the radiological environmental monitoring program not being conducted as specified in Table 3.12-1, in lieu of a Licensee Event Report, prepare and submit to the Commission, in the Annual Radiological Environmental Operating Report required by Specification 6.9.1.11, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence.

b. With the level of radioactivity as the result of plant effluents in an environmental sampling medium at a specified location exceeding the reporting levels of Table 3.12-2 when averaged over any calendar quarter, in lieu of a Licensee Event Report, prepare and submit to the Commission within 30 days, pursuant to Specification 6.9.2, a Special Report that identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce radioactive effluents so that the potential annual dose to A MEMBER OF THE PUBLIC is less than the calendar year limits of Specification 3.11.1.2, 3.11.2.2, and 3.11.2.3. When more than one of the radionuclides in Table 3.12-2 are detected in the sampling medium, this report shall be submitted if:

$$\frac{\text{concentration (1)}}{\text{reporting level (1)}} + \frac{\text{concentration (2)}}{\text{reporting level (2)}} + \ldots \geq 1.0$$

When radionuclides other than those in Table 3.12-2 are detected and are the result of plant effluents, this report shall be submitted if the potential annual dose to A MEMBER OF THE PUBLIC is equal to or greater than the calendar year limits of Specifications 3.11.1.2, 3.11.2.2 and 3.11.2.3. This report is not required if the measured level of radioactivity was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Operating Report.

c. With milk or fresh leafy vegetable samples unavailable from one or more of the sample locations required by Table 3.12-1, identify locations for obtaining replacement samples and if practical add them to the radiological environmental monitoring program within 30 days. The locations from which samples were unavailable may then be deleted from the monitoring program. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.11, identify the cause of the unavailability of samples and identify the new location(s) for obtaining replacement samples in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

d. With specimens unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons, every effort will be made to complete corrective action prior to the end of the next sampling period. All deviations from the sampling schedule will be documented in the Annual Radiological Environmental Operating Report pursuant to Specification 6.1.1.10.

e. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.1.1 The radiological environmental monitoring samples shall be collected pursuant to Table 3.12-1 from the specific locations given in the table and figure(s) in the ODCM and shall be analyzed pursuant to the requirements of Table 3.12-1, and the detection capabilities required by Table 4.12-1.

4.12.1.2 Cumulative potential dose contributions for the current calendar year from radionuclides detected in environmental samples shall be determined in accordance with the methodology and parameters in the ODCM.

TABLE 3.12-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations[a]	Collection Frequency	Type and Frequency of Analysis
1. DIRECT RADIATION[b]	27 routine monitoring stations either with two or more dosimeters or with one instrument for measuring and recording dose rate continuously, placed as follows: an inner ring of stations, generally one in each meteorological sector in the general area of the SITE BOUNDARY; an outer ring of stations, one in each meteorological sector in the 6- to 8-km range from the site, except the sectors over Lake Erie; the balance of the stations to be placed in special interest areas such as population centers, nearby residences, schools, and in 1 or 2 areas to serve as control stations.	Quarterly	Gamma dose quarterly

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations[a]	Collection Frequency	Type and Frequency of Analysis
2. AIRBORNE			
Radioiodine and Particulates	Samples from 5 locations 3 samples from close to the 3 SITE BOUNDARY locations, in different sectors, generally from areas of higher calculated annual average groundlevel D/Q. 1 sample from the vicinity of a nearby community, generally in the area of higher calculated annual average groundlevel D/Q. 1 sample from a control location, 15-30 km distant.	Continuous sampler operation with sample collection weekly, or more frequently if required by dust loading	Radioiodine Cannister: I-131 analysis weekly. Particulate Sampler: Gross beta radioactivity analysis following filter change;[c] Gamma isotopic analysis[d] of composite (by location) quarterly.
3. WATERBORNE			
a. Surface	2 samples	Weekly composite sample (Indicator location is a continuous, composite trickle-feed)	Composite for tritium[d] and gamma isotopic[d] analysis monthly.
b. Ground	Sample from one source only if likely to be affected[e]	Quarterly	Gamma isotopic[d] and tritium analysis quarterly.

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations[a]	Collection Frequency	Type and Frequency of Analysis
c. Drinking	1 sample from the nearest source. 1 sample from a control location	Weekly composite sample.	Gross beta on monthly composite. Tritium[d] and gamma isotopic[d] analysis on quarterly composite. I-131 analysis on each composite when the dose calculated for the consumption of the water is greater than 1 mrem per year.
d. Sediment from Shoreline	1 sample from area with existing or potential recreational value	Semiannually	Gamma isotopic analysis[d] semiannually.
4. INGESTION			
a. Milk	If available, samples from milking animals up to 2 locations within 8 km distance having the highest dose potential. 1 sample from milking animals at a control location 15-30 km distant and generally in a less prevalent wind direction.	Semimonthly when animals are on pasture, monthly at other times	Gamma isotopic[d] and I-131 analysis semi-monthly when animals are on pasture; monthly at other times.

TABLE 3.12-1 (Continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

Exposure Pathway and/or Sample	Number of Representative Samples and Sample Locations[a]	Collection Frequency	Type and Frequency of Analysis
b. Fish	1 sample each of 2 commercially and/or recreationally important species in vicinity of site.	1 sample in season.	Gamma isotopic analysis[d] on edible portions.
	1 sample of same species in areas not influenced by plant discharge.		
c. Food Products	Samples of up to 3 different kinds of broad leaf vegetation growth in two different offsite locations of higher predicted annual average ground-level D/Q if milk sampling is not performed.	Monthly when available.	Gamma isotopic[d] and I-131 analysis.
	1 sample of each of the similar broad leaf vegetation grown 15-30 km distant in a less prevalent wind direction if milk sampling is not performed.	Monthly when available.	Gamma isotopic[d] and I-131 analysis.

TABLE 3.12-1 (Continued)

TABLE NOTATION

[a]Specific parameters of distance and direction sector from the centerline of one reactor, and additional description where pertinent, shall be provided for each and every sample location in Table 3.12-1 in a table and figure(s) in the ODCM. Refer to NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants". October 1978, and to Radiological Assessment Branch Technical Position, Revision 1, November 1979. It is recognized that, at times, it may not be possible or practicable to continue to obtain samples of the media of choice at the most desired location or time. In these instances suitable alternative media and locations may be chosen for the particular pathway in question and appropriate substitutions made within 30 days in the radiological environmental monitoring program. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.11, identify the cause of the unavailability of samples for that pathway and identify the new location(s) for obtaining replacement samples in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

[b]One or more instruments, such as a pressurized ion chamber, for measuring and recording dose rate continuously may be used in place of, or in addition to, integrating dosimeters. For the purposes of this table, a thermoluminescent dosimeter (TLD) is considered to be one phosphor; two or more phosphors in a packet are considered as two or more dosimeters. Film badges shall not be used as dosimeters for measuring direct radiation. The number of direct radiation monitoring stations may be reduced according to geographical limitations; e.g., at an ocean site, some sectors will be over water so that the number of dosimeters may be reduced accordingly. The frequency of analysis or readout for TLD systems will depend upon the characteristics of the specific system used and should be selected to obtain optimum dose information with minimal fading.

[c]Airborne particulate sample filters shall be analyzed for gross beta radioactivity 24 hours or more after sampling to allow for radon and thoron daughter decay. If gross beta activity in air particulate samples is greater than ten times the yearly mean of control samples, gamma isotopic analysis shall be performed on the individual samples.

[d]Gamma isotopic analysis means the identification and quantification of gamma emitting radionuclides that may be attributable to the effluents from the facility.

[e]Groundwater samples shall be taken when this source is tapped for drinking or irrigation purposes in areas where the hydraulic gradient or recharge properties are suitable for contamination.

TABLE 3.12-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

Analysis	Reporting Levels				
	Water (pCi/l)	Airborne Particulate or Gases (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Vegetables (pCi/kg, wet)
H-3	2×10^4*				
Mn-54	1×10^3		3×10^4		
Fe-59	4×10^2		1×10^4		
Co-58	1×10^3		3×10^4		
Co-60	3×10^2		1×10^4		
Zn-65	3×10^2		2×10^4		
Zr-Nb-95	4×10^2				
I-131	2	0.9		3	1×10^2
Cs-134	30	10	1×10^3	60	1×10^3
Cs-137	50	20	2×10^3	70	2×10^3
Ba-La-140	2×10^2			3×10^2	

*For drinking water samples, this is the 40 CFR 141 value. If no drinking water pathway exists, a value of 30,000 pCi/liter may be used.

TABLE 4.12-1

LOWER LIMITS OF DETECTION (LLD)[a]

Analysis	Water (pCi/l)	Airborne Particulate Or Gas (pCi/m^3)	Fish (pCi/kg, wet)	Milk (pCi/l)	Food Products (pCi/kg, wet)	Sediment (pCi/kg, dry)
Gross Beta	4[b]	1×10^{-2}				
^{3}H	2000[c]*					
^{54}Mn	15		130			
^{59}Fe	30		260			
$^{58}, ^{60}Co$	15		130			
^{65}Zn	30		260			
^{95}Zr	15					
^{131}I	1[d]	7×10^{-2}		1	60	
$^{134}, ^{137}Cs$	15(10[b]),18	6×10^{-2}	130	15	60	150
^{140}Ba	15			15		

NOTE: This list does not mean that only these nuclides are to be detected and reported. Other peaks which are measurable and identifiable, together with the above nuclides, shall be identified and reported.

*If no drinking water pathway exists, a value of 3000 pCi/L may be used.

TABLE 4.12-1 (Continued)

TABLE NOTATION

a. The LLD is the smallest concentration of radioactive material in a sample that will be detected with 95% probability with 5% probability of falsely concluding that a blank observation represents a "real" signal.

For a particular measurement system (which may include radiochemical separation):

$$LLD = \frac{4.66\ s_b}{E \cdot V \cdot 2.22 \cdot Y \cdot \exp(-\lambda \Delta t)}$$

where

LLD is the lower limit of detection as defined above (as pCi per unit mass or volume).

s_b is the standard deviation of the background counting rate or of the counting rate of a blank sample as appropriate (as counts per minute).

E is the counting efficiency (as counts per transformation).

V is the sample size (in units of mass or volume).

2.22 is the number of transformations per minute per picocurie.

Y is the fractional radiochemical yield (when applicable).

λ is the radioactive decay constant for the particular radionuclide.

Δt is the elapsed time between end of the sample collection period and time of counting.

Typical values of E, V, Y and Δt should be used in the calculations.

TABLE 4.12-1 (Continued)

TABLE NOTATION

The LLD is defined as an a priori (before the fact) limit representing the capability of a measurement system and not as a posteriori (after the fact) limit for a particular measurement.

Analyses shall be performed in such a manner that the stated LLDs will be achieved under routine conditions. Occasionally background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or uncontrollable circumstances may render these LLDs unachievable. In such cases, the contributing factors will be identified and described in the Annual Radiological Environmental Operating Report.

For more complete discussion of the LLD and other detection limits, see the following:

(1) HASL Procedures Manual, HASL-300 (revised annually).

(2) Currie, L.A., "Limits for Qualitative Detection and Quantitative Determination - Application to Radiochemistry" Anal. Chem. 40, 586-93 (1968).

(3) Hartwell, J. K., "Detection Limits for Radioisotopic Counting Techniques", Atlantic Richfield Hanford Company Report ARH-2537 (June 22, 1972).

b. LLD for drinking water.

c. If no drinking water pathway exists, a value of 3000 pCi/liter may be used.

d. LLD only when specific analysis for I-131 required.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

3/4.12.2 LAND USE CENSUS

LIMITING CONDITIONS FOR OPERATIONS

3.12.2 A land use census shall be conducted and shall identify within a distance of 8 km (5 miles) the location in each of the 16 meteorological sectors of the nearest milk animal, the nearest residence and the nearest garden of greater than 50 m^2 (500 ft^2) producing broad leaf vegetation.

APPLICABILITY: At all times.

ACTION:

a. With a land use census identifying a location(s) that yields a calculated dose or dose commitment greater than the values currently being calculated in Specification 4.11.2.3, in lieu of a Licensee Event Report, identify the new location(s) in the next Semiannual Radioactive Effluent Release Report, pursuant to Specification 6.9.1.11.

b. With a land use census identifying a location(s) that yields a calculated dose or dose commitment (via the same exposure pathway) 20 percent greater than at a location from which samples are currently being obtained in accordance with Specification 3.12.1, add the new location(s) if practical to the radiological environmental monitoring program within 30 days. The sampling location(s), excluding the control station location, having a lower calculated dose or dose commitment(s), via the same exposure pathway, may be deleted from this monitoring program. In lieu of a Licensee Event Report and pursuant to Specification 6.9.1.11, identify the new location(s) in the next Semiannual Radioactive Effluent Release Report and also include in the report a revised figure(s) and table for the ODCM reflecting the new location(s).

c. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.2 The land use census shall be conducted during the growing season at least once per 12 months using that information that will provide the best results, such as by a door-to-door survey, aerial survey, or by consulting local agriculture authorities. The results of the land use census shall be included in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.10.

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

LIMITING CONDITION FOR OPERATION

3.12.3 Analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program that has been approved by the Commission.

APPLICABILITY: At all times.

