New: 1/2-ODC-2.03
Old: SECTION 3

Beaver Valley Power Station

Unit 1/2

1/2-ODC-2.03

ODCM: Radiological Environmental Monitoring Program

Document Owner
Manager, Health Physics

Revision Number	0
Level Of Use	General Skill Reference
Safety Related Procedure	Yes

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1.0 PURPOSE

1.1 This procedure provides the Radiological Environmental Monitoring Program (REMP) requirements from the Radiological Branch Technical Position.[3.1.1]

1.1.1 Prior to issuance of this procedure, these items were located in Section 3 of the old ODCM.

2.0 SCOPE

2.1 This procedure is applicable to all station personnel that are qualified to perform activities as described and referenced in this procedure.

3.0 REFERENCES AND COMMITMENTS

3.1 References

3.1.1 Radiological Branch Technical Position, Revision 1, 1979.

3.1.2 Regulatory Guide 1.109, Calculation of Annual Dose to Man From Routine Releases of Reactor Effluents For the Purpose of Evaluating Compliance with 10 CFR Part 50, Appendix I, Revision 1, 1977.

3.1.3 NUREG-1301, Offsite Dose Calculation Manual Guidance; Standard Radiological Effluent Controls for Pressurized Water Reactors (Generic Letter 89-01, Supplement No. 1).

3.1.4 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.

3.1.5 1/2-ADM-1640, Control of the Offsite Dose Calculation Manual

3.1.6 1/2-ADM-0100, Procedure Writers Guide

3.1.7 1/2-ADM-0101, Review and Approval of Documents

3.2 Commitments

3.2.1 10 CFR 50 Appendix I

4.0 RECORDS AND FORMS

4.1 Records

4.1.1 Any calculation supporting ODCM changes shall be documented, as appropriate, by a retrievable document (e.g., letter or calculation package) with an appropriate RTL number.

4.2 Forms

4.2.1 None.

5.0 PRECAUTIONS AND LIMITATIONS

5.1 The specified detection capabilities are state-of-the-art for routine environmental measurements in industrial laboratories.

6.0 ACCEPTANCE CRITERIA

6.1 Any change to this procedure shall contain sufficient justification that the change will maintain the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36a and Appendix I to 10 CFR 50, and not adversely impact the accuracy or reliability of effluent dose or setpoint calculation.

6.1.1 All changes to this procedure shall be prepared in accordance with 1/2-ADM-0100[3.1.6] and 1/2-ADM-1640[3.1.5].

6.1.2 All changes to this procedure shall be reviewed and approved in accordance with 1/2-ADM-0101[3.1.7] and 1/2-ADM-1640[3.1.5].

7.0 PREREQUISITES

7.1 The user of this procedure shall be familiar with ODCM structure and format.

8.0 PROCEDURE

8.1 REMP Overview

8.1.1 Attachment A, Table 3.0-1 contains the site number, sector, distance, sample point description, sampling and collection frequency, analysis, and analysis frequency for various exposure pathways in the vicinity of the Beaver Valley Power Station for the REMP. Attachment B, Figures 3.0-1 through 3.0-6 show the location of the various sampling points.

8.2 Sampling and Analysis Program

8.2.1 Environmental samples shall be collected and analyzed according to Attachment A, Table 3.0-1. Analytical techniques used shall be such that the detection capabilities in 1/2-ODC-3.03, Table 4.12-1 are achieved.

8.2.2 The results of the radiological environmental monitoring are intended to supplement the results of the radiological effluent monitoring by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways.

8.2.2.1 The specified environmental monitoring program 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.

8.2.2.2 The initial radiological environmental monitoring program should be conducted for the first 3 years of commercial operation (or other period corresponding to a maximum burnup in the initial core cycle). Following this period, program changes may be proposed based on operational experience.

8.2.3 Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons.

8.2.3.1 IF specimens are unobtainable due to sampling equipment malfunction, THEN every effort shall be made to complete corrective action prior to the end of the next sampling period.

8.2.3.2 All deviations from the sampling schedule shall be documented in the annual REMP report.

8.3 **Crosscheck Program**

8.3.1 The laboratories of the licensee and licensee's contractors which perform analyses shall participate in the Environmental Protection Agency's (EPA's) Environmental Radioactivity Laboratory Intercomparisons Studies (Crosscheck) Program or equivalent program.

8.3.1.1 This participation shall include all of the determinations (sample medium-radionuclide combination) that are offered by EPA and that also are included in the monitoring program.

8.3.1.2 The results of analysis of these crosscheck samples shall be included in the annual REMP report. The participants in the crosscheck program may provide their program code so that the NRC can review the participant data directly in lieu of submission in the annual REMP report.

8.3.1.3 IF the results of a determination in the crosscheck program are outside the specified control limits, THEN the laboratory shall investigate the cause of the problem and take steps to correct it. The results of this investigation and corrective action shall be included in the annual REMP report.

8.3.2 The requirement for the participation in the crosscheck program, is based on the need for independent checks on the precision and accuracy of the measurements of radioactive material in environmental sample matrices as part of the quality assurance program for environmental monitoring in order to demonstrate the results are reasonably valid.

8.4 Land Use Census Program

8.4.1 A census shall be conducted annually during the growing season to determine the location of the nearest milk animal, and nearest garden greater than 50 square meters (500 sq. ft.) producing broad leaf vegetation in each of the 16 meteorological sectors within a distance of 8 km (5 miles).

8.4.1.1 For elevated releases as defined in Regulatory Guide 1.111[3.1.4], the census shall also identify the locations of all milk animals, and gardens greater than 50 square meters producing broad leaf vegetation out to a distance of 5 km (3 miles) for each radial sector.

8.4.1.2 IF it is learned from this census that the milk animals or gardens are present at a location which yields a calculated thyroid dose greater than those previously sampled, or if the census results in changes in the location used in ODCM dose calculations, THEN a written report shall be submitted to the Director of Operating Reactors, NRR (with a copy to the Director of the NRC Regional Office) within 30 days identifying the new location (distance and direction).

8.4.1.2.1 Milk animal or garden locations resulting in higher calculated doses shall be added to the surveillance program as soon as practicable.

8.4.1.3 The sampling location (excluding the control sample location) having the lowest calculated dose may then be dropped from the surveillance program at the end of the grazing or growing season during which the census was conducted. Any location from which milk can no longer be obtained may be dropped from the surveillance program after notifying the NRC in writing that they are no longer obtainable at that location.

8.4.1.4 The results of the land-use census shall be reported in the annual REMP report.

8.4.1.5 The census of milk animals and gardens producing broad leaf vegetation is based on the requirement in Appendix I of 10 CFR Part 50[3.2.1] to "Identify changes in the use of unrestricted areas (e.g., for agricultural purposes) to permit modifications in monitoring programs for evaluating doses to individuals from principal pathways of exposure." The consumption of milk from animals grazing on contaminated pasture and of leafy vegetation contaminated by airborne radioiodine is a major potential source of exposure. Samples from milk animals are considered a better indicator of radioiodine in the environment than vegetation.

8.4.1.5.1 IF the census reveals milk animals are not present or are unavailable for sampling, THEN vegetation must be sampled.

8.4.1.6 The 50 square meter garden, considering 20% used for growing broad leaf vegetation (i.e., similar to lettuce and cabbage), and a vegetation yield of 2 kg/m^2, will produce the 26 kg/yr assumed in Regulatory Guide 1.109[3.1.2], for child consumption of leafy vegetation.

8.5 Direct Radiation Monitoring Program

8.5.1 The increase in the number of direct radiation stations is to better characterize the individual exposure (mrem) and population exposure (man-rem) in accordance with Criterion 64 - monitoring radioactivity releases, of 10 CFR Part 50, Appendix A. The NRC will place a similar amount of stations in the area between the two rings designated in 1/2-ODC-3.03, Table 3.12-1.

- END -

TABLE 3.0-1

PROGRAM DETAILS

EXPOSURE PATHWAY AND/OR SAMPLE	SITE NO.	SECTOR[1]	MILES[2]	SAMPLE POINT DESCRIPTION[3]	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSES
1. AIRBORNE Radioiodine and Particulates	13	11	1.4	Meyer's Fame	Continuous sampler operation with collection at least weekly	Radioiodine Cartridge: I-131 analysis weekly. Particulate Sampler: Gross beta analysis following filter change[5]; Gamma isotopic analysis on composite (by location) quarterly.
	30	4	0.5	Shippingport (S.S.)		
	32	15	0.8	Midland (S.S.)		
	46.1	3	2.3	Industry, Midway Dr.		
	48	10	16.3	Weirton, W. Va., Weirton Water Tower, Collier Way[4]		
2. DIRECT RADIATION	10	3	1.0	Shippingport Boro	Continuous measurement with quarterly collection.	Gamma dose quarterly.
	13	11	1.4	Meyer's Farm		
	14	11	2.5	Hookstown		
	15	14	3.7	Georgetown Post Office		
	27	7	6.1	Brunton's		
	28	1	8.6	Sherman's Farm		
	29B	3	8.0	Beaver Valley Geriatric Center		
	30	4	0.5	Shippingport (S.S.)		
	32	15	0.8	Midland (S.S.)		
	45	5	2.2	Rt. 18 & Anderson Street		
	45.1	6	1.9	Raccoon Twp., Kennedy's Corner		
	46	3	2.5	Industry, Midway Drive		
	46.1	3	2.3	Industry, Rt. 86 - Garage		
	47	14	4.9	East Liverpool, OH Water Treatment Plant		
	48	10	16.3	Weirton, W. Va., Weirton Water Tower, Collier Way		
	51	5	8.0	Aliquippa (S.S.)		
	59	6	1.0	236 Green Hill Rd.		
	60	13	2.5	444 Hill Road		
	70	1	3.4	N. of Western. Beaver School-Engle Rd.		
	71	2	6.0	Brighton Twp., First Western Bank		

TABLE 3.0-1

PROGRAM DETAILS

EXPOSURE PATHWAY AND/OR SAMPLE	SITE NO.	SECTOR[1]	MILES[2]	SAMPLE POINT DESCRIPTION[3]	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSES
2. DIRECT RADIATION (continued)	72	3	3.3	Industry, Logan Park	Continuous measurement with quarterly collection.	Gamma dose quarterly.
	73	4	2.5	618 Squirrel Run Road		
	74	4	7.0	CCBC, 137 Poplar Avenue		
	75	5	4.1	117 Holt Road		
	76	6	3.8	Raccoon Elementary School		
	77	6	5.6	3614 Green Garden Road		
	78	7	2.7	Raccoon Municipal Building		
	79	8	4.4	Rt. 151 & Pross Ln.		
	80	9	8.2	Raccoon Park Office, Rt. 18		
	81	9	3.6	Millcreek United Presb. Church		
	82	9	6.9	Hanover Municipal Building		
	83	10	4.2	735 Mill Creek Road		
	84	11	8.3	Hancock Parks & Recreation Complex		
	85	12	5.7	Rts. 8 and 30 Intersection		
	86	13	6.2	East Liverpool, Oh., 1090 Ohio Avenue		
	87	14	7.0	Calcutta, Oh.– Calcutta Smith's Ferry Rd & Valley Drive		
	88	15	2.8	Midland Heights, 110 Summit Road		
	89	15	4.8	Ohioville, 488 Smith's Ferry Road		
	90	16	5.2	Opposite Fairview School		
	91	2	3.9	Pine Grove & Doyle Roads		
	92	12	2.8	Georgetown Road (S.S.)		
	93	16	1.1	Midland – Sunrise Hills		
	94	8	2.2	McCleary Road & Pole Cat Hollow Road		
	95	10	2.3	832 McCleary Road		

TABLE 3.0-1 (continued)

PROGRAM DETAILS

EXPOSURE PATHWAY AND/OR SAMPLE	SITE NO.	SECTOR[1]	MILES[2]	SAMPLE POINT DESCRIPTION[3]	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSES
3. WATERBORNE						
a) Surface (River)	49	3	5.0	Upstream side of Montgomery Dam[4]	Composite sample with sample collection at least monthly[6].	Gamma isotopic analysis monthly; tritium analysis on composite (by location) quarterly.
	2.1	14	1.5	Downstream, Midland – J&L		
b) Drinking Water	4	15	1.3	Midland Water Treatment Plant	Composite sample with sample collection at least bi-weekly[6].	I-131 analysis bi-weekly; gamma isotopic analysis on composite (by location) monthly; tritium analysis on composite (by location) quarterly.
	5	14	4.9	East Liverpool, Oh., Water Treatment Plant		
c) Ground Water				None required[7]		
d) Shoreline Sediment	2A	13	0.2	BVPS Outfall Discharge	Semi-annually.	Gamma isotopic analysis semi-annually.
4. INGESTION						
a) Milk	25	10	2.1	Searight's Farm	At least bi-weekly when animals are on pasture; at least monthly at other times.	Gamma isotopic and I-131 analysis on each sample.
	*[8]	--	--			
	*[8]	--	--			
	*[8]	--	--			
	96	10	10.4	Windsheimer's Farm[4]		
b) Fish	2A	13	0.2	BVPS Outfall Discharge	Semi-annually one sample of available species.	Gamma isotopic analysis. On edible portion.
	49	3	5.0	Upstream side of Montgomery Dam		
c) Food Products (Leafy Vegetables)	--	--	--	Three (3) locations within 5 miles of BVPS (Shippingport, Industry, and Georgetown)[9]	Annually at harvest time.	Gamma isotopic and I-131 analysis on edible portion.
	--	--	--			
	--	--	--			
	--	--	--	One (1) control location (Weirton, W. Va. area)[9]		

TABLE 3.0-1 (continued)

PROGRAM DETAILS

EXPOSURE PATHWAY AND/OR SAMPLE	SITE NO.	SECTOR[1]	MILES[2]	SAMPLE POINT DESCRIPTION[3]	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY OF ANALYSES

[1] Sector numbers 1-16 correspond to the 16 compass direction sectors N - NNW.