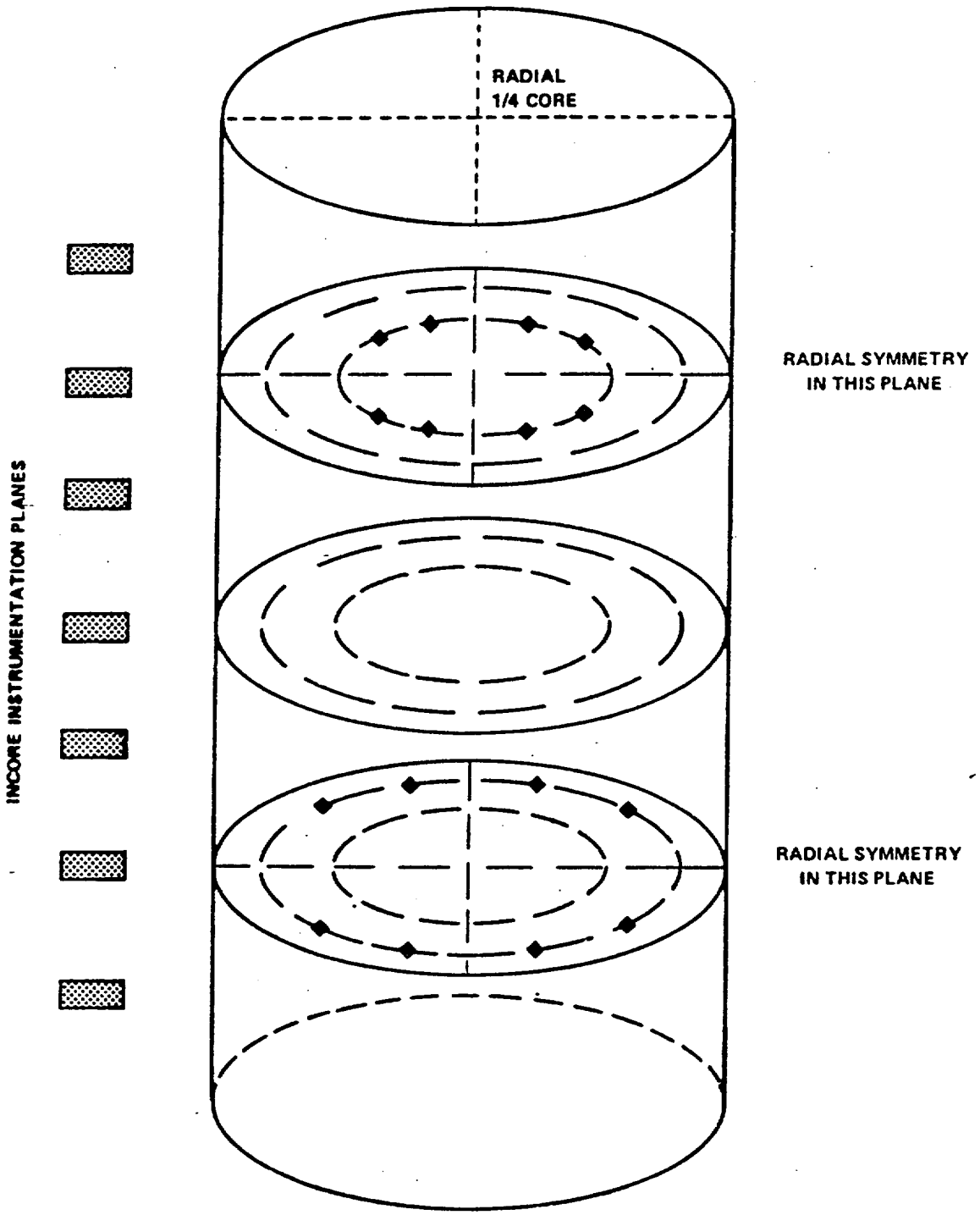
ACTION:

a. With analyses not being performed as required above, report the corrective actions taken to prevent a recurrence to the Commission in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.10.

b. The provisions of Specifications 3.0.3 and 3.0.4 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.3 A summary of the results obtained as part of the above required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Operating Report pursuant to Specification 6.9.1.10.



Bases Figure 3-2 Incore Instrumentation Specification Acceptable Minimum QUADRANT POWER TILT Arrangement

3/4.3.3.9 RADIOACTIVE LIQUID EFFLUENT INSTRUMENTATION

The radioactive liquid effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in liquid effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with methods in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20.

3/4.3.3.10 RADIOACTIVE GASEOUS EFFLUENT INSTRUMENTATION

The radioactive gaseous effluent instrumentation is provided to monitor and control, as applicable, the releases of radioactive materials in gaseous effluents during actual or potential releases. The alarm/trip setpoints for these instruments shall be calculated in accordance with methods in the ODCM to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. This instrumentation also includes provisions for monitoring the concentrations of potentially explosive gas mixtures in the waste gas holdup system. The OPERABILITY and use of this instrumentation is consistent with the requirements of General Design Criteria 60, 63 and 64 of Appendix A to 10 CFR Part 50.

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 20.106. This limitation as implemented by the ODCM provides additional assurance that the levels of radioactive materials in bodies of water outside the site should not result in exposures exceeding (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 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 implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in liquid effluents will be kept "as low as is reasonably 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 is to be shown by calculational procedures based on modes 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 are 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.

3/4.11.1.3 LIQUID WASTE TREATMENT

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 reasonably achievable". This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50 and design objective Section II.D of Appendix A to 10 CFR Part 50. Based on a cost analysis of treating liquid radwaste, the specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as the dose design objectives as 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 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 a member of the public outside the site boundary to annual average concentrations exceeding the limits specified in Appendix B, Table II of 10 CFR Part 20 (10 CFR Part 20.106(a)). For members of the public who may at times be within the site boundary, the occupancy of that member of the public will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the site boundary. The specified release limits restrict the corresponding gamma and beta doses above background to an individual at or beyond the unrestricted area boundary to $\leq$ 500 mrem/year to the total body or to $\leq$ 3000 mrem/year to the skin. These release limits also restrict, at all times, the corresponding thyroid doses above background to a child via the inhalation pathway to $\leq$ 1500 mrem/year.

3/4.11.2.2 DOSE, NOBLE GASES

This specification is provided to implement the requirements of Sections II.B, 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.B of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive material in gaseous effluents will be kept "as low as is reasonably achievable." The Surveillance Requirements implement the requirements in Section III.A of Appendix I that conform with the guides of Appendix I to be shown by calculation procedures based on models and data such that the actual exposure of an individual through the appropriate pathways is unlikely to be substantially underestimated. The dose calculations established in the ODCM for calculating the doses due to the actual release rates of radioactive noble gases in gaseous effluents are 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 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977.

3/4.11.2.3 DOSE, RADIOIODINES, RADIOACTIVE MATERIAL IN PARTICULATE FORM AND RADIONUCLIDES OTHER THAN NOBLE GASES

This specification is provided to implement the requirements of Sections II.C, III.A and IV.A of Appendix I, 10 CFR Part 50. The Limiting Conditions for Operation are the guides set forth in Section II.C of Appendix I. The ACTION statements provide the required operating flexibility and at the same time implement the guides set forth in Section IV.A of Appendix I to assure that the releases of radioactive materials in gaseous effluents will be kept "as low as is reasonably achievable." The ODCM calculational methods specified in the surveillance requirements 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 ODCM methods for calculating the doses due to the actual release rates of the subject materials are consistent with the methodology provided in Regulatory Guide 1.109, "Calculating 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 I, October 1977 and Regulatory Guide 1.111, "Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents in Routine Releases from Light-Water-Cooled Reactors," Revision 1, July 1977.

The release rate specifications for radioiodines, radioactive material in particulate form and radionuclides other than noble gases are dependent on the existing radionuclide pathways to man, in the unrestricted area. The pathways which are examined in the development of these calculations are: 1) individual inhalation of airborne radionuclides, 2) deposition of radionuclides onto green leafy vegetation with subsequent consumption by man, 3) deposition onto grassy areas where milk animals and meat producing animals graze with consumption of the milk and meat by man, and 4) deposition on the ground with subsequent exposure of man.

3/4.11.2.4 GASEOUS RADWASTE TREATMENT SYSTEM

The requirements that the appropriate portions of these systems be used, when specified, provides reasonable assurance that the releases of radioactive materials in gaseous effluents will be kept "as low as reasonably achieveable". This specification implements the requirements of 10 CFR Part 50.36a, General Design Criterion 60 of Appendix A to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the systems were specified as a suitable fraction of the dose design objectives set forth in Sections II.B and II.C of Appendix I, 10 CFR Part 50, for gaseous effluents.

3/4.11.2.5 EXPLOSIVE GAS MIXTURE

This specification is provided to ensure that the concentration of potentially explosive gas mixtures contained in the waste gas treatment system is maintained below the flammability limits of hydrogen with oxygen. Maintaining the concentration of hydrogen or oxygen below their flammability limits provides assurance that the releases of radioactive materials will be controlled in conformance with the requirements of General Design Criterion 60 of Appendix A to 10 CFR Part 50.

3/4.11.3. SOLID RADIOACTIVE WASTE

The requirements for solid radioactive waste handling and disposal given under this specification provide assurance that solid radioactive materials shipped offsite, meet destination disposal site requirements and are packaged in conformance with 10 CFR Part 20, 10 CFR Part 71, and 49 CFR Parts 170-178.

3/4.11.4 TOTAL DOSE

This specification is provided to meet the dose limitations of 40 CFR Part 190 that have been incorporated into 10 CFR Part 20 by 46 FR 18525. The specification requires the preparation and submittal of a Special Report whenever the calculated doses from plant generated radioactive effluents and direct radiation exceed 25 mrems to the total body or any organ, except the thyroid, which shall be limited to less than or equal to 75 mrems.

For sites containing up to 4 reactors, it is highly unlikely that the resultant dose to a MEMBER OF THE PUBLIC will exceed the dose limits of 40 CFR Part 190 if the individual reactors remain within twice the dose design objectives of Appendix I, and if direct radiation doses from the reactor units and outside storage tanks are kept small. The Special Report will describe a course of action that should result in the limitation of the annual dose to a MEMBER OF THE PUBLIC to within the 40 CFR Part 190 limits. For the purposes of the Special Report, it may be assumed that the dose commitment to the MEMBER OF THE PUBLIC from other uranium fuel cycle sources is negligible, with the exception that dose contributions from other nuclear fuel cycle facilities at the same site or within a radius of 8 km must be considered. If the dose to any MEMBER OF THE PUBLIC is estimated to exceed the requirements of 40 CFR Part 190, the Special Report with a request for a variance (provided the release conditions resulting in violation of 40 CFR Part 190 have not already been corrected), in accordance with the provisions of 40 CFR Part 190.11 and 10 CFR Part 20.405c, is considered to be a timely request and fulfills the requirements of 40 CFR Part 190 until NRC staff action is completed. The variance only relates to the limits of 40 CFR Part 190, and does not apply in any way to the other requirements for dose limitation of 10 CFR Part 20, as addressed in Specifications 3.11.1.1 and 3.11.2.1. An individual is not considered a MEMBER OF THE PUBLIC during any period in which he/she is engaged in carrying out any operation that is part of the nuclear fuel cycle.

3/4.12 RADIOLOGICAL ENVIRONMENTAL MONITORING

BASES

3/4.12.1 MONITORING PROGRAM

The radiological monitoring program required by this specification provides measurements of radiation and of radioactive materials in those exposure pathways and for those radionuclides which lead to the highest potential radiation exposures of individuals resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by measuring concentrations of radioactive materials and levels of radiation which may be compared with those expected on the basis of the effluent measurements and modeling of the environmental exposure pathways.

3/4.12.2 LAND USE CENSUS

This specification is provided to ensure that changes in the use of unrestricted areas are identified and that modifications to the monitoring program are made if required by the results of this census. This census satisfies the requirements of Section IV.B.3 of Appendix I to 10 CFR Part 50. Restricting the census to gardens of greater than 50 m^2 provides assurance that significant exposure pathways via leafy vegetables will be identified and monitored since a garden of this size is the minimum required to produce the quantity (26 kg/year) of leafy vegetables assumed in Regualtory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were made: 1) 20% of the garden was used for growing broad leaf vegetation (i.e., similar to lettuce and cabbage), and 2) a vegetation yield of 2 kg/m^2.

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

The requirement for participation in an approved Interlaboratory Comparison Program is provided to ensure that independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices are performed as part of the quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid for the purposes of Section IV.B.2 of Appendix I to 10 CFR Part 50.

c. Review of all proposed changes to Appendix "A" Technical Specifications.

d. Review of all proposed changes or modifications to plant systems or equipment that affect nuclear safety.

e. Investigation of all violations of the Technical Specifications including preparation and forwarding of reports covering evaluation and recommendations to prevent recurrence to the Vice President - Nuclear and to the Chairman of the Company Nuclear Review Board.

f. Review of events requiring 24 hour written notification to the Commission.

g. Review of facility operations to detect potential safety hazards.

h. Performance of special reviews, investigations and analyses and reports thereon as requested by the Chairman of the Company Nuclear Review Board.

i. Review of the Plant Security Plan and implementing procedures and shall submit recommended changes to the Chairman of the Company Nuclear Review Board.

j. Review of the Emergency Plan and implementing procedures and shall submit recommended changes to the Chairman of the Company Nuclear Review Board.

k. Review of any unplanned, accidental or uncontrolled radioactive releases, evaluation of the event, ensurance that remedial action is identified to prevent recurrence, review of a report covering the evaluation and forwarding of the report to the Station Superintendent and to the CNRB.

l. Review of the OFFSITE DOSE CALCULATION MANUAL and implementation of procedures at least once per 24 months.

m. Review of the PROCESS CONTROL PROGRAM and implementation of procedures for processing and packaging of radioactive wastes at least once per 24 months.

n. Review of the Annual Radiological Environmental Operating Report.

o. Review of the Semiannual Radioactive Effluent Release Report.

AUTHORITY

6.5.1.7 The Station Review Board shall:

a. Recommend to the Station Superintendent written approval or disapproval of items considered under 6.5.1.6(a) through (d) above.

b. Render determinations in writing with regard to whether or not each item considered under 6.5.1.6(a) through (e) above constitutes an unreviewed safety question.

c. Provide written notification within 24 hours to the Vice President, Nuclear and the Company Nuclear Review Board of disagreement between the SRB and the Station Superintendent; however, the Station Superintendent shall have responsibility for resolution of such disagreements pursuant to 6.1.1 above.

RECORDS

6.5.1.8 The Station Review Board shall maintain written minutes of each meeting and copies shall be provided to the Vice President, Nuclear and Chairman of the Company Nuclear Review Board.

6.5.2 COMPANY NUCLEAR REVIEW BOARD (CNRB)

FUNCTION

6.5.2.1 The Company Nuclear Review Board (CNRB) shall function to provide independent review and audit of designated activities in the areas of:

a. Nuclear power plant operations,

b. Nuclear engineering,

c. Chemistry and radiochemistry,

d. Metallurgy,

e. Instrumentation and control,

f. Radiological safety,

g. Mechanical and electrical engineering, and

h. Quality assurance practices.

AUDITS

6.5.2.8 Audits of facility activities shall be performed under the cognizance of the CNRB. These audits shall encompass:

a. The conformance of unit operation to provisions contained within the Technical Specifications and applicable license conditions at least once per 12 months.

b. The performance, training and qualifications of the entire station staff at least once per 12 months.

c. The results of actions taken to correct deficiencies occurring in unit equipment, structures, systems or method of operation that affect nuclear safety at least once per 6 months.

d. The performance of activities required by the Quality Assurance Program to meet the criteria of Appendix "B", 10 CFR 50, at least once per 24 months.

e. The Station Emergency Plan and implementing procedures at least once per 12 months.

f. The Station Security Plan and implementing procedures at least once per 12 months.

g. Any other area of facility operation considered appropriate by the CNRB.

h. The Facility Fire Protection Program and implementing procedures at least once per 24 months.

i. An independent fire protection and loss prevention program inspection and audit shall be performed at least once per 12 months utilizing either qualified offsite licensee personnel or an outside fire protection firm.

j. An inspection and audit of the fire protection and loss prevention program shall be performed by a qualified outside fire consulant at least once per 36 months.

k. The performance of activities required by the Quality Assurance Program to meet the provisions of Regulatory Guide 1.21, Revision 1, June 1974 and Regulatory Guide 4.1, Revision 1, April 1975 at least once per 12 months.

AUTHORITY

6.5.2.9 The Company Nuclear Review Board shall report to and advise the President and Chief Operating Officer on those areas of responsibility specified in Sections 6.5.2.7 and 6.5.2.8.

RECORDS

6.5.2.10 Records of Company Nuclear Review Board activities shall be prepared, approved and distributed as indicated below:

a. Minutes of each CNRB meeting shall be prepared, approved and forwarded to the President and Chief Operating Officer and CNRB members within 14 days following each meeting.

b. Reports of reviews encompassed by Section 6.5.2.7 above, shall be prepared, approved and forwarded to the President and Chief Operating Officer and CNRB members within 14 days following completion of the review.

c. Audit reports encompassed by Section 6.5.2.8 above, shall be forwarded to the President and Chief Operating Officer and CNRB members and to the management positions responsible for the areas audited within 30 days after completion of the audit.

6.6 REPORTABLE OCCURRENCE ACTION

6.6.1 The following actions shall be taken for REPORTABLE OCCURRENCES:

a. The Commission shall be notified and/or a report submitted pursuant to the requirements of Specification 6.9.

b. Each REPORTABLE OCCURRENCE requiring 24 hour notification to the Commission shall be reviewed by the SRB and submitted to the CNRB.

6.7 SAFETY LIMIT VIOLATION

6.7.1 The following actions shall be taken in the event a Safety Limit is violated:

a. The facility shall be placed in at least HOT STANDBY within one hour.

b. The Safety Limit violation shall be reported to the Commission, the Vice President, Nuclear and to the CNRB within 24 hours.

c. A Safety Limit Violation Report shall be prepared. The report shall be reviewed by the SRB. This report shall describe (1) applicable circumstances preceding the violation, (2) effects of the violation upon facility components, systems or structures, and (3) corrective action taken to prevent recurrence.

d. The Safety Limit Violation Report shall be submitted to the Commission, the CNRB and the Vice President, Nuclear within 14 days of the violation.

6.8 PROCEDURES

6.8.1 Written procedures shall be established, implemented and maintained covering the activities referenced below:

a. The applicable procedures recommended in Appendix "A" of Regulatory Guide 1.33, November, 1972.

b. Refueling operations.

c. Surveillance and test activities of safety related equipment.

d. Security Plan implementation.

e. Emergency Plan implementation.

f. Fire Protection Program implementation.

g. The radiological environmental monitoring program.

h. The Process Control Program.

i. Offsite Dose Calculation Manual implementation.

6.8.2 Each procedure of 6.8.1 above, and changes thereto, shall be reviewed by the SRB and approved by the Station Superintendent prior to implementation and reviewed periodically as set forth in administrative procedures.

6.8.3 Temporary changes to procedures of 6.8.1 above may be made provided:

a. The intent of the original procedure is not altered.

b. The change is approved by two members of the plant management staff, at least one of whom holds a Senior Reactor Operator's License on the unit affected.

c. The change is documented, reviewed by the SRB and approved by the Station Superintendent within 14 days of implementation.

6.8.4 The following programs shall be established, implemented, and maintained:

a. Primary Coolant Sources Outside Containment

A program to reduce leakage from those portions of systems outside containment that could contain highly radioactive fluids during a serious transient or accident to as low as practical levels. The systems include makeup, letdown, seal injection, seal return, low pressure injection, containment spray, high pressure injection, waste gas, primary sampling and reactor coolant drain systems. The program shall include the following:

(i) Preventive maintenance and/or periodic visual inspection requirements, and

(ii) Integrated leak test requirements for each system at refueling cycle intervals or less.

b. In-Plant Radiation Monitoring

A program which will ensure the capability to accurately determine the airborne iodine concentration in vital areas under accident conditions. This program shall include the following:

(i) Training of personnel,

(ii) Procedures for monitoring, and

(iii) Provisions for maintenance of sampling and analysis equipment.

e. Failure or malfunction of one or more components which prevents or could prevent, by itself, the fulfillment of the functional requirements of system(s) used to cope with accidents analyzed in the SAR.

f. Personnel error or procedural inadequacy which prevents or could prevent, by itself, the fulfillment of the functional requirements of systems required to cope with accidents analyzed in the SAR.

g. Conditions arising from natural or man-made events that, as a direct result of the event require plant shutdown, operation of safety systems, or other protective measures required by technical specifications.

h. Errors discovered in the transient or accident analyses or in the methods used for such analyses as described in the safety analysis report or in the bases for the technical specifications that have or could have permitted reactor operation in a manner less conservative than assumed in the analyses.

i. Performance of structures, systems, or components that requires remedial action or corrective measures to prevent operation in a manner less conservative than assumed in the accident analyses in the safety analysis report or technical specifications bases; or discovery during plant life of conditions not specifically considered in the safety analysis report or technical specifications that require remedial action or corrective measures to prevent the existence or development of an unsafe condition.

THIRTY DAY WRITTEN REPORTS*

6.9.1.9 The types of events listed below shall be the subject of written reports to the Director of the Regional Office within thirty days of occurrence of the event. The written report shall include, as a minimum, a completed copy of a licensee event report form. Information provided on the licensee event report form shall be supplemented, as needed, by additional narrative material to provide complete explanation of the circumstances surrounding the event.

a. Reactor protection system or engineered safety feature instrument settings which are found to be less conservative than those established by the technical specifications but which do not prevent the fulfillment of the functional requirements of affected systems.

*Routine surveillance testing, instrument calibration, or preventive maintenance which require system configurations as described in Section 6.9.1.9.a and 6.9.1.9.b need not be reported except where test results themselves reveal a degraded condition requiring corrective action.

b. Conditions leading to operation in a degraded mode permitted by a limiting condition for operation or plant shutdown required by a limiting condition for operation.

c. Observed inadequacies in the implementation of administrative or procedural controls which threaten to cause reduction of degree of redundancy provided in reactor protection systems or engineered safety feature systems.

d. Abnormal degradation of systems other than those specified in 6.9.1.8.c above designed to contain radioactive material resulting from the fission process.

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT

6.9.1.10 Routine Radiological Environmental Operating Reports covering the operation of the unit during the previous calendar year shall be submitted prior to May 1 of each year. The initial report shall be submitted prior to May 1 of the year following initial criticality.

The Annual Radiological Environmental Operating Reports shall include summaries, interpretations, and an analysis of trends of the results of the radiological environmental surveillance activities for the report period, including a comparison with the preoperational studies, with operational controls, as appropriate, and with previous environmental surveillance reports and an assessment of the observed impacts of the plant operation on the environment. The reports shall also include the results of land use censuses required by Specification 3.12.2.

The Annual Radiological Environmental Operating Reports shall include the results of analysis of all radiological environmental samples and of all environmental radiation measurements taken during the period pursuant to the locations specified in the Table and Figures in the ODCM, as well as summarized and tabulated results of these analyses and measurements. In the event that some individual results are not available for inclusion with the report, the report shall be submitted noting and explaining the reasons for the missing results. The missing data shall be submitted as soon as possible in a supplementary report.

The reports shall also include the following: a summary description of the radiological environmental monitoring program; at least two legible maps covering all sampling locations keyed to a table giving distances and directions from the centerline of one reactor; the results of licensee participation in the Interlaboratory Comparison Program, required by Specification 3.12.3; and discussion of all analyses in which the LLD required by Table 4.12-1 was not achievable.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT

6.9.1.11 Routine Radioactive Effluent Release Reports covering the operation of the unit during the previous 6 months of operation shall be submitted within 60 days after January 1 and July 1 of each year. The period of the first report shall begin with the date of initial criticality.

The Radioactive Effluent Release Reports shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit as outlined in Regulatory Guide 1.21, "Measuring, Evaluating, and Reporting Radioactivity in Solid Wastes and Releases of Radioactive Materials in Liquid and Gaseous Effluents from Light-Water-Cooled Nuclear Power Plants," Revision 1, June 1974, with data summarized on a quarterly basis following the format of Appendix B thereof.

The Radioactive Effluent Release Report to be submitted within 60 days after January 1 of each year shall include an annual summary of hourly meteorological data collected over the previous year. This annual summary may be either in the form of an hour-by-hour listing on magnetic tape of wind speed, wind direction, atmospheric stability, and precipitation (if measured), or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability. This same report shall include an assessment of the radiation doses due to the radioactive liquid and gaseous effluents released from the unit or station during the previous calendar year. This same report shall also include an assessment of the radiation doses from radioactive liquid and gaseous effluents to MEMBERS OF THE PUBLIC due to their activities inside the SITE BOUNDARY (Figures 3.11-1 and 3.11-2) during the report period. All assumptions used in making these assessments, i.e., specific activity, exposure time and location, shall be included in these reports. The assessment of radiation doses shall be performed in accordance with the methodology and parameters in the OFFSITE DOSE CALCULATION MANUAL (ODCM).

The Radioactive Effluent Release Report to be submitted 60 days after January 1 of each year shall also include an assessment of radiation doses to the likely most exposed MEMBER OF THE PUBLIC from reactor releases and other nearby uranium fuel cycle sources, including doses from primary effluent pathways and direct radiation, for the previous calendar year to show conformance with 40 CFR Part 190, Environmental Radiation Protection Standards for Nuclear Power Operation.

SEMIANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT (Continued)

The Radioactive Effluent Release Reports shall include the following information for each class of solid waste (as defined by 10 CFR Part 61) shipped offsite during the report period:

a. Container volume,

b. Total curie quantity (specify whether determined by measurement or estimate),

c. Principal radionuclides (specify whether determined by measurement or estimate),

d. Source of waste and processing employed (e.g., dewatered spent resin, compacted dry waste, evaporator bottoms),

e. Type of container (e.g., Type A, Type B, Large Quantity), and

f. Solidification agent or absorbent (e.g., cement, urea formaldehyde).

The Radioactive Effluent Release Reports shall include a list and description of unplanned releases from the site to UNRESTRICTED AREAS of radioactive materials in gaseous and liquid effluents made during the reporting period.

The Radioactive Effluent Release Reports shall include any changes made during the reporting period to the PROCESS CONTROL PROGRAM (PCP) and to the OFFSITE DOSE CALCULATION MANUAL (ODCM), as well as a listing of new locations for dose calculations and/or environmental monitoring identified by the land use census pursuant to Specification 3.12.2.

SPECIAL REPORTS

6.9.2 Special reports shall be submitted to the Director of the Office of Inspection and Enforcement Regional Office within the time period specified for each report. These reports shall be submitted covering the activities identified below pursuant to the requirements of the applicable reference specification:

a. ECCS Actuation, Specifications 3.5.2 and 3.5.3.

b. Inoperable Seismic Monitoring Instrumentation, Specification 3.3.3.3.

c. Inoperable Meteorological Monitoring Instrumentation, Specification 3.3.3.4.

d. Seismic event analysis, Specification 4.3.3.3.2.

e. Fire Detection Instrumentation, Specification 3.3.3.8.

f. Fire Suppression Systems, Specifications 3.7.9.1 and 3.7.9.2.

g. Fire Barrier Penetrations, Specification 3.7.10.

h. Dose or dose commitment exceedences to a MEMBER OF THE PUBLIC from radioactive materials in liquid effluents released to UNRESTRICTED AREAS (Specification 3.11.1.2).

i. The discharge of radioactive liquid waste without treatment and in excess of the limits in Specification 3.11.1.3.

j. The calculated air dose from radioactive gases exceeding the limits in Specification 3.11.2.2.

k. The calculated dose from the release of iodine-131, tritium, and radionuclides in particulate form with half-lives greater than 8 days, in gaseous effluents exceeding the limits in Specification 3.11.2.3.

l. The discharge of radioactive gaseous waste without treatment and in excess of the limits in Specification 3.11.2.4.

m. The calculated doses from the release of radioactive materials in liquid or gaseous effluents exceeding the limits in Specification 3.11.4.

n. The level of radioactivity as the result of plant effluents in an environmental sampling medium exceeding the reporting levels of Table 3.12-2 (Specification 3.12.1).