[2] Distance (in miles) is as measured from BVPS Unit 1 Containment Building.

[3] All Sample Points, unless otherwise noted, are in the Commonwealth of Pennsylvania. Maps showing the approximate locations of the Sample Points are provided as Attachment B, Figures 3.0-1 through 3.0-6.

[4] This is a Control Station and is presumed to be outside the influence of BVPS effluents.

[5] A gamma isotopic analysis is to be performed on each sample when the gross beta activity is found to be greater than 10 times the mean of the Control Station sample.

[6] Composite samples are obtained by collecting an aliquot at intervals not exceeding 2 hours. For the upstream surface water location site 49, a weekly grab sample, composited each month based on river flow at time of sampling is also acceptable.

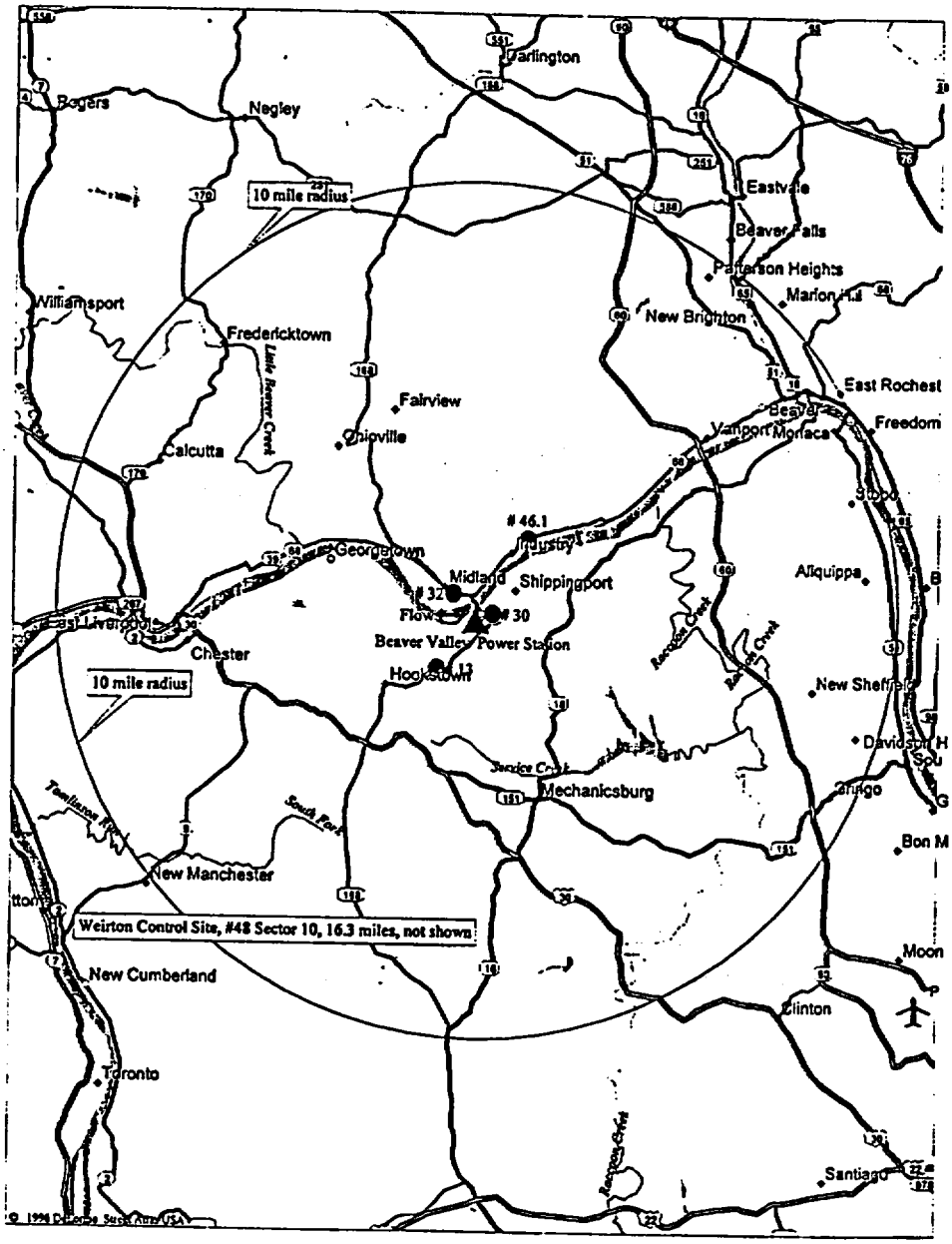
[7] Collection of Ground Water samples is not required as the hydraulic gradient or recharge properties are directed toward the river because of the high terrain in the river valley at the BVPS; thus, station effluents do not affect local wells and ground water sources in the area.

[8] These Sample Points will vary and are chosen based upon calculated annual deposition factors (highest).

[9] Exact location may vary due to availability of food products.

ATTACHMENT B
Page 1 of 7
LOCATION OF SAMPLING SITES

FIGURE 3.0-2
AIR SAMPLING LOCATIONS



Sector	Site #	Distance (miles)	Location
11	13	1.4	Meyer's Farm
4	30	0.5	Shippingport (S. S.)
15	32	0.8	Midland (S.S.)
3	46.1	2.3	Industry, Rt. 68 Garage
10	48	16.4	Weirton, W. Va.,-Weirton Water Tower, Collier Way

ATTACHMENT B
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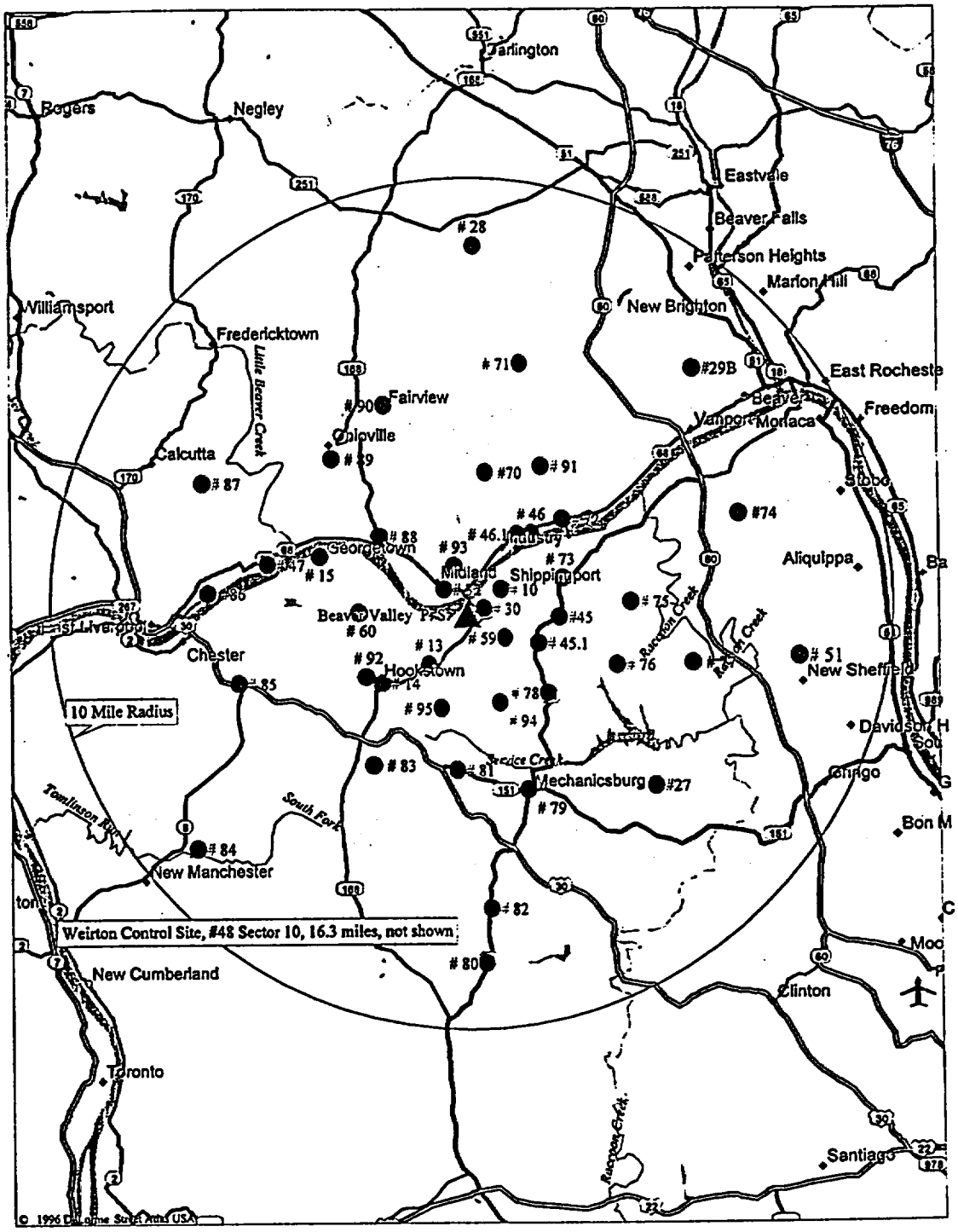
LOCATION OF SAMPLING SITES

FIGURE 3.0-2 (continued)

TLD LOCATIONS



ATTACHMENT B
Page 3 of 7
LOCATION OF SAMPLING SITES

FIGURE 3.0-2 (continued)
TLD LOCATIONS

Southeast

Sector	Site #	Distance (miles)	Location	Sector	Site #	Distance (miles)	Location
7	27	6.1	Brunton's Farm	7	78	2.7	Raccoon Municipal Bldg.
6	45.1	1.9	Raccoon Twp., Kennedy Corners	8	79	4.4	Rt. 151 & Pross Ln.
5	51	8.0	Aliquippa (S.S.)	9	80	8.2	Raccoon Park Office–Rt. 18
6	59	1.0	236 Green Hill Road	9	82	6.9	Hanover Municipal Building
6	76	3.8	Raccoon Elementary School	8	94	2.2	McCleary Road & Pole Cat Hollow Road
6	77	5.6	3614 Green Garden Road				

Northwest

Sector	Site #	Distance (miles)	Location	Sector	Site #	Distance (miles)	Location
14	15	3.7	Georgetown Post Office	14	87	7.0	Calcutta, Oh. - Calcutta Smith's Ferry Rd & Valley Drive
15	32	0.8	Midland (S.S.)	15	88	2.8	Midland Heights – 110 Summit Rd
14	47	4.9	E. Liverpool, Oh. (Water Company)	15	89	4.8	Ohioville – 488 Smith's Ferry Road
13	60	2.5	Haney's Farm	16	90	5.2	Opposite Fairview School
13	86	6.2	E. Liverpool, Oh., 1090 Ohio Avenue	16	93	1.1	Midland - Sunrise Hills

Northeast

Sector	Site #	Distance (miles)	Location	Sector	Site #	Distance (miles)	Location
4	10	1.0	Shippingport Boro	1	70	3.4	North of Western Beaver School – Engle Road
1	28	8.6	Sherman's Farm	2	71	6.0	Brighton Twp., First Western Bank
3	29B	8.0	Beaver Valley Geriatric Ctr.	3	72	3.3	Industry, Logan Park
4	30	0.5	Shippingport (S.S.)	4	73	2.5	618 Squirrel Run Road
5	45	2.2	Rt. 18 & Anderson Street	4	74	7.0	CCBC – 137 Poplar Avenue
3	46	2.5	Industry, Midway Drive	5	75	4.1	117 Holt Road
3	46.1	2.3	Industry, Rt. 68 - Garage	2	91	3.9	Pine Grove Rd. & Doyle Rd.