6.10 RECORD RETENTION

6.10.1 The following records shall be retained for at least five years:

a. Records and logs of facility operation covering time interval at each power level.

b. Records and logs of principal maintenance activities, inspections, repair and replacement of principal items of equipment related to nuclear safety.

c. ALL REPORTABLE OCCURRENCES submitted to the Commission.

d. Records of surveillance activities, inspections and calibrations required by these Technical Specifications.

e. Records of changes made to Operating Procedures.

f. Records of radioactive shipments.

g. Records of sealed source and fission detector leak tests and results.

h. Records of annual physical inventory of all sealed source material of record.

6.10.2 The following records shall be retained for the duration of the Facility Operating License:

a. Records and drawing changes reflecting facility design modifications made to systems and equipment described in the Final Safety Analysis Report.

b. Records of new and irradiated fuel inventory, fuel transfers and assembly burnup histories.

c. Records of radiation exposure for all individuals entering radiation control areas.

d. Records of gaseous and liquid radioactive material released to the environs.

e. Records of transient of operational cycles for those facility components identified in Table 5.7-1.

f. Records of reactor tests and experiments.

g. Records of training and qualification for current members of the plant staff.

h. Records of in-service inspections performed pursuant to these Technical Specifications.

i. Records of Quality Assurance activities required by the QA Manual.

j. Records of reviews performed for changes made to procedures or equipment or reviews of tests and experiments pursuant to 10 CFR 50.59.

k. Records of meetings of the SRB and the CNRB.

l. Records for Environmental Qualification which are covered under the provisions of paragraph 6.13.

RECORD RETENTION (continued)

m. Records of analyses required by the radiological environmental monitoring program that would permit evaluation of the accuracy of the analyses at a later date. This should include procedures effective at specified times and QA records showing that these procedures were followed.

6.13 ENVIRONMENTAL QUALIFICATION

6.13.1 By no later than June 30, 1982 all safety-related electrical equipment in the facility shall be qualified in accordance with the provisions of Division of Operating Reactors "Guidelines for Evaluating Environmental Qualification of Class IE Electrical Equipment in Operating Reactors"(DOR Guidelines); or, NUREG-0588 "Interim Staff Position on Environmental Qualification of Safety-Related Electrical Equipment", December 1979. Copies of these documents are attached to Order for Modification of License NPF-3 dated October 24, 1980.

6.13.2 By no later than December 1, 1980, complete and auditible records must be available and maintained at a central location which describe the environmental qualification method used for all safety-related electrical equipment in sufficient detail to document the degree of compliance with the DOR Guidelines or NUREG-0588. Thereafter, such records should be updated and maintained current as equipment is replaced, further tested, or otherwise further qualified.

6.14 PROCESS CONTROL PROGRAM (PCP)

6.14.1 Licensee initiated changes to the PCP:

1. Shall be submitted to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made. This submittal shall contain:

   a. Information to support the rationale for the change;

   b. A determination that the change did not reduce the overall conformance of the solidified waste product to existing criteria for solid wastes; and

   c. Documentation of the fact that the change has been reviewed and found acceptable by the SRB.

2. Shall become effective as reviewed and accepted by the SRB.

6.15 OFFSITE DOSE CALCULATION MANUAL (ODCM)

6.15.1 Licensee initiated changes to the ODCM:

1. Shall be submitted to the Commission in the Semiannual Radioactive Effluent Release Report for the period in which the change(s) was made effective. This submittal shall contain:

   a. Information to support the rationale for the change;

   b. A determination that the change will not reduce the accuracy or reliability of dose calculations or setpoint determinations; and

   c. Documentation of the fact that the change has been reviewed and found acceptable by the SRB.

2. Shall become effective as reviewed and accepted by the SRB.

6.16 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS AND SOLID WASTE TREATMENT SYSTEMS

6.16.1 Licensee initiated major changes to the radioactive waste systems (liquid, gaseous and solid):

1. Shall be reported to the Commission in the update to the Safety Analysis Report. The discussion of each change shall contain:

   a. A summary of the evaluation that led to the determination that the change could be made in accordance with 10 CFR Part 50.59;

   b. Sufficient detailed information to totally support the reason for the change without benefit of additional or supplemental information;

   c. A detailed description of the equipment, components and processes involved and the interfaces with other plant systems;

   d. An evaluation of the change, which shows the predicted releases of radioactive materials in liquid and gaseous effluents and/or quantity of solid waste that differ from those previously predicted in the license application and amendments thereto;

   e. An evaluation of the change, which shows the expected maximum exposures to individual in the UNRESTRICTED AREA and to the general population that differ from those previously estimated in the license application and amendments thereto;

   f. A comparison of the predicted releases of radioactive materials, in liquid and gaseous effluents and in solid waste, to the actual releases for the period prior to when the changes are to be made;

   g. An estimate of the exposure to plant operating personnel as a result of the change; and

6.16 MAJOR CHANGES TO RADIOACTIVE LIQUID, GASEOUS, AND SOLID WASTE TREATMENT SYSTEMS (Continued)

h. Documentation of the fact that the change was reviewed and found acceptable by the Station Review Board.

2. Shall become effective upon review and acceptance by the Station Review Board.

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ENVIRONMENTAL TECHNICAL SPECIFICATIONS
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2.3 (Deleted)

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3.0 ENVIRONMENTAL SURVEILLANCE

3.2 (Deleted)

5.0 ADMINISTRATIVE CONTROLS

5.4 Unit Reporting Requirements

5.4.1 Routine Reports

A. Annual Environmental Operating Report

Part A - Nonradiological Report - A report on the environmental surveillance programs for the previous 12 months of operation shall be submitted to the Director of the NRC Regional Office (with a copy to the Director, Office of Nuclear Reactor Regulation) as a separate document within 90 days after January 1 of each year. The period of the first report shall begin with the date of commercial operation. The report shall include descriptive summaries and presentation of results, if available, of the special surveillance and study activities (Section 4), summaries, interpretations, and statistical evaluation of the results of the nonradiological environmental surveillance activities (Section 3) and the environmental monitoring programs required by limiting conditions for operation (Section 2) for the report period, including a comparison with preoperational studies, operational controls (as appropriate), and previous environmental surveillance reports and an assessment of the observed impacts of the unit operation on the environment. In the event that some results are not available within the 90 day period, the report shall be submitted noting and explaining the reason for the missing results. The missing data shall be submitted as soon as possible in a supplementary report. If harmful effects or evidence of irreversible damage are detected by the monitoring, the licensee shall provide an analysis of the problem and a proposed course of action to alleviate the problem.

B. (Deleted)

5.4.2 Nonroutine Reports

A. Nonroutine Environmental Operating Reports

A report shall be submitted in the event that (a) a limiting condition for operation is exceeded (as specified in Section 2, "Limiting Conditions for Operation"), or (b) an unusual or important event occurs that causes a significant environmental impact, that affects potential environmental impact from unit operation, or that has high public or potential public interest concerning environmental impact from unit operation. Reports shall be submitted under the report schedule described below:

1. Prompt Report. Those events requiring prompt reports shall be reported within 24 hours by telephone, telegraph, or facsimile transmission to the Director of the NRC Regional Office and within 10 days by a written report to the Director of the Regional NRC Office (with a copy to the Director, Office of Nuclear Reactor Regulation).

2. 30-Day Report. Those events not requiring prompt reports shall be reported within 30 days by a written report to the Director of the NRC Regional Office (with a copy to the Director, Office of Nuclear Reactor Regulation).

The reporting schedule for reports concerning limiting conditions for operation specified in Section 2.4.1.a and Section 2.4.3.a and in (b) above shall be on the prompt schedule.

The significance of an unusual or apparently important event with regard to environmental impact may not be obvious or fully appreciated at the time of occurrence. In such cases, the NRC shall be informed promptly of changes in the licensee's assessment of the significance of the event and a corrected report shall be submitted as expeditously as possible.

B. (Deleted)

C. (Deleted)

5.4.3 Change in Environmental Technical Specifications

A. A report shall be made to the NRC prior to implementation of a change in unit design, in unit operation, or in procedures described in Section 5.3 if the change would have a significant effect on the environment or involves an environmental matter or question not previously reviewed and evaluated by the NRC. The report shall include a description and evaluation of the change and a supporting benefit-cost analysis.

B. Request for changes in environmental technical specifications shall be submitted to the Director, Office of Nuclear Reactor Regulation, for review and authorization. The request shall include an evaluation of the environmental impact of the proposed change and a supporting benefit-cost analysis.

5.0 ADMINISTRATIVE CONTROLS

5.5 Records Retention

5.5.1. Records and logs relative to instrument calibration and chemical analysis shall be retained for five years except as described in Section 5.5.2.

5.5.2 All records and logs relative to the following areas shall be retained for the life of the unit:

5.5.2.1 Records and drawing changes reflecting unit design modifications made to systems and equipment described in the unit's Environmental Report.

5.5.2.2 Records of environmental monitoring surveys.

5.5.2.3 (Deleted)

5.5.2.4 Minutes of Station Review Board and Company Nuclear Review Board meetings.

5.5.2.5 Copies of all superseded operating procedures which affect the environment.

UNITED STATES
NUCLEAR REGULATORY COMMISSION
WASHINGTON, D. C. 20555

SAFETY EVALUATION BY THE OFFICE OF NUCLEAR REACTOR REGULATION
SUPPORTING AMENDMENT NO. 86 TO FACILITY OPERATING LICENSE NO. NPF-3

TOLEDO EDISON COMPANY
AND
THE CLEVELAND ELECTRIC ILLUMINATING COMPANY
DAVIS-BESSE NUCLEAR POWER STATION, UNIT NO. 1
DOCKET NO. 50-346

1.0 INTRODUCTION

To comply with Section V of Appendix I of 10 CFR Part 50, the Toledo Edison Company has filed with the Commission plans and proposed technical specifications developed for the purpose of keeping releases of radioactive materials to unrestricted areas during normal operations, including expected operational occurrences, as low as is reasonably achievable. Toledo Edison filed this information with the Commission by letter dated March 15, 1984, which requested changes to the Technical Specifications appended to Facility Operating License No. NPF-3 for Davis-Besse Nuclear Power Station, Unit 1. The proposed technical specifications update those portions of the technical specifications addressing radioactive waste management and make them consistent with the current staff positions as expressed in NUREG-0472. These revised technical specifications would reasonably assure compliance, in radioactive waste management, with the provisions of 10 CFR Part 50.36a, as supplemented by Appendix I to 10 CFR Part 50, with 10 CFR Parts 20.105(c), 106(g), and 405(c); with 10 CFR Part 50, Appendix A, General Design Criteria 60, 63, and 64; and with 10 CFR Part 50, Appendix B.

2.0 BACKGROUND AND DISCUSSION

2.1 Regulations

10 CFR Part 50, "Domestic Licensing of Production and Utilization Facilities", Section 50.36a, "Technical Specifications on Effluents from Nuclear Power Reactors", provides that each license authorizing operation of a nuclear power reactor will include technical specifications that (1) require compliance with applicable provisions of Part 20.106, "Radioactivity in Effluents to Unrestricted Areas"; (2) require that operating procedures developed for the control of effluents be established and followed; (3) require that equipment installed in the radioactive waste system be maintained and used; and (4) require the periodic submission of reports to the NRC specifying the quantity of each of the principal radionuclides released to unrestricted areas in liquid and gaseous effluents, any quantities of radioactive materials released that are significantly above design objectives, and such other information as may be required by the Commission to estimate maximum potential radiation dose to the public resulting from the effluent releases.

10 CFR Part 20, "Standards for Protection Against Radiation," paragraphs 20.105(c), 20.106(g), and 20.405(c), require that nuclear power plant and other licensees comply with 40 CFR Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations" and submit reports to the NRC when the 40 CFR Part 190 limits have been or may be exceeded.

10 CFR Part 50, Appendix A - General Design Criteria for Nuclear Power Plants, contains Criterion 60, Control of releases for radioactive materials to the environment; Criterion 63, Monitoring fuel and waste storage; and Criterion 64, Monitoring radioactivity releases. Criterion 60 requires that the nuclear power unit design include means to control suitably the release of radioactive materials in gaseous and liquid effluents and to handle radioactive solid wastes produced during normal reactor operation, including anticipated operational occurrences. Criterion 63 requires that appropriate systems be provided in radioactive waste systems and associated handling areas to detect conditions that may result in excessive radiation levels and to initiate appropriate safety actions. Criterion 64 requires that means be provided for monitoring effluent discharge paths and the plant environs for radioactivity that may be released from normal operations, including anticipated operational occurrences and postulated accidents.

10 CFR Part 50, Appendix B, establishes quality assurance requirements for nuclear power plants.

10 CFR Part 50, Appendix I, Section IV, provides guides on technical specifications for limiting conditions for operation for light-water-cooled nuclear power reactors licensed under 10 CFR Part 50.

2.2 Standard Radiological Effluent Technical Specifications

NUREG-0472 provides radiological effluent technical specifications for pressurized water reactors which the staff finds to be an acceptable standard for licensing actions. Further clarification of these acceptable methods is provided in NUREG-0133, "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants." NUREG-0133 describes methods found acceptable to the staff of the NRC for the calculation of certain key values required in the preparation of proposed radiological effluent technical specifications for light-water-cooled nuclear power plants. NUREG-0133 also provides guidance to licensees in preparing requests for changes to existing radiological effluent technical specifications for operating reactors. It also describes current staff positions on the methodology for estimating radiation exposure due to the release of radioactive materials in effluents and on the administrative control of radioactive waste treatment sytems.

The above NUREG documents address all of the radiological effluent technical specifications needed to assure compliance with the guidance and requirements provided by the regulations previously cited. However, alternative approaches to the preparation of radiological effluent technical specifications and alternative radiological effluent technical specifications may be acceptable if the staff determines that the alternatives are in compliance with the regulations and with the intent of the regulatory guidance.

The standard radiological effluent technical specifications can be grouped under the following categories:

(1) Instrumentation

(2) Radioactive effluents

(3) Radiological environmental monitoring

(4) Design features

(5) Administrative controls.

Each of the specifications under the first three categories is comprised of two parts: the limiting condition for operation and the surveillance requirements. The limiting condition for operation provides a statement of the limiting condition, the times when it is applicable, and the actions to be taken in the event that the limiting condition is not met.

In general, the specifications established to assure compliance with 10 CFR Part 20 standards provide, in the event the limiting conditions of operation are exceeded, that without delay conditions are restored to within the limiting conditions. Otherwise, the facility is required to effect approved shutdown procedures. In general, the specifications established to assure compliance with 10 CFR Part 50 provide, in the event the limiting conditions of operation are exceeded, that within specified times corrective actions are to be taken, alternative means of operation are to be employed, and certain reports are to be submitted to the NRC describing these conditions and actions.

The specifications concerning design features and administrative controls contain no limiting conditions of operation or surveillance requirements.

Table 1 indicates the standard radiological effluent technical specifications that are needed to assure compliance with the particular provisions of the regulations described in Section 1.0.

3.0 EVALUATION

The enclosed report (TER-C5506-91) was prepared for us by Franklin Reasearch Center (FRC) as part of our technical assistance contract program. Their report provides their technical evaluation of the compliance of the Licensee's submittal with NRC provided criteria. The staff has reviewed this TER and agrees with the evaluation.

3.1 SUMMARY

The proposed changes to the radiological effluent technical specifications for Davis-Besse Nuclear Power Station, Unit 1, have been reviewed, evaluated, and found to be in compliance with the requirements of the NRC regulations and with the intent of NUREG-0133 and NUREG-0472 (Davis-Besse Nuclear Power Station, Unit 1, is a pressurized water reactor) and thereby fulfill all the requirements of the regulations related to radiological effluent technical specifications.

Table 1. Relat[illegible] between Provisions of the Regulations and the Standard R[illegible]ological Effluent Technical Specifications for Pressurized Wate[illegible] Reactors and Boiling Water Reactors

● Indicate the specifications that are needed to assure compliance with the identified provision of the regulations.

Provisions of Title 10 Code of Federal Regulations	Standard Radiological Effluent Technical Specifications																						
	Instrumentation		Radioactive Effluents										Rad. Envir. Monitoring			Design Features	Administrative Control						
			Liquid		Gaseous																		
					PWR/BWR		PWR		BWR														
	Rad. Liquid Effl. Monitoring	Rad. Gas. Effl. Monitoring	Effluent Concentration	Liquid Radwaste Treatment	Dose Rate	Dose Noble Gases	Dose I-131, Trit. and Part.	Explosive Gas Mixture	Gaseous Radwaste Treatment	Gas Storage Tanks	Gaseous Radwaste Treatment	Ventilation Exhaust Treatment	Main Condenser	Mark I or II Containment	Solid Radioactive Waste	Total Dose	Rad. Env. Monitoring Program	Land Use Census	Interlab. Comparison Program	Site Boundaries*	Review and Audits	Procedures	Reports	Record Retention	Process Control Program	Offsite Dose Calc. Manual	Major Changes to Rad. Systems
§ 50.36a Technical specifications on effluents from nuclear power reactors																										
Remain within limits of § 20.106			●	●	●				●					●												
Establish and follow procedures to control effluents			●	●	●	●	●	●	●	●	●	●	●	●	●							●			●	
Maintain and use radioactive waste system equipment				●		●			●		●														●	
Submit reports, semi-annual and other	●	●	●	●	●	●	●	●	●	●	●	●			●									●	●	●
§§ 20.105(c), 20.106(g), 20.405(c) Compliance with 40 CFR 190															●		●	●	●						●	
Part 50 Appendix A - General Design Criteria																										
Criterion 60 - Control of releases of radioactive materials to the environment	●	●		●				●	●	●	●	●	●	●	●							●			●	
Criterion 61 - Fuel storage and handling and radioactivity control	●	●																								
Criterion 63 - Monitoring fuel and waste storage	●	●																								
Criterion 64 - Monitoring radioactivity releases	●	●											●				●								●	
Part 50 Appendix B - Quality Assurance Criteria	●	●																	●		●	●			●	
Part 50 Appendix I - Guides to Meet "As Low As Is Reasonably Achievable (ALARA)"																										
Maintain releases within design objectives				●		●			●			●													●	
Establish surveillance & monitoring program to provide data on:																										
(1) quantities of rad. matls. in effluents	●	●															●									
(2) radiation & rad. matls. in the environment																		●					●	●		
(3) changes in use of unrestricted areas																										
Exert best efforts to keep releases "ALARA"				●		●			●			●														●
Submit report if calculated doses exceed the design objective				●		●			●			●											●			
Demonstrate conform. to des. obj. by calc. proced.				●		●			●			●													●	
Part 100													●													

*Note: Needed to fully implement other specifications.

The proposed changes will not remove or relax any existing requirement needed to provide reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner. The staff, therefore, finds the proposed changes acceptable.

4.0 ENVIRONMENTAL CONSIDERATION

This amendment involves a change in the requirements with respect to the use of facility components located within the restricted area as defined in 10 CFR Part 20 or a change in inspection or surveillance requirements. We have determined that the amendment involves no significant increase in the amounts, and no significant change in the types, of any effluents that may be released offsite, and that there is no significant increase in individual or cumulative occupational radiation exposure. The Commission has previously issued a proposed finding that this amendment involves no significant hazards consideration and there has been no public comment on such finding. Accordingly, this amendment meets the eligibility criteria for categorical exclusion set forth in 10 CFR 51.22(c)(9). Pursuant to 10 CFR 51.22(b), no environmental impact statement or environmental assessment need be prepared in connection with the issuance of this amendment.

5.0 GENERAL CONCLUSION

We have concluded, based on the considerations discussed above, that: (1) there is reasonable assurance that the health and safety of the public will not be endangered by operation in the proposed manner, and

(2) such activities will be conducted in compliance with the Commission's regulations and the issuance of the amendment will not be inimical to the common defense and security or to the health and safety of the public.

Enclosure:

FRC Technical Evaluation

Date: July 2, 1985

Principal Contributors: W. Meinke, F. Congel, and C. Willis, Office of Nuclear Reactor Regulation.

TECHNICAL EVALUATION REPORT

RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATION IMPLEMENTATION (A-2)

TOLEDO EDISON COMPANY

DAVIS-BESSE NUCLEAR POWER STATION UNIT 1

NRC DOCKET NO. 50-346

NRC TAC NO. 8141

NRC CONTRACT NO. NRC-03-81-130

FRC PROJECT C5506

FRC ASSIGNMENT 4

FRC TASK 91

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May 22, 1984

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Date: 5/22/84	Date: 5/22/84	Date: 5/22/84

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FOREWORD

This Technical Evaluation Report was prepared by Franklin Research Center under a contract with the U.S. Nuclear Regulatory Commission (Office of Nuclear Reactor Regulation, Division of Operating Reactors) for technical assistance in support of NRC operating reactor licensing actions. The technical evaluation was conducted in accordance with criteria established by the NRC.

1. INTRODUCTION

1.1 PURPOSE OF REVIEW

The purpose of this technical evaluation report (TER) is to review and evaluate the proposed changes in the Technical Specifications of Davis-Besse Nuclear Power Station Unit 1 with regard to Radiological Effluent Technical Specifications (RETS), the Offsite Dose Calculation Manual (ODCM), and the Process Control Program (PCP).

The evaluation uses criteria proposed by the NRC staff in the Model Technical Specifications for pressurized water reactors (PWRs), NUREG-0472 [1]. This effort is directed toward the NRC objective of implementing RETS which comply principally with the regulatory requirements of the Code of Federal Regulations, Title 10, Part 50 (10CFR50), "Domestic Licensing of Production and Utilization Facilities," Appendix I [2]. Other regulations pertinent to the control of effluent releases are also included within the scope of compliance.

1.2 GENERIC BACKGROUND

Since 1970, 10CFR50, Section 50.36a, "Technical Specifications on Effluents from Nuclear Power Reactors," has required licensees to provide technical specifications which ensure that radioactive releases will be kept as low as reasonably achievable (ALARA). In 1975, numerical guidance for the ALARA requirement was issued in 10CFR50, Appendix I. The licensees of all operating reactors were required [3] to submit, no later than June 4, 1976, their proposed ALARA Technical Specifications and information for evaluation in accordance with 10CFR50, Appendix I.

However, in February 1976, the NRC staff recommended that proposals to modify Technical Specifications be deferred until the NRC completed the model RETS. The model RETS deals with radioactive waste management systems and environmental monitoring. Although the model RETS closely parallels 10CFR50, Appendix I requirements, it also includes provisions for addressing other issues.

These other issues are specifically stipulated by the following regulations:

- 10CFR20 [4], "Standards for Protection Against Radiation," Paragraphs 20.105(c), 20.106(g), and 20.405(c) require that nuclear power plants and other licensees comply with 40CFR190 [5], "Environmental Radiation Protection Standards for Nuclear Power Operations," and submit reports to the NRC when the 40CFR190 limits have been or may be exceeded.

- 10CFR50, Appendix A [6], "General Design Criteria for Nuclear Power Plants," contains Criterion 60 - Control of releases of radioactive materials to the environment; Criterion 63 - Monitoring fuel and waste storage; and Criterion 64 - Monitoring radioactivity releases.

- 10CFR50, Appendix B [7], establishes the quality assurance required for nuclear power plants.

The NRC position on the model RETS was established in May 1978 when the NRC's Regulatory Requirements Review Committee approved the model RETS: NUREG-0472 [1] for pressurized water reactors (PWRs) and NUREG-0473 [8] for boiling water reactors (BWRs). Copies were sent to licensees in July 1978 with a request to submit proposed site-specific RETS on a staggered schedule over a 6-month period. Licensees responded with requests for clarifications and extensions.

The Atomic Industrial Forum (AIF) formed a task force to comment on the model RETS. NRC staff members first met with the AIF task force on June 17, 1978. The model RETS was subsequently revised to reflect comments from the AIF and others. A principal change was the transfer of much of the material concerning dose calculations from the model RETS to a separate ODCM.

The revised model RETS was sent to licensees on November 15 and 16, 1978 with guidance (NUREG-0133 [9]) for preparation of the RETS and the ODCM and a new schedule for responses, again staggered over a 6-month period.

Four regional seminars on the RETS were conducted by the NRC staff during November and December 1978. Subsequently, Revision 2 of the model RETS and additional guidance on the ODCM and the PCP were issued in February 1979 to each utility at individual meetings. In response to the NRC's request,

operating reactor licensees have subsequently submitted initial proposals on plant RETS and the ODCM. Review leading to ultimate implementation of these documents was initiated by the NRC in 1981 using subcontracted independent teams as reviewers.

As the RETS review process has progressed since September 1981, feedback from the licensees has led the NRC to believe that modification to some of the guidelines in the current version of Revision 2 is needed to clarify specific concerns of the licensees and thus expedite the entire review process. Starting in April 1982, NRC distributed revised versions of RETS in draft form to the licensees during the site visits. The new guidance on these changes was presented in the AIF meeting on May 19, 1982 [10]. Some interim changes regarding the Radiological Environmental Monitoring Section were issued in 1982 [11]. With the incorporation of these new changes, NRC issued, in September 1982, a draft version of NUREG-0472, Revision 3 [12], to serve as new guidance for the review teams.

1.3 PLANT-SPECIFIC BACKGROUND

In response to NRC's request, the Licensee, Toledo Edison Company, submitted a RETS proposal dated March 16, 1979 [13] on behalf of Davis-Besse Nuclear Power Station Unit 1. This proposal also included the ODCM [14]. In the RETS submittal, the Licensee closely followed the model RETS format (NUREG-0472) for PWRs. In an initial evaluation by the Franklin Research Center (FRC), an independent review team, the Licensee's RETS and ODCM submittals were compared with the model RETS (NUREG-0472, Revision 2 [1]) and assessed for compliance with the stipulated provisions. Review of the ODCM was conducted in accordance with NRC-issued guidelines (NUREG-0133 [9]). Copies of the draft review, dated August 10, 1982 [15, 16], were delivered to the NRC and the Licensee prior to a site visit by the reviewers.

The site visit was conducted on September 2-3, 1982 by the reviewers with the participation of plant personnel and the NRC staff. Discussions focused on the initial review of the proposed changes to the RETS and on the technical

approaches for an ODCM. The deficiencies in the Licensee's proposed RETS were considered, deviations from NRC guidelines were pointed out, many differences were clarified, and only a few items remained unresolved pending justification by the Licensee. These issues are summarized in Reference 17.