Southwest

Sector	Site #	Distance (miles)	Location	Sector	Site #	Distance (miles)	Location
11	13	1.4	Meyer's Farm	11	84	8.3	Hancock Co. Parks & Recreation Complex
11	14	2.5	Hookstown	12	85	5.7	Rts. 8 & 30 Intersection
10	48	16.3	Weirton, W. Va., - Weirton Water Tower, Collier Way	12	92	2.8	Georgetown Road
9	81	3.6	Millcreek United Presb. Church	10	95	2.3	832 McCleary Road
10	83	4.2	735 Mill Creek Road				

ATTACHMENT B
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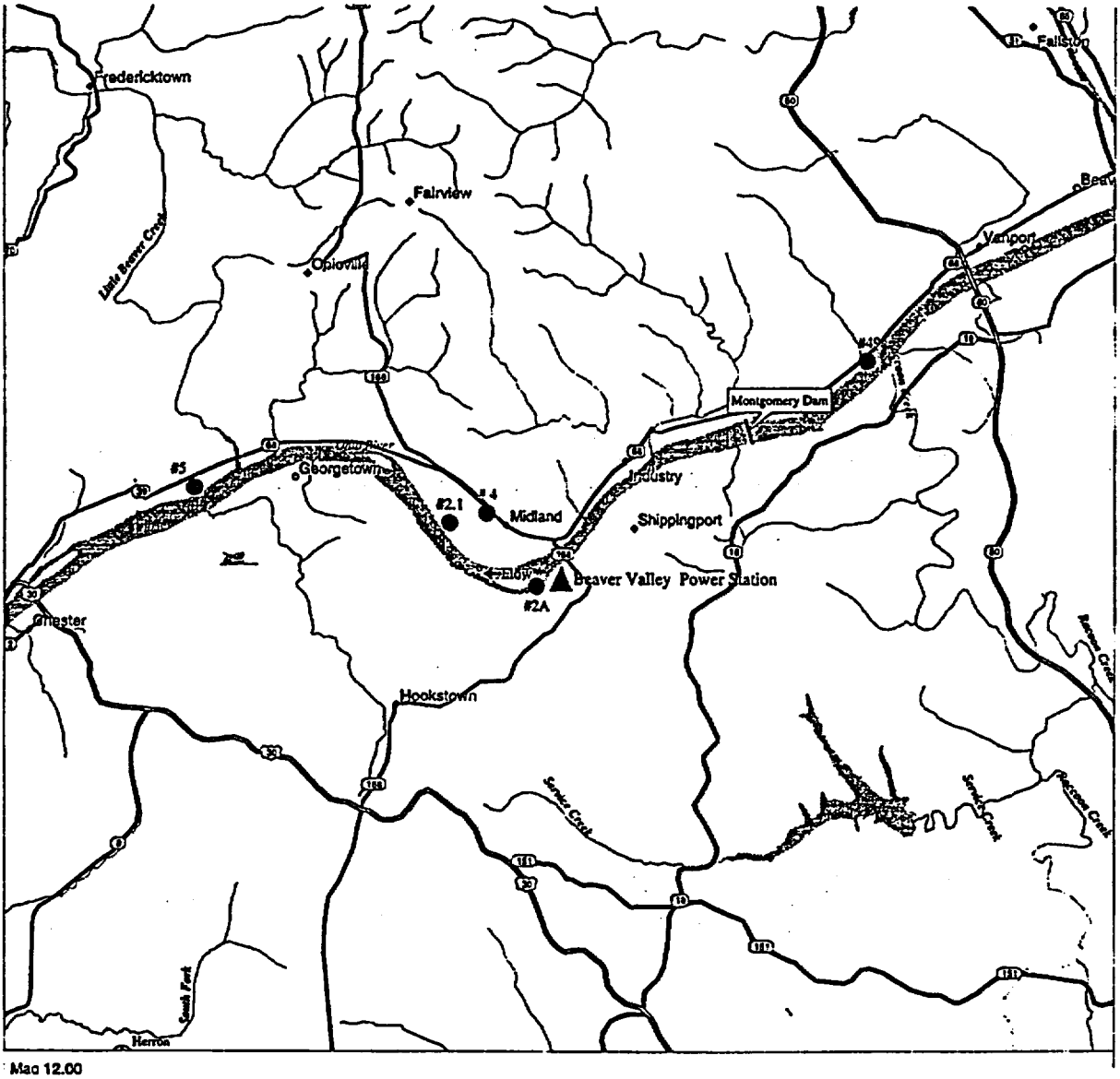
LOCATION OF SAMPLING SITES

FIGURE 3.0-3

SHORELINE, SEDIMENT, SURFACE WATER, AND DRINKING WATER SAMPLING LOCATIONS



Water/Shoreline Sediment Sampling Locations

Sample Type	Sector	Site #	Distance (miles)	Location
Surface Water	14	2.1	1.5	Downstream, Midland - J&L
Surface Water	3	49	5.0	Upstream side of Montgomery Dam
Sediment	13	2A	0.2	BVPS Outfall Discharge
Drinking Water	15	4	1.3	Midland Water Treatment Plant
Drinking Water	14	5	4.9	E. Liverpool, Oh. Water Treatment Plant

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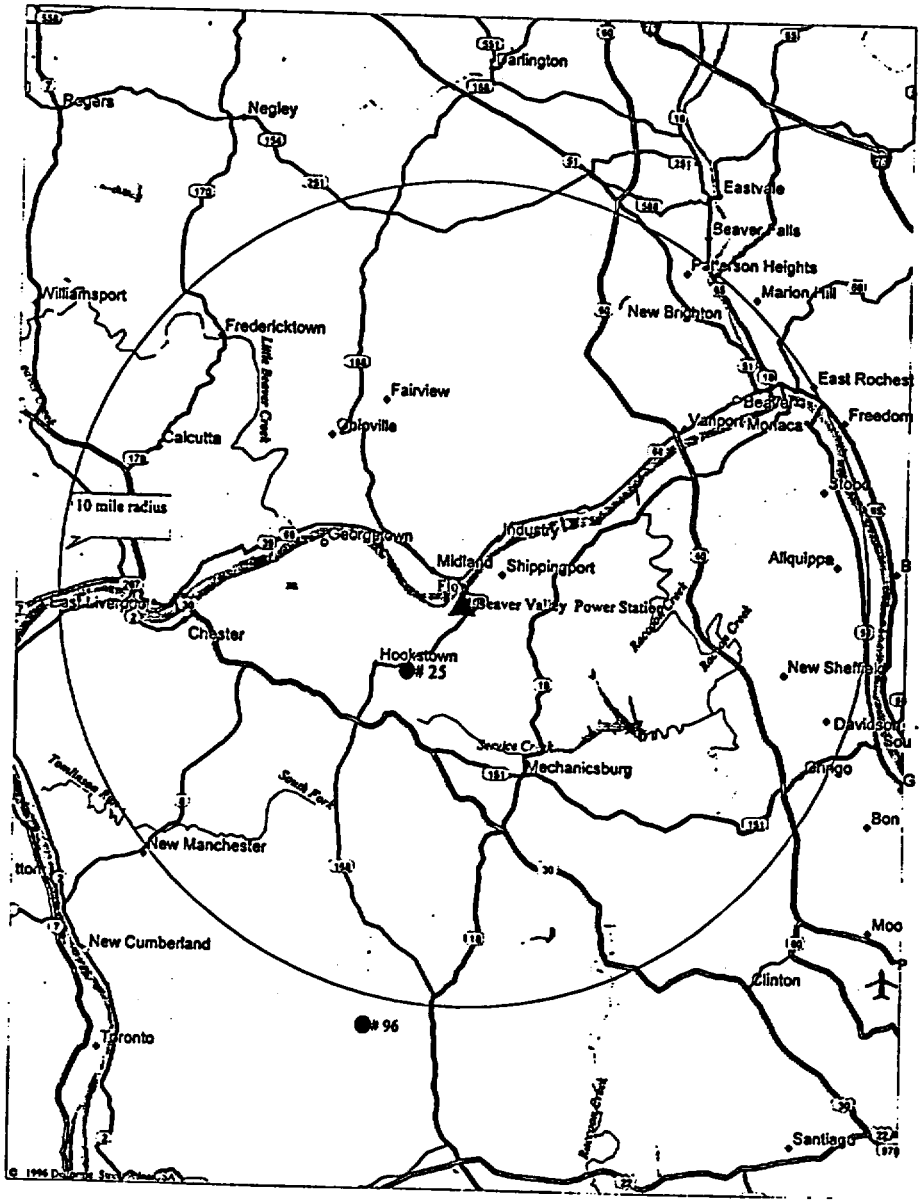
LOCATION OF SAMPLING SITES

FIGURE 3.0-4
MILK SAMPLING LOCATIONS



Milk Sampling Locations

Sector	Site #	Distance (miles)	Location
10	25*	2.1	Searight's Farm
10	96	10.4	Windsheimer Farm
	*		
	*		
	*		

*Three dairies based on highest deposition factors.

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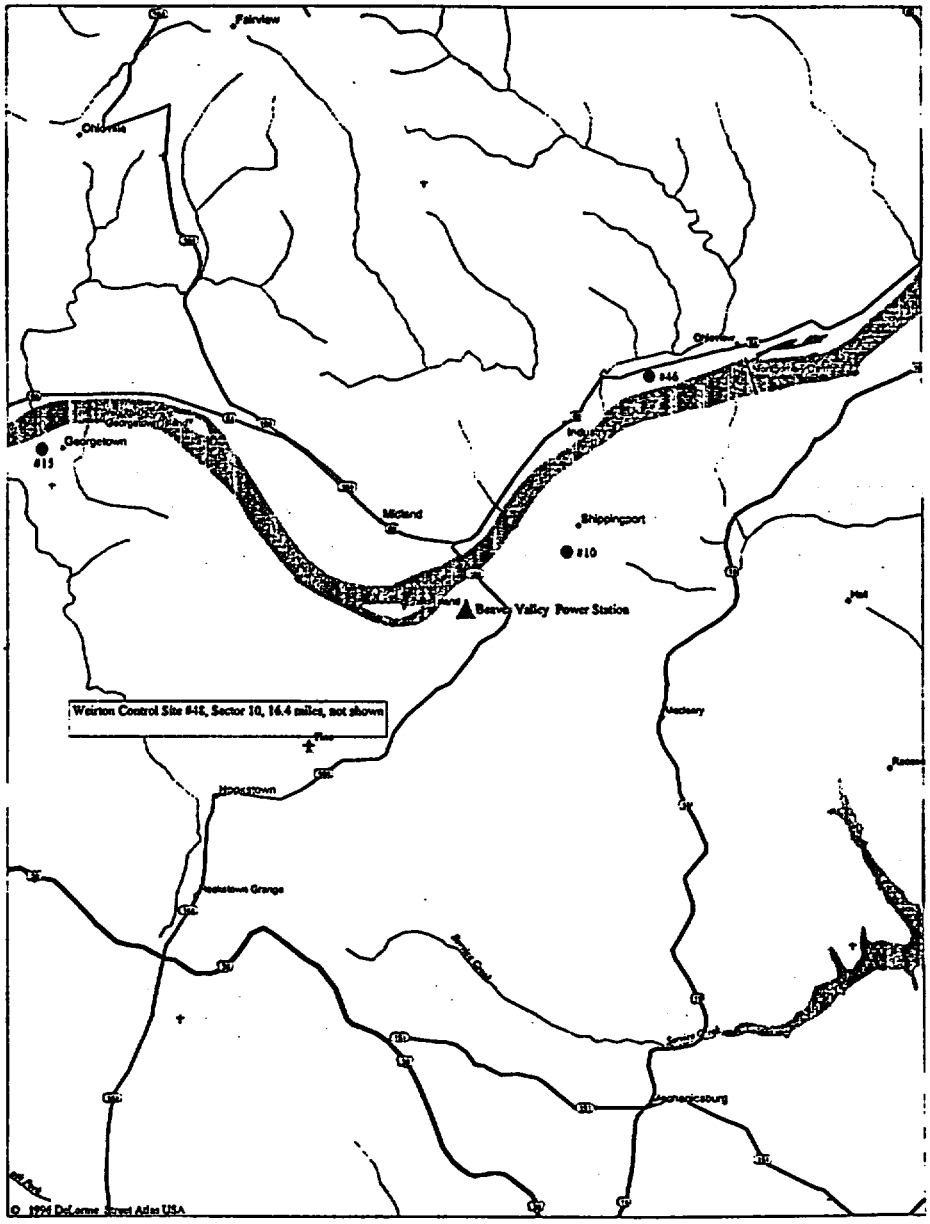
LOCATION OF SAMPLING SITES

FIGURE 3.0-5
FOODCROP SAMPLING LOCATIONS



Food Sampling Locations

Site #	Description
10	Shippingport Boro
15	Georgetown Post Office
46	Industry, Midway Dr.
48	Weirton, W. Va., - Weirton Water Tower, Collier Way

ATTACHMENT B
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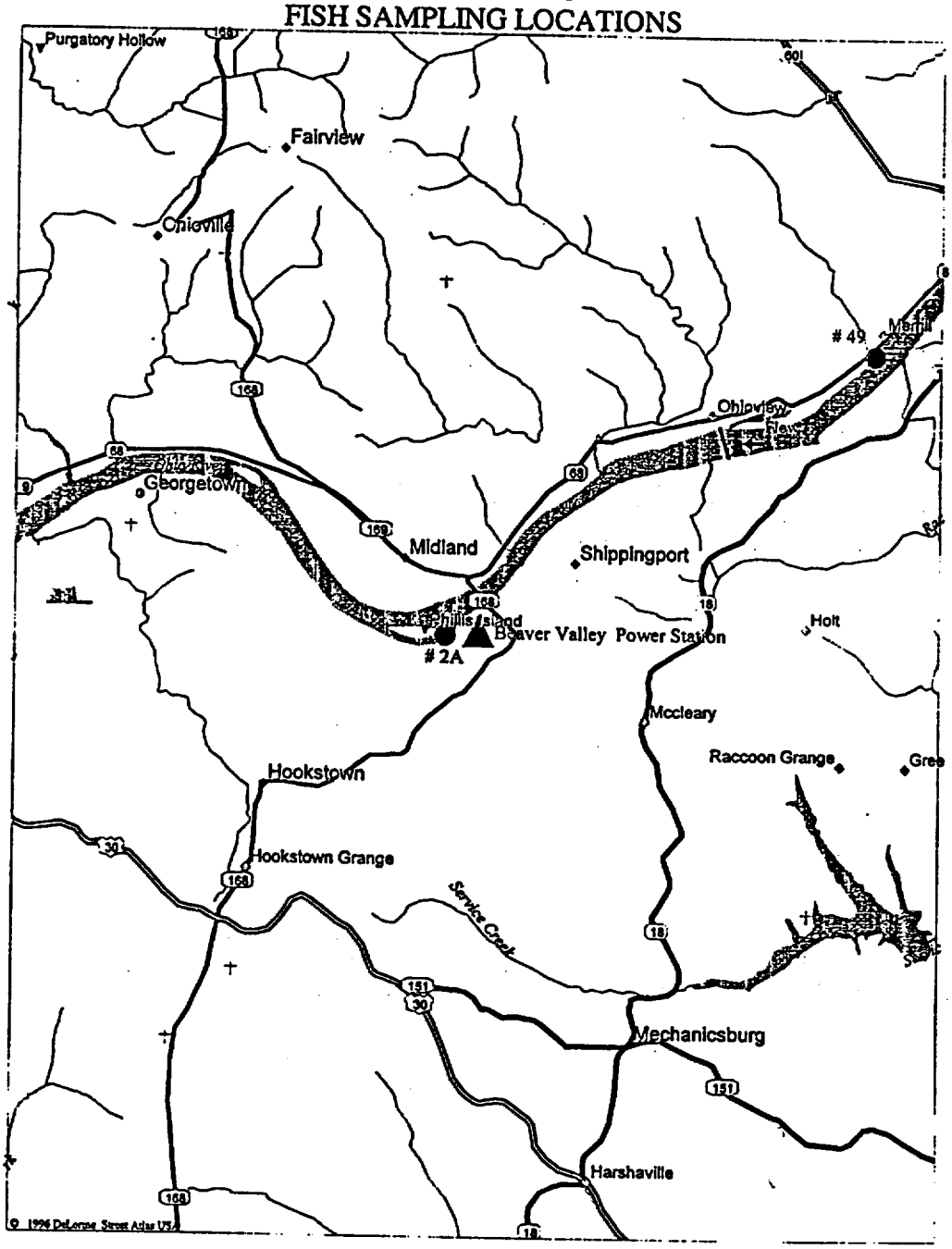
LOCATION OF SAMPLING SITES

FIGURE 3.0-6
FISH SAMPLING LOCATIONS



Fish Sampling Locations

Sector	Site #	Distance (miles)	Location
13	2A	0.2	BVPS Outfall Discharge
3	49	5.0	Upstream side of Montgomery Dam

New: 1/2-ODC-2.04
Old: SECTION 4

Beaver Valley Power Station

Unit 1/2

1/2-ODC-2.04

ODCM: Information Related to 40 CFR 190

Document Owner
Manager, Health Physics

Revision Number	0
Level Of Use	General Skill Reference
Safety Related Procedure	Yes

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1.0 PURPOSE

1.1 This procedure provides the steps to be taken when the Total Dose of ODCM Control 4.11.4.1 exceeds twice the limit of any of the ODCM Controls specifying an Offsite Dose Limit.[3.1.2]

1.1.1 Prior to issuance of this procedure, these items were located in Section 4 of the old ODCM.

2.0 SCOPE

2.1 This procedure is applicable to all station personnel that are qualified to perform activities as described and referenced in this procedure.

3.0 REFERENCES AND COMMITMENTS

3.1 References

3.1.1 40 CFR Part 190

3.1.2 1/2-ODC-3.03, ODCM: Controls for RETS and REMP Programs

3.1.3 1/2-ADM-1640, Control of the Offsite Dose Calculation Manual

3.1.4 1/2-ADM-0100, Procedure Writer's Guide

3.1.5 1/2-ADM-0101, Review and Approval of Documents

3.2 Commitments

3.2.1 Technical Specification 6.9.2f, Special Reports

3.2.2 NUREG-1301, Offsite Dose Calculation Manual Guidance: Standard Radiological Effluent Controls for Pressurized Water Reactors (Generic Letter 89-01, Supplement No. 1)

4.0 RECORDS AND FORMS

4.1 Records

4.1.1 Any calculation supporting ODCM changes shall be documented, as appropriate, by a retrievable document (e.g.; letter or calculation package) with an appropriate RTL number.

4.2 Forms

4.2.1 None

5.0 PRECAUTIONS AND LIMITATIONS

5.1 The Offsite Dose Limits used to show compliance to this procedure are as follows:

5.1.1 ODCM Control 3.11.2.a; Liquid Effluents: $\leq$ 1.5 mrem/quarter Total Body or $\leq$ 5 mrem/quarter any Organ.

5.1.2 ODCM Control 3.11.2.b; Liquid Effluents: $\leq$ 3 mrem/year Total Body or $\leq$ 10 mrem/year any Organ.

5.1.3 ODCM Control 3.11.2.2.a; Gas Effluent-Noble Gas: $\leq$ 5 mrad/quarter Gamma, or $\leq$ 10 mrad/quarter Beta

5.1.4 ODCM Control 3.11.2.2.b; Gas Effluents-Noble Gas: $\leq$ 10 mrad/year Gamma $\leq$ 20 mrad/year Beta

5.1.5 ODCM Control 3.11.2.3.a; Gas Effluents-Particulates & Iodines: $\leq$ 7.5 mrem/quarter any organ

5.1.6 ODCM Control 3.11.2.3.b; Gas Effluents-Particulates & Iodines: $\leq$ 15 mrem/year any organ

5.1.7 ODCM Control 3.11.4.1; All Fuel Cycle Sources: $\leq$ 25 mrem/year Total Body or any Organ, except the thyroid, which is limited to $\leq$ 75 mrem/year

6.0 ACCEPTANCE CRITERIA

6.1 Any changes to this procedure shall contain sufficient justification that the change will maintain the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36a, and Appendix I to 10 CFR 50, and not adversely impact the accuracy or reliability of effluent dose or setpoint calculation.[3.2.2]

6.1.1 All changes to this procedure shall be prepared in accordance with 1/2-ADM-0100[3.1.4] and 1/2-ADM-1640.[3.1.3]

6.1.2 All changes to this procedure shall be reviewed and approved in accordance with 1/2-ADM-0101[3.1.5] and 1/2-ADM-1640.[3.1.3]

7.0 PREREQUISITES

7.1 The user of this procedure shall be familiar with ODCM structure and content.

8.0 PROCEDURE

8.1 Information Related To 40 CFR 190

8.1.1 CONTROL 3.11.4.1 requires that when the calculated doses associated with the effluent releases exceed twice the limits of ODCM CONTROL 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, the following shall be performed:

8.1.1.1 Calculations shall be made including direct radiation contributions from the units (including outside storage tanks, etc.) to determine whether the dose or dose commitment to any MEMBER OF THE PUBLIC from all facility releases of radioactivity and to radiation from uranium fuel cycle sources exceeds the limits of ≤ 25 mrem to the total body or any organ, except the thyroid, which is limited to ≤ 75 mrem for a calendar year.

8.1.1.1.1 If any of these limits are exceeded, prepare and submit to the Commission within 30 days a Special Report pursuant to Technical Specification 6.9.2f.[3.2.1] The following shall be included in the Special Report:

8.1.1.1.1.1 Define the corrective action to be taken to reduce subsequent releases to prevent recurrence of exceeding the limits of ODCM CONTROL 3.11.4.1.

8.1.1.1.1.2 Include the schedule for achieving conformance within the limits of ODCM CONTROL 3.11.4.1.

8.1.1.1.1.3 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.

8.1.1.1.1.4 Describe levels of radiation and concentrations of radioactive material involved, and the cause of exposure levels or concentrations.

8.1.1.1.1.5 If the estimated dose(s) exceeds the limits of ODCM CONTROL 3.11.4.1, and if the release condition resulting in violation of 40 CFR Part 190 has not already been corrected, 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.

8.2 Inside The Site Boundary Radiation Doses

8.2.1 In regards to assessment of radiation doses (from Radioactive Effluents) to MEMBERS OF THE PUBLIC due to their activities inside the site boundary, the following is provided:

8.2.1.1 A separate assessment of radiation doses from radioactive effluents to MEMBERS OF THE PUBLIC due to their activities inside the site boundary is generally not necessary because the exposure time for individuals not occupationally associated with the plant site is minimal in comparison to the exposure time considered for the dose calculation at or beyond the site boundary.

8.2.1.2 For reporting purposes, separate guidance for calculating radiation doses to a MEMBER OF THE PUBLIC inside the site boundary is not needed because the dose assessments for an offsite MEMBER OF THE PUBLIC is also assumed to be for a MEMBER OF THE PUBLIC conducting activities onsite.