The Licensee subsequently issued to NRC a draft submittal on RETS, ODCM, and PCP, dated December 23, 1982 [18], and amendments to the RETS [19, 20]. These documents were reviewed by FRC, and the results of the evaluation were transmitted to NRC. Preliminary discussion on the open items was initiated by the NRC staff with the Licensee, and resolutions on plant-specific issues were agreed upon [21].

Under a cover letter dated March 15, 1984 [22], Toledo Edison Company delivered its final submittals on RETS, ODCM, and PCP to the NRC. Copies of these submittals were transmitted to FRC for review. The Licensee's RETS submittal was evaluated against NUREG-0472, Draft Revision 3 [12]. The ODCM was also evaluated according to the existing guidelines specified by NUREG-0133 [9]. The PCP was reviewed against NRC guidelines dated January 7, 1983 [23].

The review also incorporated the additional guidance that FRC received from the NRC staff on plant-specific issues [24]. Details of the draft RETS review are documented in the comparison copy [25].

2. REVIEW CRITERIA

Review criteria for the RETS and ODCM were provided by the NRC in three documents:

NUREG-0472, RETS for PWRs

NUREG-0473, RETS for BWRs

NUREG-0133, Preparation of RETS for Nuclear Power Plants.

Twelve essential criteria are given for the RETS and ODCM:

1. All significant releases of radioactivity shall be controlled and monitored.
2. Offsite concentrations of radioactivity shall not exceed the 10CFR20, Appendix B, Table II limits.
3. Offsite radiation doses of radioactivity shall be ALARA.
4. Equipment shall be maintained and used to keep offsite doses ALARA.
5. Radwaste tank inventories shall be limited so that failures will not cause offsite doses exceeding 10CFR20 limits.
6. Hydrogen and/or oxygen concentration in the waste gas system shall be controlled to prevent explosive mixtures.
7. Wastes shall be processed to shipping and burial ground criteria under a documented program, subject to quality assurance verification.
8. An environmental monitoring program, including a land-use census and an interlaboratory comparison program, shall be implemented.
9. The radwaste management program shall be subject to regular audits and reviews.
10. Procedures for control of liquid and gaseous effluents shall be maintained and followed.
11. Periodic and special reports on environmental monitoring and on releases shall be submitted.
12. Offsite dose calculations shall be performed using documented and approved methods consistent with NRC methodology.

Subsequent to the publication of NUREG-0472 and NUREG-0473, the NRC staff issued guidelines [26, 27], clarifications [28, 29], and branch positions [30, 31, 32, 33] establishing a policy that requires the licensees of operating reactors to meet the intent, if not the letter, of the model RETS provisions. The NRC branch positions issued since the RETS implementation review began have clarified the model RETS implementation for operating reactors.

Review of the ODCM was based on the following NRC guidelines: Branch Technical Position, "General Content of the Offsite Dose Calculation Manual" [34]; NUREG-0133 [9]; and Regulatory Guide 1.109 [35]. The ODCM format is left to the licensee and may be simplified by tables and grid printouts.

Review of the PCP was based on the guidance provided by the NRC staff [23].

3. TECHNICAL EVALUATION

3.1 GENERAL DESCRIPTION OF RADIOLOGICAL EFFLUENT SYSTEMS

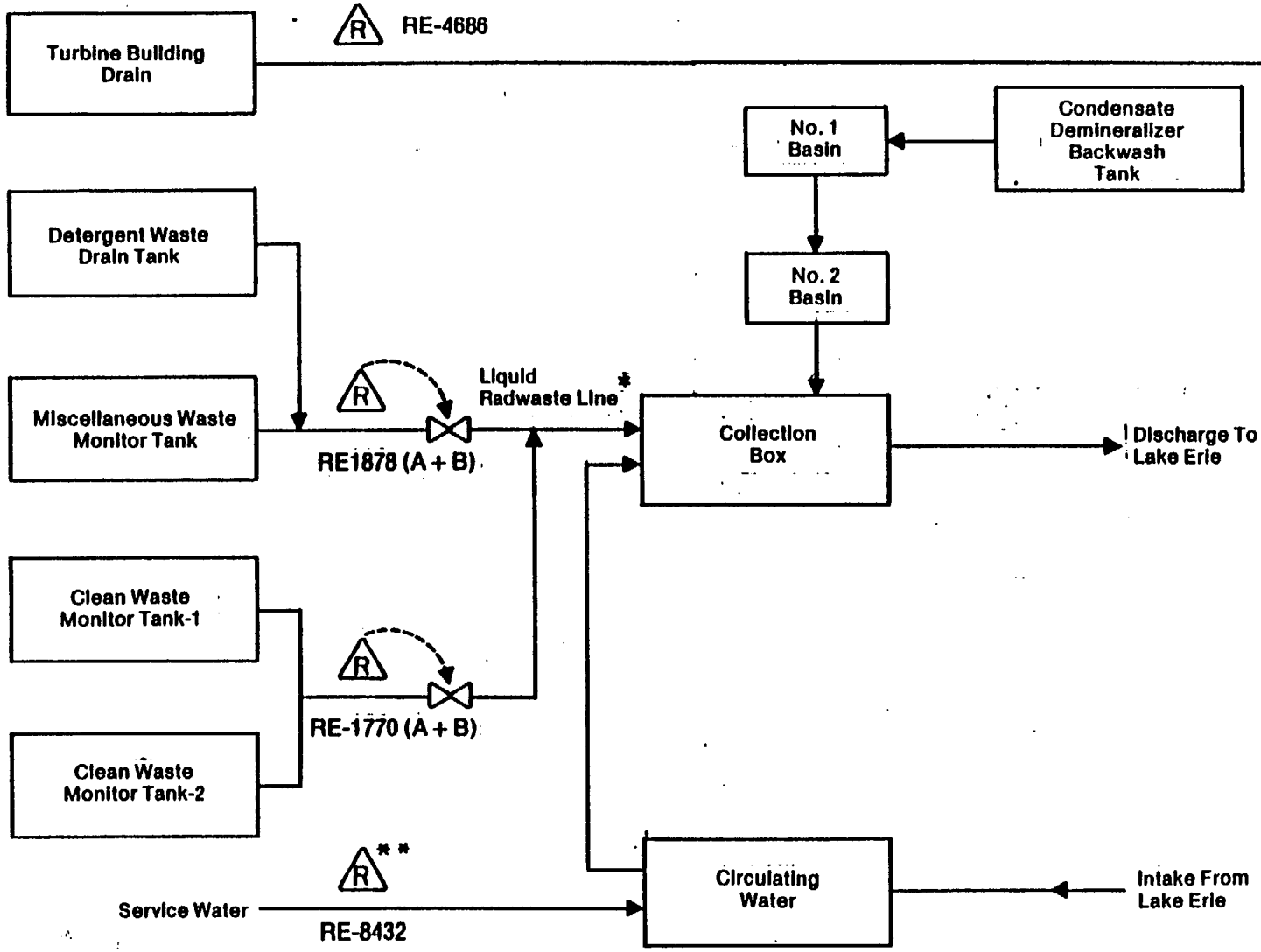
This section briefly describes the liquid and gaseous radwaste effluent systems, release paths, and control systems installed at Davis-Besse Nuclear Power Station Unit 1, a PWR.

3.1.1 Radioactive Liquid Effluent

The liquid radwaste system for Davis-Besse Unit 1 is shown in Figure 1. The liquid waste is primarily collected in clean waste monitor tanks. This includes the degasified hydrogenated liquid waste from the reactor coolant drain tank and the letdown from the makeup and purification system. The liquid waste from the monitor tanks form the liquid radwaste effluent line which leads to the collection box and discharges to Lake Erie. Other liquid effluents also dumped to the collection box are from the miscellaneous waste monitor tank, the detergent waste drain tank, the turbine building drains, the condensate demineralizer backwash tank, the circulating water, and the service water. Because the plant uses once-through steam generators, no blowdown effluents are expected in the waste streams.

3.1.2 Radioactive Gaseous Effluent

The gaseous radwaste system for Davis-Besse Unit 1 is shown in Figure 2. The major sources of waste gas are the hydrogen and fission gases stripped from the primary coolant as it is let down through the degasifier. The radioactive gases are then stored in the waste gas decay tanks before being discharged to the station vent stack through the waste gas charcoal filter and the high-efficiency particulate air (HEPA) filter. Other gaseous streams are the radwaste area ventilation, the fuel handling area ventilation, the vacuum system discharge, and the purges from the containment and the penetration rooms. All these gaseous effluents lead to the station vent for release to the atmosphere, which is considered as mixed mode.



*Discharge is either from clean wastes or from miscellaneous and detergent waste
**Process monitors

Figure 1. Liquid Radwaste Treatment Systems, Effluent Paths, and Controls, Davis-Besse Nuclear Power Station Unit 1

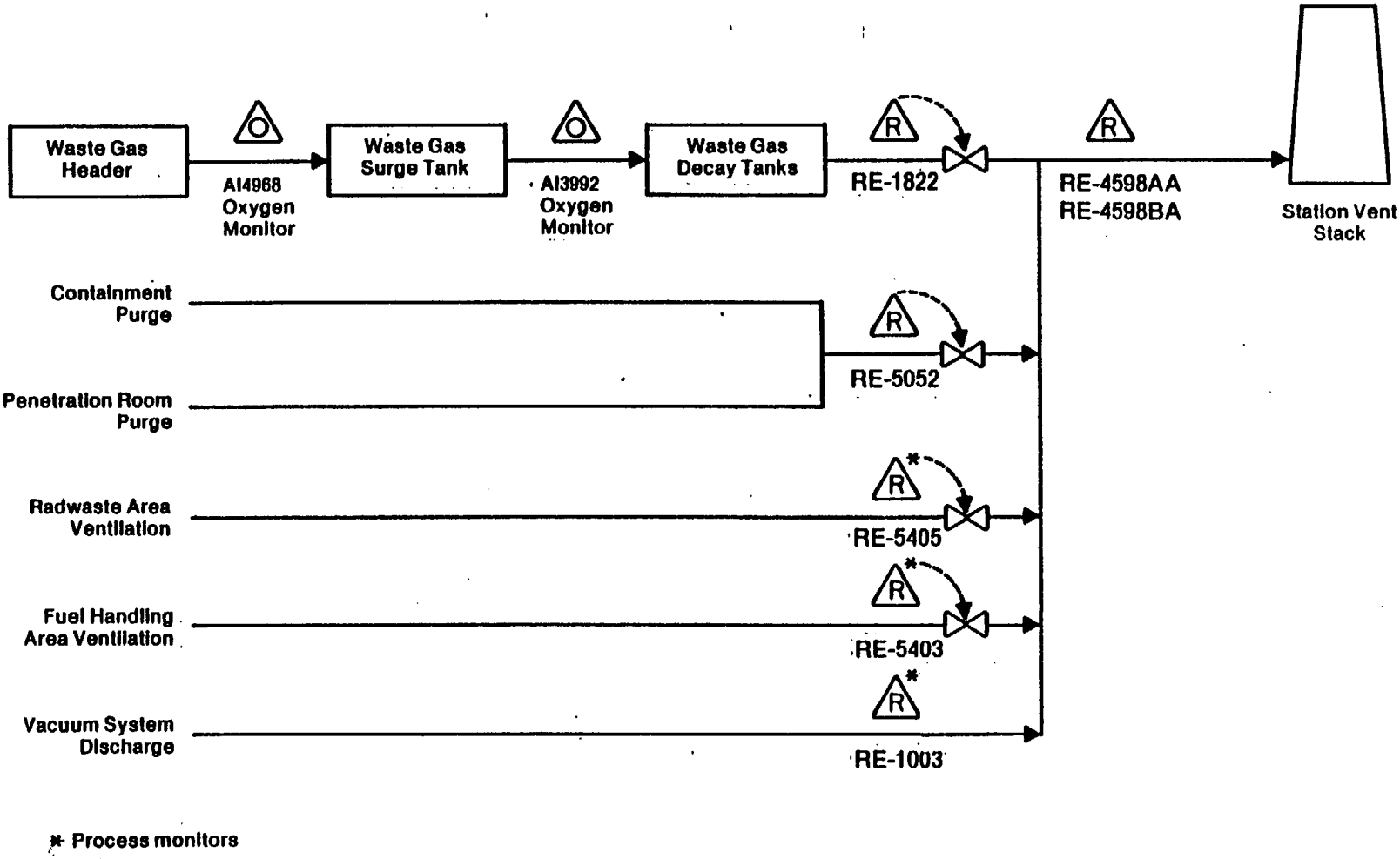


Figure 2. Gaseous Radwaste Treatment Systems, Effluents Paths, and Controls, Davis-Besse Nuclear Power Station Unit 1

3.2 RADIOLOGICAL EFFLUENT TECHNICAL SPECIFICATIONS

The evaluation of the Licensee's proposed RETS against the provisions of NUREG-0472 included the following: (1) a review of information provided by the Licensee in the 1979 proposed RETS submittal [13, 14], (2) the resolution of problem areas in that submittal by means of a site visit [17], (3) a review of the Licensee's December 23, 1982 draft submittal [18] and other amendments [19, 20], and (4) a review of the Licensee's March 15, 1984 final RETS, ODCM, and PCP submittals [22].

3.2.1 Effluent Instrumentation

The objective of the RETS with regard to effluent instrumentation is to ensure that all significant releases of radioactivity are monitored. The RETS specify that all effluent monitors be operable and that alarm/trip setpoints be determined to ensure that radioactivity levels do not exceed the maximum permissible concentration (MPC) set by 10CFR20. To further ensure that the instrumentation functions properly, surveillance requirements are also needed in the specifications.