8.2.1.2.1 This is verified by showing that the ground release χ/Q dispersion parameter used for dose calculation at the site boundary (0.352 miles NW) is greater than the χ/Q dispersion parameter at the location where a MEMBER OF THE PUBLIC would most likely have the maximum exposure time (0-0.5 miles N and 0-0.5 miles NNW). A comparison of these χ/Q dispersion parameters is as follows:

χ/Q Used for Dose Calculation	χ/Q Where an Assumed MEMBER OF THE PUBLIC Would Most Likely Have the Maximum Exposure Time		χ/Q References from 1/2-ODC-2.02
Site Boundary 0.352 miles NW	Inside the Site Boundary 0-0.5 miles N	Inside the Site Boundary 0-0.5 miles NNW	See Attachment F
9.24E-5 sec/m^3	2.33E-5 sec/m^3	5.47E-5 sec/m^3	Table 2.2-4
1.03E-4 sec/m^3	2.76E-5 sec/m^3	6.01E-5 sec/m^3	Table 2.2-5
7.35E-5 sec/m^3	2.44E-5 sec/m^3	5.57E-5 sec/m^3	Table 2.2-7
9.24E-5 sec/m^3	2.33E-5 sec/m^3	5.47E-5 sec/m^3	Table 2.2-8
9.24E-5 sec/m^3	2.33E-5 sec/m^3	5.47E-5 sec/m^3	Table 2.2-9
7.35E-5 sec/m^3	2.44E-5 sec/m^3	5.57E-5 sec/m^3	Table 2.2-10

- END -

New: 1/2-ODC-3.01
Old: APPENDIX A & B

Beaver Valley Power Station

Unit 1/2

1/2-ODC-3.01

ODCM: Dispersion Calculational Procedure and Source Term Inputs

Document Owner
Manager, Health Physics

Revision Number	0
Level Of Use	General Skill Reference
Safety Related Procedure	Yes

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure contains the basic methodology that was used for calculating dispersion (χ/Q) and deposition (D/Q).

1.1.1 Prior to issuance of this procedure, these items were located in Appendix A of the old ODCM.

1.2 This procedure also contains the input parameters to the various computer codes used by the Licensee and its subcontractors for determination of the liquid and gaseous source term mixes.

1.2.1 Prior to issuance of this procedure, these items were located in Appendix B of the old ODCM.

2.0 SCOPE

2.1 This procedure is applicable to all station personnel (including subcontractors) that are qualified to perform activities as described and referenced in this procedure.

3.0 REFEFERENCES AND COMMITMENTS

3.1 References

3.1.1 NUS-2173,Development Of Terrain Adjustment Factors For Use At the Beaver Valley Power Station, For the Straight-Line Atmospheric Dispersion Model, NUS Corporation, June 1978

3.1.2 NUREG/CR-2919, XOQDOQ: Computer Program For The Meteorological Evaluation Of Routine Effluent Releases At Nuclear Power Stations, September, 1982

3.1.3 Regulatory Guide 1.23, Meteorological Measurement Program for Nuclear Power Plants

3.1.4 Regulatory Guide 1.111, Methods for Estimating Atmospheric Transport and Dispersion of Gaseous Effluents In Routine Releases From Light-Water-Coded Reactors, Revision 1, July 1977

3.1.5 NRC Gale Code,

3.1.6 SWEC LIQ1BB Code,

3.1.7 SWEC GAS1BB Code,

3.1.8 NUREG-1301, Offsite Dose Calculation Manual Guidance, Standard Radiological Effluent Controls for Pressurized Water Reactors (Generic Letter 89-01, Supplement No. 1)

3.1.9 1/2-ADM-1640, Control of the Offsite Dose Calculation Manual

3.1.10 1/2-ADM-0100, Procedure Writer's Guide

3.1.11 1/2-ADM-0101, Review and Approval of Documents

3.2 Commitments

3.2.1 None

4.0 RECORDS AND FORMS

4.1 Records

4.1.1 Any calculation supporting generation of dispersion, deposition, or source term mixes shall be documented, as appropriate, by a retrievable document (e.g.; letter or calculation package) with an appropriate RTL number.

4.2 Forms

4.2.1 None

5.0 PRECAUTIONS AND LIMITATIONS

5.1 This procedure contains the information that was previously contained in Appendix A and Appendix B of the previous BV-1 and 2 Offsite Dose Calculation Manual.

5.1.1 In regards to this, the Tables that were transferred from Appendix A and Appendix B to the appropriate ATTACHMENTS of this procedure will still contain a prefix denoting an "A" or "B".

6.0 ACCEPTANCE CRITERIA

6.1 Any change to this procedure shall contain sufficient justification that the change will maintain the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36a and Appendix I to 10 CFR 50, and not adversely impact the accuracy or reliability of effluent dose or setpoint calculation.

6.1.1 All changes to this procedure shall be prepared in accordance with 1/2-ADM-0100[3.1.10] and 1/2-ADM-1640.[3.1.9]

6.1.2 All changes to this procedure shall be reviewed and approved in accordance with 1/2-ADM-0101[3.1.11] and 1/2-ADM-1640.[3.1.9]

7.0 PREREQUISITES

7.1 The user of this procedure shall be familiar with ODCM structure and content.

8.0 PROCEDURE

8.1 Summary of Dispersion and Deposition Methodology

8.1.1 Annual average and grazing season average values of relative concentration (χ/Q) and deposition (D/Q) were calculated for continuous and intermittent gaseous releases of activity from the site according to the straight-line airflow (Gaussian) model described in RG-1.111.[3.1.4]

8.1.1.1 Undecayed and undepleted sector average χ/Q and D/Q values were obtained for each of sixteen 22.5-degree sectors at the site boundary and maximum individual receptors.

8.1.1.2 For an elevated release, (i.e.; occurring at a height that is twice the height or more of a nearby structure) credit was taken for the effective release height which is comprised of the physical release height plus momentum plume rise minus the terrain height at a given receptor.

8.1.1.3 A building wake correction factor was used to adjust calculations for ground-level releases.

8.1.1.4 Airflow reversals were also accounted for by applying site-specific terrain recirculation factors for both ground and elevated releases at the site.[3.1.1]

8.1.1.5 The methodology employed in the calculation of intermittent release χ/Q and D/Q values is that described in NUREG/CR-2919.[3.1.2]

8.1.2 The site continuous gaseous release points that have been evaluated include the following:

8.1.2.1 PV-1/2: The Unit 1/2 Gaseous Waste/Process Vent attached to the Unit 1 natural draft cooling tower

8.1.2.2 CV-1 and CV-2: The Unit 1 Rx Containment/SLCRS Vented the Unit 2 SLCRS Filtered Pathway

8.1.2.3 VV-1 and VV-2: The Unit 1 Ventilation Vent and the Unit 2 SLCRS Unfiltered Pathway

8.1.2.4 TV-2: The Unit 2 Turbine Building Vent

8.1.2.5 CB-2: The Unit 2 Condensate Polishing Building Vent

8.1.2.6 DV-2: The Unit 2 Decontamination Building Vent

8.1.2.7 WV-2: The Unit 2 Gaseous Waste Storage Tank Vault Vent

8.1.3 The intermittent releases are from PV-1/2, VV-1, VV-2, CV-1 and CV-2.

8.1.4 Only PV-1/2 was considered to be an elevated release with all other release points being treated as ground level releases. A summary of the release characteristics and their locations is given in ATTACHMENT A.

8.1.5 Onsite meteorological data for the period January 1, 1976 through December 31, 1980 were used as input for the annual-average calculations.

8.1.5.1 The grazing season was represented by a six-month period from May 1 through October 31 for each year of the 5-year meteorological data base. This grazing season corresponds reasonably well with the growing season.

8.1.5.2 The data were collected according to guidance in NRC RG-1.23[3.1.3] as described in Section 2.3 of the BVPS-2 FSAR.

8.1.5.3 The parameters used in the χ/Q and D/Q calculations consist of wind speed, wind direction, and ΔT as an indicator of atmospheric stability. The lower level winds (35 ft) and ΔT (150-35 ft) were used for all release points except the Process Vent which required the use of 500 ft winds and ΔT (500-35 ft) which are representative of the release height (510 ft).

8.1.6 The annual average and grazing season χ/Q and D/Q values for the continuous and intermittent radioactive releases were calculated at the site boundary, nearest resident, nearest vegetable garden, nearest milk cow, nearest milk goat, and nearest meat animal.

8.1.6.1 In the case of the Process Vent releases, several of each receptor type were evaluated in each downwind sector to determine the maximum χ/Q and D/Q values.

8.1.6.2 The distances of the limiting maximum individual receptors from the radioactive release points are given in ATTACHMENT E (Table 2.2-3) of 1/2-ODC-2.02.

8.1.6.3 The continuous release annual average χ/Q values at the special locations for the Containment Vents, Ventilation Vents, Process Vent, Turbine Building Vents, Decontamination Building Vent, Waste Gas Storage Vault Vent, and Condensate Polishing Building Vent are given in ATTACHMENT F (Tables 2.2-4 through 2.2-10) of 1/2-ODC-2.02. Continuous release annual average χ/Q's for these same release points are also given at ten incremental downwind distances of 0-5 miles.

8.1.6.4 Continuous release D/Q values for these same release points are given in ATTACHMENT K (Tables 2.3-21 through 2.3-27) of 1/2-ODC-2.02 for the same 0-5 mile incremental distances, and in ATTACHMENT L (Tables 2.3-28 through 2.3-34) of 1/2-ODC-2.02 for the special locations.

8.1.6.5 Due to their location adjacent to the Containment Building, the Decontamination Building and Gaseous Waste Storage Tank Vault χ/Q's and D/Q's are the same as the Containment Vent χ/Q's and D/Q's.

8.1.6.6 Likewise, the Turbine Building Vent χ/Q's and D/Q's apply to the Condensate Polishing Building as well due to its location adjacent to the Turbine Building.

8.1.7 ATTACHMENT M (Tables 2.3-35 through 2.3-38) of 1/2-ODC-2.02 contain short term χ/Q values for batch releases originating from the Containment Vent, Ventilation Vent, and Process Vent releases respectively.

8.1.7.1 The values in these tables are based on 32 hours per year of Containment and Ventilation Vent purges and 74 hours per year of Process Vent purges.

8.2 Summary of Source Term Inputs

8.2.1 Liquid Source Term Inputs

8.2.1.1 Inputs to the NRC Gale Code used for generation of BV-1 Liquid Source Term Mixes are shown in ATTACHMENT B (Table B:1a).

8.2.1.2 Inputs to the SWEC LIQ1BB Code used for generation of BV-2 Liquid Source Term Mixes are shown in ATTACHMENT B (Table B:1b)

8.2.2 Gaseous Source Term Inputs

8.2.2.1 Inputs to the SWEC GAS1BB Code for generation of BV-1 Gaseous Source Term Mixes are shown in ATTACHMENT C (Table B:2a)

8.2.2.2 Inputs to the SWEC GAS1BB Code for generation of BV-2 Gaseous Source Term Mixes are shown in ATTACHMENT C (Table B:2b)

ATTACHMENT A
Page 1 of 1
BV-1 AND 2 RELEASE CONDITIONS

TABLE A:1

	VV-1 VENTILATION VENT (PAB EXHAUST)	CV-1 RX CONTAINMENT/ SLCRS VENT	PV-1/2 GASEOUS WASTE/PROCESS VENT	TV-2 TURBINE BUILDING VENT
	VV-2 SLCRS UNFILTERED PATHWAY	CV-2 RX CONTAINMENT/ SLCRS FILTERED PATHWAY		
TYPE OF RELEASE	GROUND LEVEL	GROUND LEVEL	ELEVATED	GROUND LEVEL
	Long Term And Short Term	Long Term And Short Term	Long Term And Short Term	Long Term And Short Term
Release Point Height (m)	26	47	155	33
Adjacent Building Height (m)	19	44	155	33
Relative Location To Adjacent Structures	E. Side Of Primary Auxiliary Bldg	Top Center Of Containment Dome	Atop Cooling Tower	Turbine Building
Exit Velocity(m/sec)	NA	NA	9.4	NA
Internal Stack Diameter (m)	NA	NA	0.25	NA
Building Cross-Sectional Area (m^2)	1600	1600	NA	NA
Purge Frequency* (hours/year)	32	32	74	NA
Purge Duration (hrs/release)	8	8	NA	NA

*Applied to Short Term calculations only

ATTACHMENT B
Page 1 of 1
LIQUID SOURCE TERM INPUTS

TABLE B:1a
INPUTS TO GALE CODE FOR GENERATION OF BV-1 LIQUID SOURCE TERM MIXES

BV-1 PWR INPUTS	VALUE
Thermal Power Level (megawatts)	2766.000
Plant Capacity Factor	.800
Mass Of Primary Coolant (thousand lbs)	345.000
Percent Fuel With Cladding Defects	.120
Primary System Letdown Rate (gpm)	60.000
Letdown Cation Demineralizer Flow	6.000
Number Of Steam Generators	3.000
Total Steam Flow (million lbs/hr)	11.620
Mass Of Steam In Each Steam Generator (thousand lbs)	6.772
Mass Of Liquid In Each Steam Generator (thousand lbs)	97.000
Total Mass Of Secondary Coolant (thousand lbs)	1296.000
Mass Of Water In Steam Generator (thousand lbs)	291.000
Blowdown Rate (thousand lbs/hr)	33.900
Primary To Secondary Leak Rate (lbs/day)	100.000
Fission Product Carry-Over Fraction	.001
Halogen Carry-Over Fraction	.010
Condensate Demineralizer Flow Fraction	0.000
Radwaste Dilution Flow (thousand gpm)	22.500

BV-1 LIQUID WASTE INPUTS

STREAM	FLOW RATE (gal/day)	FRACTION OF PCA	FRACTION DISCHARGE	COLLECTION TIME (days)	DELAY TIME (days)	DECONTAMINATION FACTORS I	Cs	OTHERS
Shim Bleed Rate	1.32E4	1.000	0.000	11.260	7.220	1E7	1E7	1E7
Equipment Drains	6.00E2	1.000	0.000	11.260	7.220	1E7	1E7	1E7
Clean Waste Input	7.50E1	1.000	1.000	0.071	0.648	1E5	2E4	1E5
Dirty Waste Input	1.35E3	0.035	1.000	0.071	0.648	1E5	2E4	1E5
Blowdown	9.75E4	--	1.000	0.071	0.648	1E5	2E4	1E5
Untreated Blowdown	0.0	--	--	--	--	--	--	--

ATTACHMENT B
Page 2 of 2
LIQUID SOURCE TERM INPUTS

TABLE B:1b
INPUTS TO SWEC LIQ1BB CODE FOR GENERATION OF BV-2 LIQUID SOURCE TERM MIXES

BV-2 PWR INPUTS	VALUE
Thermal Power Level (megawatts)	2766.000
Plant Capacity Factor	.800
Mass Of Primary Coolant (thousand lbs)	385.000
Percent Fuel With Cladding Defects	.120
Primary System Letdown Rate (gpm)	57.000
Letdown Cation Demineralizer Flow	5.700
Number Of Steam Generators	3.000
Total Steam Flow (million lbs/hr)	11.600
Mass Of Steam In Each Steam Generator (thousand lbs)	8.700
Mass Of Liquid In Each Steam Generator (thousand lbs)	100.000
Total Mass Of Secondary Coolant (thousand lbs)	2000.000
Mass Of Water In Steam Generator (thousand lbs)	298.000
Blowdown Rate (thousand lbs/hr)	22.300
Primary To Secondary Leak Rate (lbs/day)	100.000
Fission Product Carry-Over Fraction	.001
Halogen Carry-Over Fraction	.010
Condensate Demineralizer Flow Fraction	.700
Radwaste Dilution Flow (thousand gpm)	7.800

BV-2 LIQUID WASTE INPUTS

STREAM	FLOW RATE (gal/day)	FRACTION OF PCA	FRACTION DISCHARGE	COLLECTION TIME (hrs)	DELAY TIME (hrs)	DECONTAMINATION FACTORS I	CsRb	OTHERS
Containment Sump	40	1.000	1.0	35.5	6.2	1E3	1E4	1E4
Auxiliary Building Sump	200	0.100	1.0	35.5	6.2	1E3	1E4	1E4
Miscellaneous Sources	700	0.010	1.0	35.5	6.2	1E3	1E4	1E4
Rx Plant Samples	35	1.000	1.0	35.5	6.2	1E3	1E4	1E4
Lab Drains	400	0.002	1.0	35.5	6.2	1E3	1E4	1E4
Cond. Demin. Rinse Water	2685	1.1E-4	1.0	35.5	6.2	1E3	1E4	1E4
CVCS	60	--	1.0	1300	173	1E4	4E3	1E5
Turbine Bldg.Drains	7200	--	1.0	--	--	--	--	--

ATTACHMENT C
Page 1 of 1
GASEOUS SOURCE TERM INPUTS

TABLE B:2a
INPUTS TO SWEC GAS1BB CODE FOR GENERATION OF BV-1 GASEOUS SOURCE TERM MIXES

BV-1 PWR INPUTS	VALUE
Thermal Power Level (megawatts)	2766.000
Plant Capacity Factor	.800
Mass Of Primary Coolant (thousand lbs)	385.000
Percent Fuel With Cladding Defects	.120
Primary System Letdown Rate (gpm)	57.000
Letdown Cation Demineralizer Flow	5.700
Number Of Steam Generators	3.000
Total Steam Flow (million lbs/hr)	11.600
Mass Of Steam In Each Steam Generator (thousand lbs)	8.700
Mass Of Liquid In Each Steam Generator (thousand lbs)	100.000
Total Mass Of Secondary Coolant (thousand lbs)	2000.000
Mass Of Water In Steam Generator (thousand lbs)	298.000
Blowdown Rate (thousand lbs/hr)	52.000
Primary To Secondary Leak Rate (lbs/day)	100.000
Fission Product Carry-Over Fraction	.001
Halogen Carry-Over Fraction	.010
Condensate Demineralizer Flow Fraction	0.000
Radwaste Dilution Flow (thousand gpm)	15.000

BV-1 GASEOUS WASTE INPUTS	VALUE
<u>There Is Not Continuous Stripping Of Full Letdown Flow</u>	
Hold Up Time For Xenon (days)	39.000
Hold Up Time For Krypton (days)	2.000
Primary Coolant Leak To Auxiliary Building (lb/day)	160.000
Auxiliary Building Leak Iodine Partition Factor	7.5E-3
Gas Waste System Particulate Release Fraction	0.000
Auxiliary Building Charcoiodine Release Fraction	1.000
Auxiliary Building Particulate Release Fraction	1.000
Containment Volume (million cu-ft)	1.800
Frequency Of Primary Coolant Degassing (times/yr)	2.000
Primary To Secondary Leak Rate (lb/day)	100.000
<u>There Is A Kidney Filter</u>	
Containment Atmosphere Cleanup Rate (thousand cfm)	2.000
Purge Time Of Containment (hours)	8.000
<u>There Is Not A Condensate Demineralizer</u>	
Iodine Partition Factor (gas/liq) In Steam Generator	0.010
Frequency Of Containment Building High Vol Purge (times/yr)*	4.000
Containment Volume Purge Iodine Release Fraction	1.000
Containment Volume Purge Particulate Release Fraction	1.000
Steam Leak To Turbine Building (lbs/hr)	1700.000
Fraction Iodine Released From Blowdown Tank Vent	0.000
Fraction Iodine Released From Main Condensate Air Ejector	0.440
<u>There Is Not A Cryogenic Off Gas System</u>	

*2 cold and 2 hot purges

ATTACHMENT C
Page 2 of 2
GASEOUS SOURCE TERM INPUTS

TABLE B:2b
INPUTS TO SWEC GAS1BB CODE FOR GENERATION OF BV-2 GASEOUS SOURCE TERM MIXES

BV-2 PWR INPUTS	VALUE
Thermal Power Level (megawatts)	2766.000
Plant Capacity Factor	.800
Mass Of Primary Coolant (thousand lbs)	385.000
Percent Fuel With Cladding Defects	.120
Primary System Letdown Rate (gpm)	57.000
Letdown Cation Demineralizer Flow	5.700
Number Of Steam Generators	3.000
Total Steam Flow (million lbs/hr)	11.600
Mass Of Steam In Each Steam Generator (thousand lbs)	8.700
Mass Of Liquid In Each Steam Generator (thousand lbs)	100.000
Total Mass Of Secondary Coolant (thousand lbs)	2000.000
Mass Of Water In Steam Generator (thousand lbs)	298.000
Blowdown Rate (thousand lbs/hr)	22.300
Primary To Secondary Leak Rate (lbs/day)	100.000
Fission Product Carry-Over Fraction	.001
Halogen Carry-Over Fraction	.010
Condensate Demineralizer Flow Fraction	.700
Radwaste Dilution Flow (thousand gpm)	7.800

BV-2 GASEOUS WASTE INPUTS	VALUE
<u>There Is Not Continuous Stripping Of Full Letdown Flow</u>	
Hold Up Time For Xenon (days)	45.800
Hold Up Time For Krypton (days)	2.570
Primary Coolant Leak To Auxiliary Building (lb/day)	160.000
Auxiliary Building Leak Iodine Partition Factor	7.5E-3
Gas Waste System Particulate Release Fraction	0.000
Auxiliary Building Charcoiodine Release Fraction	0.100
Auxiliary Building Particulate Release Fraction	0.010
Containment Volume (million cu-ft)	1.800
Frequency Of Primary Coolant Degassing (times/yr)	2.000
Primary To Secondary Leak Rate (lb/day)	100.000
<u>There Is A Kidney Filter</u>	
Containment Atmosphere Cleanup Rate (thousand cfm)	20.000
Purge Time Of Containment (hours)	8.000
<u>There Is Not A Condensate Demineralizer</u>	
Iodine Partition Factor (gas/liq) In Steam Generator	0.010
Frequency Of Containment Building High Vol Purge (times/yr)*	4.000
Containment Volume Purge Iodine Release Fraction	1.000
Containment Volume Purge Particulate Release Fraction	1.000
Steam Leak To Turbine Building (lbs/hr)	1700.000
Fraction Iodine Released From Blowdown Tank Vent	0.000
Fraction Iodine Released From Main Condensate Air Ejector	0.270
<u>There Is Not A Cryogenic Off Gas System</u>	

*2 cold and 2 hot purges

New: 1/2-ODC-3.02
Old: APPENDIX D

Beaver Valley Power Station

Unit 1/2

1/2-ODC-3.02

ODCM: Bases For ODCM Controls

Document Owner
Manager, Radiation Protection

Revision Number	1
Level Of Use	General Skill Reference
Safety Related Procedure	Yes

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure contains the Bases for the ODCM Controls that were transferred from the Bases Section of the Technical Specification per Unit 1/2 Amendments 1A-188/2A-70, and in accordance with Generic Letter 89-01 and NUREG-1301 (Generic Letter 89-01, Supplement No. 1).(3.1.5, 3.2.10)

1.1.1 Prior to issuance of this procedure, these items were located in Appendix D of the old ODCM.

1.2 This procedure also contains the Bases for the ODCM Controls (for Radiation Monitoring Instrumentation) that were duplicated from the Bases Section of the Technical Specification per Unit 1/2 Amendments 1A-246/2A-124, and in accordance with NUREG-1431.(3.1.6, 3.2.11)

1.3 This procedure also contains the Bases for the ODCM Controls (for Liquid Holdup Tank Activity Limits and for Gas Decay/Storage Tank Activity Limits) that were transferred from the Bases Section of the Technical Specification per Unit 1/2 Amendments 1A-250/2A-130, and in accordance with NUREG-1431.(3.1.7, 3.2.11)

2.0 SCOPE

2.1 This procedure is applicable to all station personnel that are qualified to perform activities as described and referenced in this procedure.

3.0 REFERENCES AND COMMITMENTS

3.1 References

3.1.1 1/2-ODC-2.01, ODCM: Liquid Effluents

3.1.2 1/2-ODC-2.02, ODCM: Gaseous Effluents

3.1.3 1/2-ODC-3.03, ODCM: Controls for RETS and REMP Programs

3.1.4 1/2-ADM-1640, Control of the Offsite Dose Calculation Manual

3.1.5 Unit 1/2 Technical Specification 6.8.6, including Amendments 1A-188/2A-70 (LAR 1A-175/2A-37), Implemented August 7, 1995

3.1.6 Unit 1/2 Technical Specification 3.3.3.1, including Amendments 1A-246/2A-124 (LAR 1A-287/2A-159), Implemented April 11, 2002

3.1.7 Unit 1/2 Technical Specifications 3.11.1.4, 3.11.2.5 and 6.8.6, including Amendments 1A-250/2A-130 (LAR 1A-291/2A-163), Implemented August 7, 2002

3.1.8 1/2-ADM-0100, Procedure Writer's Guide

3.1.9 1/2-ADM-0101, Review and Approval of Documents

3.2 Commitments

3.2.1 10 CFR Part 20

3.2.2 10 CFR Part 50

3.2.3 40 CFR Part 141

3.2.4 40 CFR Part 190

3.2.5 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

3.2.6 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

3.2.7 Regulatory Guide 1.113, Estimating Aquatic Dispersion Of Effluents From Accidental And Routine Reactor Releases For The Purpose Of Implementing Appendix I, April, 1977

3.2.8 NUREG-0133, Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, October 1978

3.2.9 NUREG-0737, Clarification of TMI Action Plan Requirements, October, 1980

3.2.10 NUREG-1301, Offsite Dose Calculation Manual Guidance. Standard Radiological Effluent Controls For Pressurized Water Reactors (Generic Letter 89-01, Supplement No. 1)

3.2.11 NUREG-1431, Standard Technical Specifications - Westinghouse Plants Specifications

4.0 RECORDS AND FORMS

4.1 Records

4.1.1 Any calculation supporting ODCM changes shall be documented, as appropriate, by a retrievable document (eg; letter or calculation package) with an appropriate RTL number.