3.2.1.1 Radioactive Liquid Effluent Monitoring Instrumentation

Radiation monitors have been installed for the liquid effluent line (Figure 1) which receives effluent releases from either the clean waste monitor tanks (monitor RE-1770 A+B) or the detergent waste tank and the miscellaneous waste tank (monitor RE-1878 A+B). Both monitors also have automatic isolation capabilities. The Licensee also has a radiation monitor (monitor RE-4686) for the turbine building drain. A process monitor (monitor RE-8432) is also installed for the service water line to monitor the continuous releases.

These existing monitoring capabilities provide adequate assurance that the provisions of NUREG-0472 for the radioactive liquid effluent monitoring instrumentation are met.

3.2.1.2 Radioactive Gaseous Effluent Monitoring Instrumentation

The station vent stack is provided with a monitoring system (monitors RE-4598AA and RE-4598BA) capable of monitoring noble gases, iodines, and particulates.

The following substreams (see Figure 2) to the station vent stack are equipped with radiation monitors capable of automatically isolating their respective effluent lines: monitor RE-1822 for the waste gas system, monitor RE-5052 for the containment purge system, process monitor RE-5405 for the radwaste area ventilation system, process monitor RE-5403 for the fuel handling area ventilation system. The vacuum system discharge is also equipped with a process monitor (RE-1003).

These existing gaseous monitoring capabilities provided by the Licensee meet the intent of NUREG-0472 for radioactive gaseous effluent monitoring instrumentation.

3.2.2 Concentration and Dose Rates of Effluents

3.2.2.1 Liquid Effluent Concentration

In Section 3.11.1.1 of the Licensee's submittal, a commitment is made to maintain the concentration of radioactive liquid effluents released to the unrestricted areas to within 10CFR20 limits, and if the concentration of liquid effluents exceeds these limits, the concentration will be restored without delay to a value equal to or less than the MPC values specified in 10CFR20. Both batch and continuous radioactive liquid effluent releases are sampled and analyzed periodically in accordance with a sampling and analysis program (Table 4.11-1 of the Licensee's submittal), which meets the intent of NUREG-0472.

It was determined that the Licensee-proposed specification meets the intent of NUREG-0472.

3.2.2.2 Gaseous Effluent Dose Rate

In Section 3.11.2.1 of the Licensee's submittal, a commitment is made to maintain the offsite gaseous dose rate from radioactive gaseous effluents to

areas at and beyond the site boundary to within 10CFR20 limits, or the equivalent dose rate values prescribed by Section 3.11.1.2.1 of NUREG-0472. If the dose rate of gaseous effluents exceeds these limits, it will be restored without delay to a value equal to or less than these limits. This commitment satisfies the provisions of NUREG-0472.

The radioactive gaseous waste sampling and analysis program (Table 4.11-2 of the Licensee's submittal) provides adequate sampling and analysis of the vent discharges, including the substreams, and therefore meets the intent of NUREG-0472.

3.2.3 Offsite Doses from Effluents

The objective of the RETS with regard to offsite doses from effluents is to ensure that offsite doses are kept ALARA and are in accordance with 10CFR50, Appendix I, and 40CFR190. The Licensee has made a commitment to (1) meet the quarterly and yearly dose limitations for liquid effluents, per Section II.A of Appendix I, 10CFR50; (2) restrict the air doses for beta and gamma radiation from the site to areas at and beyond the site boundary as specified in 10CFR50, Appendix I, Section II.B; (3) maintain the dose level at and beyond the site boundary from releases of iodine-131, tritium, and all radionuclides in particulate form with half-lives greater than 8 days within the design objectives of 10CFR50, Appendix I, Section II.C; and (4) limit the annual dose from all uranium fuel cycle sources of the plant to any member of the public to within the requirements of 40CFR190. In each pertinent section, the Licensee has made a commitment to perform dose calculations in accordance with methods given in the ODCM. This satisfies the intent of NUREG-0472.

3.2.4 Effluent Treatment

The objectives of the RETS with regard to effluent treatment are to ensure that wastes are treated to keep releases ALARA and to satisfy the provisions of technical specifications governing the maintenance and use of radwaste treatment equipment. The Licensee has made a commitment (Sections

3.11.1.3 and 3.11.2.4 of the Licensee's submittal) to use the liquid and gaseous radwaste treatment systems when the projected dose, averaged over 31 days, exceeds 25% of the annual dose design objectives, prorated monthly. The Licensee has also made a commitment to use the gaseous radwaste treatment system and the ventilation exhaust treatment system if the monthly projected dose exceeds the limits prescribed in NUREG-0472. This meets the intent of 10CFR50, Appendix I, Section II.D. The Licensee has also made a commitment to project the monthly dose in accordance with the ODCM. This also meets the intent of NUREG-0472.

3.2.5 Radioactivity Inventory Limits

The objective of the RETS with regard to tank inventory limits is to ensure that the rupture of a radwaste tank would not cause offsite doses greater than the limits set in 10CFR20 for non-occupational exposure. The Licensee has set a curie limit of 10 curies on all outside liquid tanks listed in the specifications and has made a commitment to perform surveillance according to the provisions of NUREG-0472. This limit excludes tritium and dissolved or entrained noble gases. For gas storage tanks, the Licensee has set in the ODCM a curie limit of 45,000 curies for noble gases which are considered to be represented by xenon-133. The Licensee's commitment to comply with these radioactivity inventory limits satisfies the intent of NUREG-0472.

3.2.6 Explosive Gas Mixtures

The objective of the RETS with regard to explosive gas mixtures is to prevent hydrogen explosions in the waste gas systems. The Licensee has stated that the waste gas holdup system is hydrogen-rich and is not designed to withstand a hydrogen/oxygen explosion. The Licensee has made a commitment to maintain a safe concentration by duel oxygen monitors (monitors A13992 and A14968) on this system. Although the Licensee does not have redundant hydrogen monitors as specified in the model RETS, the present system meets the intent of NUREG-0472 in the interim.

3.2.7 Solid Radwaste System

The objective of the RETS with regard to the solid radwaste system is to ensure that radwaste will be properly processed and packaged before it is shipped to a burial site. Specification 3.11.3 of NUREG-0472 provides for the establishment of a PCP to show compliance with this objective. The Licensee has made a commitment to implement such a program in accordance with a PCP and thus to ensure that radwaste is properly processed and packaged before it is shipped to the burial site. This meets the intent of NUREG-0472.

3.2.8 Radiological Environmental Monitoring Program

The objectives of the RETS with regard to environmental monitoring are to ensure that an adequate and full-area-coverage monitoring program exists and that the 10CFR50, Appendix I requirements for technical specifications on environmental monitoring are satisfied. In all cases, the Licensee has followed NUREG-0472 guidelines, including the Branch Technical Position dated November 1979 [31], and has provided an adequate number (27) of thermoluminescent dosimeter (TLD) sample locations accounting for lake sectors not applicable to land pathways. The Licensee's methods of analysis and maintenance of yearly records satisfy the NRC guidelines and meet the intent of 10CFR50, Appendix I. The Licensee has also made a commitment to document the environmental monitoring sample locations in the ODCM, which meets the intent of NUREG-0472. The specification for the land use census satisfies the provisions of Section 3.12.2 of NUREG-0472 by providing for an annual census in the specified areas. The Licensee participates in an interlaboratory comparison program approved by the NRC and reports the results in the Annual Radiological Environmental Operating Report, which also meets the intent of NUREG-0472.

3.2.9 Audits and Reviews

The objective of the RETS with regard to audits and reviews is to ensure that audits and reviews of the radwaste and environmental monitoring programs

are properly conducted. The Licensee's administrative structure designates the Station Review Board (SRB) as the group responsible for review of the unplanned, accidental, or uncontrolled radioactive releases and review of the ODCM and PCP. The Licensee's administrative structure also designates the Company Nuclear Review Board (CNRB) as the group responsible for audit of the QA program. The two committees encompass the total responsibility for reviews and audits, which meets the intent of NUREG-0472.

3.2.10 Procedures and Records

The objective of the RETS with regard to procedures is to satisfy the provisions for written procedures specified in NUREG-0472 for implementing the ODCM, the PCP, and the quality assurance (QA) program. It is also an objective of RETS to properly retain the documented records related to the environmental monitoring program and certain QA procedures. The Licensee has made a commitment to establish, implement, and maintain written procedures for the PCP and ODCM in accordance with the provisions of NUREG-0472. The Licensee has also made a commitment to follow Appendix A of Regulatory Guide 1.33 for the QA procedures, which also meets the intent of NUREG-0472. The Licensee intends to retain the records of the radiological environmental monitoring program, as well as the records of quality assurance activities for the duration of the facility operating license. It is thus determined that the Licensee has met the intent of NUREG-0472.

3.2.11 Reports

In addition to the reporting requirements of Title 10, Code of Federal Regulations (10CFR), the objective of the RETS with regard to administrative controls is to ensure that appropriate periodic and special reports are submitted to the NRC.

The Licensee has made a commitment to follow applicable reporting requirements stipulated by 10CFR regulations and also the following reports specified by NUREG-0472:

1. Annual radiological environmental operating report. In Section 6.9.1.10 of the Licensee's submittal, a commitment is made to provide an annual radiological environmental surveillance report that includes summaries, interpretations, and analysis of the results of the environmental surveillance activities. The report also includes the results of land use censuses, and participation in an inter-laboratory comparison program specified by Specification 3.12.3 of the submittal.

2. Semiannual radioactive and solid waste release reports. In Section 6.9.1.11 of the Licensee's submittal, a commitment is made to provide semiannual radioactive effluent and solid waste release reports which include a summary of radioactive liquid and gaseous effluents and solid waste released, an assessment of offsite doses, and a list of unplanned releases. Listing of new locations for dose calculations identified by the land use census as well as any changes to ODCM, PCP, and major changes to radioactive waste treatment systems are also included in the report.

3. Special report. The Licensee has made a commitment to file a 30-day special report to the NRC under the following conditions as prescribed by the proposed specifications:

   - exceeding liquid effluent dose limits according to Specifications 3.11.1-2 and 3.11.1-3
   - exceeding gaseous effluent dose limits according to Specifications 3.11.2-2, 3.11.2-3, and 3.11.2-4
   - exceeding total dose limits according to Specification 3.11.4
   - exceeding the reporting levels of Table 3.12-2 for the radioactivity measured in the environmental sampling medium.

These reporting commitments have satisfied the provisions of NUREG-0472.

3.2.12 Implementation of Major Programs

One objective of the administrative controls is to ensure that implementation of major programs such as the ODCM, the PCP, and major changes to the radioactive waste treatment system follow appropriate administrative procedures. The Licensee has made a commitment to review, report, and implement major programs such as the ODCM, the PCP, and major changes to the radioactive waste treatment system. These commitments meet the intent of NUREG-0472.

3.3 OFFSITE DOSE CALCULATION MANUAL (ODCM)

As specified in NUREG-0472, the ODCM is to be developed by the Licensee to document the methodology and approaches used to calculate offsite doses and maintain the operability of the effluent system. As a minimum, the ODCM should provide equations and methodology for the following topics:

- o alarm and trip setpoint on effluent instrumentation
- o liquid effluent concentration in unrestricted areas
- o gaseous effluent dose rate at or beyond the site boundary
- o liquid and gaseous effluent dose contributions
- o liquid and gaseous effluent dose projections.

In addition, the ODCM should contain flow diagrams, consistent with the systems being used at the station, defining the treatment paths and the components of the radioactive liquid, gaseous, and solid waste management systems. Of course, these diagrams should be consistent with the systems being used at the station. A description and the location of samples in support of the environmental monitoring program are also needed in the ODCM.

3.3.1 Evaluation

The Licensee has followed the methodology of NUREG-0133 [9] to determine the alarm and trip setpoints for the liquid and gaseous effluent monitors.

The Licensee has demonstrated the method of calculating the radioactive liquid concentration by describing in the ODCM the means of collecting and analyzing representative samples prior to and after releasing liquid effluents into the circulating water discharge. The method provides added assurance of compliance with 10CFR20 for liquid releases.

Methods are also included for showing that dose rates at or beyond the unrestricted areas due to noble gases, iodine-131, and radionuclides in particulate form with half-lives greater than 8 days are in compliance with 10CFR20. In all cases, the Licensee has used the highest annual average values of relative concentration (X/Q) and relative deposition (D/Q) to

determine the controlling locations. The Licensee intends to use the maximally exposed individual and the critical organ as the reference receptor. For noble gases, the Licensee has considered the total body dose and the skin dose resulting from gamma and beta radiation, respectively. For iodine-131 and particulates, the Licensee has considered the inhalation pathway for estimating the doses. The Licensee has demonstrated that the described methods and relevant parameters have followed the conservative approaches provided by NUREG-0133 and Regulatory Guide 1.109. However, the Licensee has not included tritium in the dose rate calculation, which is inconsistent with the Licensee's RETS Specification 3.11.2.1(b).

Evaluation of the cumulative dose is to ensure that the quarterly and annual dose design objectives specified in RETS are not exceeded.

For liquid releases, the Licensee has identified drinking water and fish consumption as the two viable pathways. In the calculation, the Licensee has used a near-field dilution factor (D_W = 5.7) specific to the plant; all other key parameters follow the suggested values given in Regulatory Guide 1.109. The Licensee has used the maximally exposed adult individual as the reference receptor. To correctly assess the cumulative dose, the Licensee intends to estimate the dose once per 31 days. However, the Licensee has made a typographic error in page 1.0-11 of the submittal, where the units conversion factor K_o should be 1.14×10^5 rather than 1.14×10^3.