4.2 Forms

4.2.1 None

5.0 PRECAUTIONS AND LIIMITATIONS

5.1 The numbering of each specific ODCM Bases contained in this procedure does not appear to be sequential. This is intentional, as all ODCM Bases numbers remained the same when they were transferred from the Technical Specifications. This was done in an effort to minimize the amount of plant procedure changes and to eliminate any confusion associated with numbering changes.

6.0 ACCEPTANCE CRITERIA

6.1 Any change to this procedure shall contain sufficient justification that the change will maintain the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36a, and Appenidx I to 10 CFR 50, and not adversely impact the accuracy or reliability of effluent dose or setpoint calculation.[3.2.10]

6.1.1 All changes to this procedure shall be prepared in accordance with 1/2-ADM-0100[3.1.8] and 1/2-ADM-1640.[3.1.4]

6.1.2 All changes to this procedure shall be reviewed and approved in accordance with 1/2-ADM-0101[3.1.9] and 1/2-ADM-1640.[3.1.4]

7.0 PREREQUISITES

7.1 The user of this procedure shall be familiar with ODCM structure and content.

8.0 PROCEDURE

8.1 See ATTACHMENT A for a complete description of Bases for ODCM Controls associated with Instrumentation.

8.2 See ATTACHMENT B for a complete description of Bases for ODCM Controls associated with Liquid Effluents.

8.3 See ATTACHMENT C for a complete description of Bases for ODCM Controls associated with Gaseous Effluents.

8.4 See ATTACHMENT D for a complete description of Bases for ODCM Controls associated with Total Dose.

8.5 See ATTACHMENT E for a complete description of Bases for ODCM Controls associated with the Radiological Environmental Monitoring Program (REMP).

-END-

ATTACHMENT A
Page 1 of 1
BASES FOR ODCM CONTROLS: INSTRUMENTATION

3/4.3.3.1 RADIATION MONITORING INSTRUMENTATION

The OPERABILITY of the radiation monitoring channels ensures that: 1) the radiation levels are continually measured in the areas served by the individual channels; 2) the alarm or automatic action is initiated when the radiation level trip setpoint is exceeded; and 3) sufficient information is available on selected plant parameters to monitor and assess these variables following an accident. This capability is consistent with the recommendations of NUREG-0737.[3.2.9]

3/4.3.3.9 RADIOACTIVE LIQUID EFFLUENT MONITORING 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 of liquid effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with Section 1 of this manual to ensure that the alarm/trip will occur prior to exceeding the limits of 10 CFR Part 20. 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.[3.2.1, 3.2.2]

3/4.3.3.10 RADIOACTIVE GASEOUS EFFLUENT MONITORING 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 of gaseous effluents. The alarm/trip setpoints for these instruments shall be calculated in accordance with Section 2 of this manual 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 (and controlling) 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.[3.2.1, 3.2.2]

ATTACHMENT B
Page 1 of 2
BASES FOR ODCM CONTROLS: LIQUID EFFLUENTS

3/4.11.1.1 LIQUID EFFLUENT CONCENTRATION

This CONTROL 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 10 times the EC's specified in 10 CFR Part 20, Appendix B (20.1001-20-2401), Table 2, Column 2. This limitation provides additional assurance that the levels of radioactive materials in bodies of water outside the site will result in exposure within (1) the Section II.A design objectives of Appendix I, 10 CFR Part 50, to an individual and (2) the limits of 10 CFR Part 20.1302 to the population. The concentration limit for dissolved or entrained 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.(3.2.1, 3.2.2)

3/4.11.1.2 LIQUID EFFLUENT DOSE

This CONTROL 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 procedure 1/2-ODC-2.01 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 models and data such that the actual exposure of an individual through appropriate pathways is unlikely to be substantially underestimated. The equations specified in procedure1/2-ODC-2.01 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, and Regulatory Guide 1.113. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guides 1.109 and 1.113.(3.1.1, 3.2.2, 3.2.3, 3.2.5, 3.2.7, 3.2.8)

This CONTROL applies to the release of liquid effluents for Beaver Valley Power Station, Unit No. 1 or Unit No. 2. These units have shared radwaste treatment systems, the liquid effluents from the shared system are proportioned among the units sharing that system.

ATTACHMENT B
Page 2 of 2
BASES FOR ODCM CONTROLS: LIQUID EFFLUENTS

3/4.11.1.3 LIQUID WASTE TREATMENT SYSTEM

The CONTROL 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 given in Section II.D of Appendix I to 10 CFR Part 50. The specified limits governing the use of appropriate portions of the liquid radwaste treatment system were specified as a suitable fraction of the dose design objectives set forth in Section II.A of Appendix I, 10 CFR Part 50, for liquid effluents. This specification applies to Beaver Valley Power Station, Unit No. 1 or Unit No. 2.(3.2.2)

3/4.11.1.4 LIQUID HOLDUP TANKS

9/2002

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 2, Column 2, at the nearest potable water supply and the nearest surface water supply in an unrestricted area.

ATTACHMENT C
Page 1 of 3
BASES FOR ODCM CONTROLS: GASEOUS EFFLUENTS

3/4.11.2.1 GASEOUS EFFLUENT DOSE RATE

This CONTROL is provided to ensure that the dose at anytime 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, Column 1. These limits provide reasonable assurance that radioactive material discharged in gaseous effluents will not result in the exposure of an individual in an unrestricted area, either within or 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(b)). For individuals who may at times be within the site boundary, the occupancy of the individual will be sufficiently low to compensate for any increase in the atmospheric diffusion factor above that for the site boundary. The specified release rate limits restrict, at all times, the corresponding gamma and beta dose rates above background to an individual at or beyond the site boundary to ≤ 500 mrem/year to the total body or to ≤ 3,000 mrem/year to the skin. These release rate limits also restrict, at all times, the corresponding thyroid dose rate above background of a child via the inhalation pathway to ≤ 1,500 mrem/year.(3.2.1)

3/4.11.2.2 DOSE, NOBLE GASES

This CONTROL is provided to implement the requirements of Sections II.B, III.A, and IV.A of Appendix I, 10 CFR Part 50. The CONTROL 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 release 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 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 the appropriate pathways is unlikely to be substantially underestimated. The dose calculations established in procedure 1/2-ODC-2.02 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, and Regulatory Guide 1.111. The equations in procedure 1/2-ODC-2.02 are provided for determining the air doses at the exclusion area boundary, and are based upon the historical average atmospheric conditions. NUREG-0133 provides methods for dose calculations consistent with Regulatory Guides 1.109 and 1.111. This specifications applies to the release of gaseous effluents from Beaver Valley Power Station, Unit No. 1 or Unit No. 2.(3.1.2, 3.2.2, 3.2.5, 3.2.6, 3.2.8)

ATTACHMENT C
Page 2 of 3
BASES FOR ODCM CONTROLS: GASEOUS EFFLUENTS

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

This CONTROL is provided to implement the requirements of Sections II.C, III.A, and IV.A of Appendix I, 10 CFR Part 50. The CONTROLS are the guides set forth in Section II.C of Appendix I.(3.2.2)

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 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 calculational methods in procedure 1/2-ODC-2.02 are 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, and Regulatory Guide 1.111. These equations also provide for determining the actual doses based upon the historical average atmospheric conditions. 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 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. This CONTROL applies to radioactive material in particulate form and radionuclides other than noble gases released from Beaver Valley Power Station, Unit No. 1 or Unit No.2.(3.1.2, 3.2.2, 3.2.6, 3.2.7)

ATTACHMENT C
Page 3 of 3
BASES FOR ODCM CONTROLS: GASEOUS EFFLUENTS

3/4.11.2.4 GASEOUS RADWASTE TREATMENT SYSTEM

The CONTROL 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 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 I 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. This specification applies to gaseous radwaste from Beaver Valley Power Station, Unit No. 1 or Unit No. 2.(3.1.2, 3.2.2)

3/4.11.2.5 BV-1 GASEOUS WASTE STORAGE TANKS

Restricting the quantity of radioactivity contained in each gas storage tank provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting total body exposure to an individual located at the nearest exclusion area boundary for two hours immediately following the onset of the release will not exceed 0.5 rem. The specified limit restricting the quantity of radioactivity contained in each gas storage tank was specified to ensure that the total body exposure resulting from the postulated release remained a suitable fraction of the reference value set forth in 10 CFR 100.11 (a)(1).

3/4.11.2.5 BV-2 GASEOUS WASTE STORAGE TANKS

Restricting the quantity of radioactivity contained in any connected group of gaseous waste storage tanks provides assurance that in the event of an uncontrolled release of the tanks' contents, the resulting total body exposure to an individual located at the nearest exclusion area boundary for two hours immediately following the onset of the release will not exceed 0.5 rem. The specified limit restricting the quantity of radioactivity contained in any connected group of gaseous waste storage tanks was specified to ensure that the total body exposure resulting from the postulated release remained a suitable fraction of the reference value set forth in 10 CFR 100.11(a)(1). The curie content limit is applied individually to each gaseous waste storage tank and collectively to the number of unisolated gaseous waste storage tanks.

8/2002

ATTACHMENT D
Page 1 of 1
BASES FOR ODCM CONTROLS: TOTAL DOSE

3/4.11.4 TOTAL DOSE

This CONTROL 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 CONTROL requires the preparation and submittal of a Special Report whenever the calculated doses due to releases of radioactivity and to radiation from uranium fuel cycle sources exceed 25 mrems to the whole 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 unlikley 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 units (including outside storages tanks, etc.) 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 5 miles 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 190.11 and 10 CFR 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 ODCM CONTROL 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.[3.1.3, 3.2.1, 3.2.2, 3.2.4]

ATTACHMENT E
Page 1 of 1
BASES FOR ODCM CONTROLS: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM (REMP)

3/4.12.1 MONITORING PROGRAM

The radiological monitoring program required by this CONTROL 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 MEMBER(S) OF THE PUBLIC resulting from the station operation. This monitoring program thereby supplements the radiological effluent monitoring program by verifying that the measurable concentrations of radioactive materials and levels of radiation are not higher than expected on the basis of the effluent measurements and modeling of the environmental exposure pathways. The initially specified monitoring program will be effective for at least the first 3 years of commercial operation. Following this period, program changes may be initiated based on operational experience.

The detection capabilities required by ODCM Control 3.12.1, Table 4.12-1 are state-of-the-art for routine environmental measurements in industrial laboratories. The LLD's for drinking water meet the requirements of 40 CFR 141.(3.1.3, 3.2.3)

3/4.12.2 LAND USE CENSUS

ODCM CONTROL 3.12.2 is provided to ensure that changes in the use of unrestricted areas are identified and that modifications to the monitoring programs are made if required by the results of this census. The best survey information from the door-to-door survey, aerial survey, or by consulting with local agriculture authorities shall be used. 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 500 square feet 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 Regulatory Guide 1.109 for consumption by a child. To determine this minimum garden size, the following assumptions were used: 1) that 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/square meter.(3.1.3, 3.2.2)

3/4.12.3 INTERLABORATORY COMPARISON PROGRAM

The ODCM CONTROL 3.12.3 for participation in an 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 a quality assurance program for environmental monitoring in order to demonstrate that the results are reasonably valid.(3.1.3)

New: 1/2-ODC-3.03
Old: APPENDIX C & E

RTL #A9.621B

Beaver Valley Power Station

Unit 1/2

1/2-ODC-3.03

ODCM: Controls for RETS and REMP Programs

Document Owner
Manager, Radiation Protection

Revision Number	2
Level Of Use	General Skill Reference
Safety Related Procedure	Yes

TABLE OF CONTENTS

1.0 PURPOSE

1.1 This procedure includes selected Definitions and Tables as delineated in Section 1 of the Technical Specifications and selected Applicability and Surveillance Requirement statements as delineated in Section 3/4 of the Technical Specifications.