Evaluation of the cumulative dose from noble gas releases includes both beta and gamma and air doses at and beyond the site boundary. The critical organs under consideration are the total body and skin for gamma and beta radiation, respectively. Again, the Licensee has used the maximum (X/Q) values as discussed earlier and has followed the methodology and parameters of NUREG-0133 and Regulatory Guide 1.109.

For iodine-131 and particulates with half-lives greater than 8 days, the Licensee has provided a method to demonstrate that cumulative doses calculated from the release meet both quarterly and annual design objectives. The Licensee has demonstrated a method of calculating the dose using maximum

annual average (X/Q) values for the inhalation pathway and has included (D/Q) values for the grass-cow-milk pathway for ingestion, for which the Licensee considered thyroid to be the critical organ for all age groups. This approach is consistent with the methodology of NUREG-0133. However, the Licensee has not included tritium in the cumulative dose calculation, which is inconsistent with the Licensee's RETS Specification 3.11.2.3.

Using the existing methodology for gaseous and liquid dose calculations, the Licensee has demonstrated a procedure to project the 90-day dose. The Licensee, however, should ensure that the dose projection method can be used for the monthly dose projection in order to meet the design objectives for the liquid radwaste system and the gaseous radwaste system. Also, the Licensee's technical basis (0.25 mrem/31 days, total body, and 0.833 mrem/31 days, any organ) is inconsistent with the RETS commitment, for which the Licensee has followed the model RETS design objective (0.06 mrem to the total body and 0.2 mrem to any organ in a 31-day period).

Adequate flow diagrams defining the effluent paths and components of the radioactive liquid and gaseous waste treatment systems have been provided by the Licensee. Radiation monitors specified in the Licensee-submitted RETS are also properly identified in the flow diagrams.

The Licensee has provided a description of sampling locations in the ODCM and has identified them in Section 3 of that document. This description is consistent with the sampling locations specified in the Licensee's RETS Table 3.12-1 on environmental monitoring, except that the Licensee's Table 9 has only 25 TLD locations, which is less than the 27 locations specified in the Licensee's RETS commitment. The Licensee has not designated a section to assess the total dose (40CFR190 requirement) including the direct radiation from the uranium fuel cycle sources.

In summary, except for the deficiencies discussed above, the Licensee's ODCM uses documented and approved methods that are consistent with the methodology and guidance in NUREG-0133 and is therefore an acceptable reference.

3.4 PROCESS CONTROL PROGRAM (PCP)

NUREG-0472 specifies that the Licensee develop a PCP to ensure that the processing and packaging of solid radioactive wastes will be accomplished in compliance with 10CFR20, 10CFR71, and other federal and state regulations or requirements governing the offsite disposal of the low-level radioactive waste.

The PCP is not intended to contain a set of detailed procedures; rather, it is the source of basic criteria for the detailed procedures to be developed by the Licensee. The criteria used for the PCP are to address only today's requirements [23]. The uncertainty about PCP requirements results from the recent promulgation of 10CFR61, "Licensing Requirements for Land Disposal of Radioactive Waste." The NRC staff's technical positions are being developed by the Division of Waste Management.

3.4.1 Evaluation

The Licensee has made a commitment to process all liquid wet wastes prior to shipment offsite; has made a commitment to comply with federal regulations (e.g., 10CFR71) on shipping and packaging; has made a commitment to comply with burial site regulations; has provided general descriptions for laboratory mixing for deriving process parameters, process, and sampling for solidification; and has referenced plant and approved contractor procedures for verifying the absence of free liquid in containers and also for the treatment of oily wastes. The Licensee has also made a commitment to follow plant procedures and exercise controls in keeping the doses ALARA. These commitments satisfy the intent of the NRC Guidelines [23]. However, the Licensee has not indicated whether the solidification is exothermic and has not provided process control parameters for capping the containers if the solidification is indeed exothermic. Also, the Licensee has not provided a sketch of the processing system(s).

In summary, it is concluded that the Licensee complies with the NRC criteria for PCP implementation except for the deficiencies described above.

4. CONCLUSIONS

Table 1 summarizes the results of the final review and evaluation of the RETS submittal for Davis-Besse Nuclear Power Station Unit 1. The evaluation was based on the Licensee's final submittal of the RETS, ODCM, and PCP [22].

The following conclusions were reached:

1. The Licensee's proposed RETS, submitted March 15, 1984 [22], meets the intent of the NRC staff's "Standard Radiological Effluent Technical Specifications," NUREG-0472, for Davis-Besse Nuclear Power Station Unit 1.

2. The Licensee's ODCM, submitted March 15, 1984 [22], uses documented and approved methods that are applicable to Davis-Besse Nuclear Power Station Unit 1 and are consistent with the criteria of NUREG-0133, except for the following decrepancies:

   - The Licensee has not included tritium in either the gaseous dose rate or gaseous dose calculations, which is inconsistent with the Licensee's commitments in RETS.

   - A typographic error was found in the Licensee's submittal (p. 1.0-11), where the units conversion factor K_o should be 1.14×10^5 rather than 1.14×10^3.

   - The Licensee has not included a monthly dose projection method in the submittal for the liquid and gaseous radwaste treatment system.

   - The Licensee's technical basis (0.25 mrem/31 days, total body, and 0.833 mrem/31 days, any organ) is inconsistent with the RETS commitment, for which the Licensee has followed the model RETS design objectives (0.06 mrem to the total body and 0.2 mrem to any organ in a 31-day period).

   - The Licensee has not designated a section to assess the total dose (40CFR190 requirement) including the direct radiation from the uranium fuel cycle sources.

   - The Licensee has only provided 25 TLD locations in Table 9 of the submittal, which is less than the 27 locations specified in the Licensee's RETS commitment.

3. The Licensee's PCP, submitted March 15, 1984 [22], complies with the NRC criteria for implementing the PCP, except for the following discrepancies:

- The Licensee has not indicated whether the solidification is exothermic and has not provided process control parameters for capping the containers if the solidification is indeed exothermic.

- The Licensee has not provided a sketch of the processing system(s).

Table 1. Evaluation of Proposed Radiological Effluent Technical Specifications (RETS), Davis-Besse Nuclear Power Station Unit 1

	Technical Specifications		Replaces or Updates Existing Tech. Specs. (Section)	Evaluation
	NRC Staff Std. RETS NUREG-0472 (Section)*	Licensee Proposal (Section)		
Effluent Instrumentation	3/4.3.3.3.10 3/4.3.3.3.11	3/4.3.3.3.9 3/4.3.3.3.10	3/4.3.3 Appendix A	Meets the intent of NRC criteria
Radioactive Effluent Concentrations	3/4.11.1.1 3/4.11.2.1	3/4.11.1.1 3/4.11.2.1	To be added to Appendix A	Meets the intent of NRC criteria
Offsite Doses	3/4.11.1.2, 3/4.11.2.2, 3/4.11.2.3, 3/4.11.4	3/4.11.1.2, 3/4.11.2.2, 3/4.11.2.3, 3/4.11.4	To be added to Appendix A	Meets the intent of NRC criteria
Effluent Treatment	3/4.11.1.3 3/4.11.2.4	3/4.11.1.3 3/4.11.2.4	To be added to Appendix A	Meets the intent of NRC criteria
Radioactivity Inventory Limits	3/4.11.1.4 3/4.11.2.6	3/4.11.1.4	To be added to Appendix A	Meets the intent of NRC criteria
Explosive Gas Mixtures	3/4.11.2.5B	3/4.11.2.5	To be added to Appendix A	Meets the intent of NRC criteria on an interim basis
Solid Radioactive Waste	3/4.11.3	3/4.11.3	To be added to Appendix A	Meets the intent of NRC criteria
Environmental Monitoring	3/4.12.1	3/4.12.1	To be added to Appendix A	Meets the intent of NRC criteria
Audits and Reviews	6.5.1, 6.5.2	6.5.1, 6.5.2	6.5.1, 6.5.2	Meets the intent of NRC criteria .
Procedures and Records	6.8, 6.10	6.8, 6.10	6.8, 6.10	Meets the intent of NRC criteria
Reports	6.9	6.9	6.9	Meets the intent of NRC criteria
Implementation of Major Programs	6.13, 6.14, 6.15	6.14, 6.15, 6.16	To be added to Appendix A	Meets the intent of NRC criteria

*Section number sequence is according to NUREG-0472, Rev. 3, Draft 7" [12].

5. REFERENCES

1. "Radiological Effluent Technical Specifications for Pressurized Water Reactors," Rev. 2
   NRC, July 1979
   NUREG-0472

2. Title 10, Code of Federal Regulations, Part 50, Appendix I, "Numerical Guides for Design Objectives and Limiting Conditions for Operation to Meet the Criterion, 'As Low As Is Reasonably Achievable,' for Radioactive Material in Light-Water-Cooled Nuclear Power Reactor Effluents"

3. Title 10, Code of Federal Regulations, Part 50, Appendix I, Section V, "Effective Dates"

4. Title 10, Code of Federal Regulations, Part 20, "Standards for Protection Against Radiation"

5. Title 40, Code of Federal Regulations, Part 190, "Environmental Radiation Protection Standards for Nuclear Power Operations"

6. Title 10, Code of Federal Regulations, Part 50, Appendix A, "General Design Criteria for Nuclear Power Plants"

7. Title 10, Code of Federal Regulations, Part 50, Appendix B, "Quality Assurance Criteria for Nuclear Power Plants and Fuel Reprocessing Plants"

8. "Radiological Effluent Technical Specifications for Boiling Water Reactors," Rev. 2
   NRC, July 1979
   NUREG-0473

9. "Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, A Guidance Manual for Users of Standard Technical Specifications"
   NRC, October 1978
   NUREG-0133

10. C. Willis and F. Congel (NRC)
    "Summary of Draft Contractor Guidance of RETS"
    Presented at the AIF Environmental Subcommittee Meeting, Washington, DC
    May 19, 1982

11. F. Congel (NRC)
    Memo to RAB Staff (NRC)
    Subject: Interim Changes in the Model Radiological Effluent Technical Specifications (RETS)
    August 9, 1982

12. "Radiological Effluent Technical Specifications for Pressurized Water Reactors," Rev. 3, Draft 7", intended for contractor guidance in reviewing RETS proposals for operating reactors
NRC, September 1982
NUREG-0472

13. Davis-Besse Nuclear Power Station Unit 1 Radiological Effluent Technical Specifications
Toledo Edison Company, March 16, 1979
NRC Docket No. 50-346

14. Davis-Besse Unit 1 Offsite Dose Calculation Manual
Toledo Edison Company, March 16, 1979
NRC Docket No. 50-346

15. "Comparison of Specification NUREG-0472, Radiological Effluent Technical Specifications for PWRs, vs. Licensee Submittal of Radiological Effluent Technical Specifications for Davis-Besse Nuclear Power Station Unit 1" (Draft)
Franklin Research Center, August 10, 1982

16. Technical Review of Offsite Dose Calculation Manual for Davis-Besse Nuclear Power Station Unit 1 (Draft)
Franklin Research Center, August 10, 1982

17. Franklin Research Center
Letter of Transmittal to NRC
Subject: Trip report on site visit to Davis-Besse Nuclear Power Plant Unit 1
September 2, 1982

18. R. P. Crouse (Toledo Edison)
Letter of Transmittal to NRC
Subject: Application for Amendment to Facility Operating Licensee No. NPF-3 for the Davis-Bessee Nuclear Power Station Unit 1 (Draft)
December 23, 1982
NRC Docket No. 50-346

19. R. P. Crouse (Toledo Edison)
Letter of Transmittal to NRC
Subject: Schedule of Installation for the Turbine Building Sump Effluent Line Monitor (with regard to RETS submittal)
January 31, 1983
NRC Docket No. 50-346

20. R. P. Crouse (Toledo Edison)
Letter of Transmittal to NRC
Subject: Revisions to Radiological Technical Specifications (RETS)
July 13, 1983
NRC Docket No. 50-346

21. W. Meinke (NRC)
Memo to S. Pandey (FRC)
Subject: Resolution of Discrepancies in RETS Draft of September 23, 1982, for Davis-Besse Nuclear Power Station Unit 1
November 2, 1983

22. R. P. Crouse (Toledo Edison)
Letter of Transmittl to NRC
Subject: Request for Amendment Change, "Application for Amendment to Facility Operating Licensee No. NPF-3 for Davis-Besse Nuclear Power Station Unit 1"
March 15, 1984
NRC Docket No. 50-346

23. C. Willis (NRC)
Letter to S. Pandey (FRC)
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January 7, 1983

24. W. Meinke (NRC)
Memo to S. Pandey (FRC)
Subject: Resolution of Discrepancies in RETS Submittal of March 15, 1984, for Davis-Besse Nuclear Power Station Unit 1
April 16, 1984

25. "Comparison of Specification NUREG-0472, Radiological Effluent Technical Specifications for PWRs, vs. Licensee Final Submittal, dated March 15, 1984, of Radiological Effluent Technical Specifications for Davis-Besse Nuclear Power Station Unit 1"
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Letter to S. Pandey (FRC)
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Memo to P. C. Wagner (NRC)
"Plan for Implementation of RETS for Operating Reactors"
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30. W. P. Gammill (NRC)
Memo to P. C. Wagner (NRC)
"Current Position on Radiological Effluent Technical Specifications (RETS) Including Explosive Gas Controls"
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31. "An Acceptable Radiological Environmental Monitoring Program"
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Memo to ETSB/RAB (NRC)
"Radiological Effluent Technical Specifications (RETS) Provisions for I-133"
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33. Methods for Demonstrating LWR Compliance with the EPA Uranium Fuel Cycle Standard (40CFR190)
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34. "General Contents of the Offsite Dose Calculation Manual," Revision 1
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