1.1.1 Prior to issuance of this procedure, these items were located in Appendix C of the old ODCM, and were added to this procedure for reference purposes, even though they are currently described in the Technical Specifications.

1.2 This procedure contains the controls for the Radiological Effluent Technical Specification (RETS) that were transferred from the Technical Specifications per Unit 1/2 Amendments 1A-188/2A-70, and in accordance with Generic Letter 89-01 and NUREG-1301.(3.2.10)

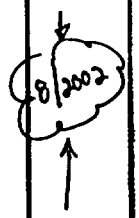
1.2.1 Prior to issuance of this procedure, these items were located in Appendix C of the old ODCM.

1.3 This procedure contains the reporting requirements for the Annual Radioactive Effluent Release Report and the Annual Radiological Environmental Report that were transferred from the Technical Specifications per Unit 1/2 Amendments 1A-188/2A-70 and in accordance with Generic Letter 89-01 and NUREG-1301.(3.2.10)

1.3.1 Prior to issuance of this procedure, these items were located in Appendix E of the old ODCM.

1.4 This procedure contains the controls for Radiation Monitoring Instrumentation that were transferred from the Technical Specification per Unit 1/2 Amendments 246/124, and in accordance with NUREG-1431.(3.2.11)

1.5 This procedure contains the controls for Liquid Holdup Tank Activity Limits and for Gas Decay/Storage Tank Activity Limits that were transferred from the Technical Specification per Unit 1/2 Amendment 250/130, and in accordance with NUREG-1431.(3.1.6, 3.2.11)



2.0 SCOPE

2.1 This procedure is applicable to all station personnel that are qualified to perform activities as described and referenced in this procedure.

3.0 REFERENCES AND COMMITMENTS

3.1 References

3.1.1 1/2-ODC-2.01, ODCM: Liquid Effluents

3.1.2 1/2-ODC-2.02, ODCM: Gaseous Effluents

3.1.3 1/2-ODC-3.02, ODCM: Bases for ODCM Controls

3.1.4 Unit 1/2 Technical Specification 6.8.6, including Amendments 1A-188/2A-70 (LAR 1A-175/2A-137) Implemented August 7, 1995.

3.1.5 Unit 1/2 Technical Specification 3.3.3.1, including Amendments 1A-246/2A-142 (LAR 1A-287/2A-159) Implemented April 11, 2002

3.1.6 Unit 1/2 Technical Specification 3.11.1.4, 3.11.2.5, 6.8.6 and 6.9.3, including Amendments 1A-250/2A-130 (LAR 1A-291/2A-163) Implemented August 7, 2002

3.1.7 1/2-ADM-1640, Control of the Offsite Dose Calculation Manual

3.1.8 1/2-ADM-0100, Procedure Writer's Guide

3.1.9 1/2-ADM-0101, Review and Approval of Documents

3.1.10 CR 981489, ODCM Table 4.11-2 Row A (Waste Gas Storage Tank Discharge). CA-001, Revise Appendix C of the ODCM (Table 4.11-2) to add clarification as to where and when tritium samples are to be obtained for GWST discharges.

3.1.11 CR 981490, ODCM Table 4.11-2 Note e, and Related Chemistry Department Procedures. CA-001, Revise Appendix C of the ODCM (Table 4.11-2, Note e) to specify the proper tritium sample point.

3.1.12 CR 993021, Apparent failure to test RM-1DA-100 trip function as required by ODCM. No ODCM changes are required for this CR.

3.1.13 CR 001682, ODCM Action 28 Guidance. CA-002, Revise Appendix C of the ODCM (Table 3.3-13, Action 28) to differentiate actions associated with Inoperable Process Flow Rate Monitors vs. Sample Flow Rate Monitors.

3.1.14 CR 02-05711, TS and ODCM changes not reflected in 1OM.54.3.L5 Surveillance Log. CA-001, Revise 1/2-ODC-3.03 to add a requirement for applicable station groups notification of pending ODCM changes.

3.2 Commitments

3.2.1 10 CFR Part 20

3.2.2 10 CFR Part 50

3.2.3 40 CFR Part 141

3.2.4 40 CFR Part 190

3.2.5 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

3.2.6 Regulatory Guide 1.111, Methods For Estimating Atmospheric Transport And Dispersion Of Gaseous Eflfuents In Routine Releases From Light-Water-Cooled Reactors, Revision 1, July 1977

3.2.7 Regulatory Guide 1.113, Estimating Aquatic Dispersion Of Effluents From Accidental And Routine Reactor Releases For The Purpose Of Implementing Appendix I, April 1977

3.2.8 NUREG-0133, Preparation of Radiological Effluent Technical Specifications for Nuclear Power Plants, October 1978

3.2.9 NUREG-0737, Clarification of TMI Action Plan Requirements, October 1980

3.2.10 NUREG-1301, Offsite Dose Calculation Manual Guidance; Standard Radiological Effluent Controls For Pressurized Water Reactors (Generic Letter 89-01, Supplement No. 1)

3.2.11 NUREG-1431, Standard Technical Specifications - Westinghouse Plants Specifications

4.0 RECORDS AND FORMS

4.1 Records

4.1.1 Any calculation supporting ODCM changes shall be documented, as appropriate, by a retrievable document (e.g.; letter or calculation package) with an appropriate RTL number.

4.2 Forms

4.2.1 None

5.0 PRECAUTIONS AND LIMITATIONS

5.1 The numbering of each specific ODCM Control, ODCM Surveillance Requirement and ODCM Table contained in this procedure does not appear to be sequential. This is intentional, as all ODCM Control, ODCM Surveillance Requirement and ODCM Table numbers remained the same when they were transferred from the Technical Specifications. This was done in an effort to minimize the amount of plant procedure changes and to eliminate any confusion associated with numbering changes.

5.2 The numbering of each specific ODCM Report contained in this procedure does not appear to be sequential. This is intentional, as all ODCM Report numbers remained the same when they were transferred from the Technical Specifications. This was done in an effort to minimize the amount of plant procedure changes and to eliminate any confusion associated with numbering changes.

6.0 ACCEPTANCE CRITERIA

6.1 Any change to this procedure shall contain sufficient justification that the charge will maintain the level of radioactive effluent control required by 10 CFR 20.1302, 40 CFR Part 190, 10 CFR 50.36a, and Appendix I to 10 CFR 50, and not adversely impact the accuracy or reliability of effluent dose or setpoint calculation.(3.2.10)

6.1.1 All changes to this procedure shall be prepared in accordance with 1/2-ADM-0100(3.1.8) and 1/2-ADM-1640.(3.1.7)

6.1.2 Pending changes to this procedure shall be provided to applicable station groups. For example, IF Control 3.11.1.1 is being changed, THEN the proposed changes shall be provided to the applicable station groups (i.e.; owner of the procedures), identified in the MATRIX of ODCM procedure 1/2-ODC-1.01. This will allow the station groups to revise any affected procedures concurrent with the ODCM change.(3.1.14)

6.1.3 All changes to this procedure shall be reviewed and approved in accordance with 1/2-ADM-0101(3.1.9) and 1/2-ADM-1640.(3.1.7)

7.0 PREREQUISITES

7.1 The user of this procedure shall be familiar with ODCM structure and content.

8.0 PROCEDURE

8.1 See ATTACHMENT A for a Table of Operational Modes and a Table of Frequency Notation.

8.2 See ATTACHMENT B for a list of defined terms used throughout the ODCM.

8.3 See ATTACHMENT C thru ATTACHMENT S for a complete description of all ODCM Controls.

8.4 See ATTACHMENT T for a description of the Annual Report required by the REMP Controls.

8.5 See ATTACHMENT U for a description of the Annual Report required by the RETS Controls.

- END -

ATTACHMENT A
Page 1 of 2
ODCM CONTROLS: OPERATIONAL MODES AND FREQUENCY NOTATION

TABLE 1.1

OPERATIONAL MODES

MODE	REACTIVITY CONDITION, K_{eff}	% RATED THERMAL POWER[1]	AVERAGE COOLANT TEMPERATURE
1. Power Operation	≥0.99	>5%	≥350°F
2. Startup	≥0.99	≤5%	≥350°F
3. Hot Standby	<0.99	0	≥350°F
4. Hot Shutdown	<0.99	0	350°F >T_{avg} >200°F
5. Cold Shutdown	<0.99	0	≤200°F
6. Refueling[2]	≤0.95	0	≤140°F

(1) Excluding decay heat.
(2) Reactor vessel head unbolted or removed and fuel in the vessel.

ATTACHMENT A
Page 2 of 2
ODCM CONTROLS: OPERATIONAL MODES AND FREQUENCY NOTATION

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 184 days
R	At least once per 18 months
S/U	Prior to each reactor startup
P	Completed prior to each release
N.A.	Not applicable

ATTACHMENT B
Page 1 of 3
ODCM CONTROLS: DEFINITIONS

The defined terms of this section appear in capitalized type and are applicable throughout these CONTROLS.

ACTION shall be those additional requirements specified as corollary statements to each principal CONTROL and shall be part of the CONTROLS.

CHANNEL CALIBRATION shall be the adjustment, as necessary, of the channel output such that it responds with the necessary range and accuracy to known values of the parameter which the channel monitors. The CHANNEL CALIBRATION shall encompass the entire channel including the sensor and alarm and/or trip functions, and shall include the CHANNEL FUNCTIONAL TEST. The CHANNEL CALIBRATION may be performed by any series of sequential, overlapping, or total channel steps such that the entire channel is calibrated.

CHANNEL CHECK shall be the qualitative assessment of channel behavior during operation by observation. This determination shall include, where possible, comparison of the channel indication and/or status with other indications and/or status derived from independent instrument channels measuring the same parameter.

CHANNEL FUNCTIONAL TEST shall be the injection of a simulated signal into the channel as close to the primary sensor as practicable to verify OPERABILITY including alarm and/or trip functions.

FREQUENCY NOTATION specified for the performance of Surveillance Requirements shall correspond to the intervals defined in Table 1.2.

GASEOUS RADWASTE TREATMENT SYSTEM is any system designed and installed to reduce radioactive gaseous effluents by collecting primary coolant system offgases from the primary system and providing for delay or holdup for the purpose of reducing the total radioactivity prior to release to the environment.

MEMBER(S) OF THE PUBLIC (10 CFR 20) means any individual except when that individual is receiving an occupational dose. **This definition is used to show compliance to an ODCM Appendix C CONTROL that is based on 10 CFR Part 20.**

MEMBER(S) OF THE PUBLIC (40 CFR 190) means any individual that can receive a radiation dose in the general environment, whether he may or may not also be exposed to radiation in an occupation associated with a nuclear fuel cycle. However, an individual is not considered a MEMBER OF THE PUBLIC during any period in which he is engaged in carrying out any operation which is part of the nuclear fuel cycle. **This definition is used to show compliance to an ODCM CONTROL 3.11.4.1 that is based on 40 CFR Part 190.**

ATTACHMENT B
Page 2 of 3
ODCM CONTROLS: DEFINITIONS

OFFSITE DOSE CALCULATION MANUAL (ODCM) shall contain the methodology and parameters used in the calculation of offsite doses resulting from radioactive gaseous and liquid effluents, in the calculation of gaseous and liquid effluent monitoring Alarm/Trip Setpoints, and in the conduct of the Environmental Radiological Monitoring Program. The ODCM shall also contain (1) the Radioactive Effluent Controls and Radiological Environmental Monitoring Programs required by Technical Specification (TS) Section 6.8.6 and (2) descriptions of the information that should be included in the Annual Radiological Environmental Operating and Annual Radioactive Effluent Release Reports that are also required by the Administrative Controls Section of the TS

OPERABLE/OPERABILITY A system, subsystem, train, component, or device shall be OPERABLE or have OPERABILITY when it is capable of performing its specified function(s). Implicit in this definition shall be the assumption that all necessary attendant instrumentation, controls, normal and emergency electric power sources, cooling or seal water, lubrication or other auxiliary equipment that are required for the system, subsystem, train, component, or device to perform its function(s) are also capable of performing their related safety function(s).

OPERATIONAL MODE shall correspond to any one inclusive combination of core reactivity condition power level, and average reactor coolant temperature specified in ATTACHMENT A Table 1.1.

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

RATED THERMAL POWER shall be a total reactor core heat transfer rate to the reactor coolant of 2689 MWt.

REPORTABLE EVENT shall be any of those conditions specified in Section 50.73 to 10 CFR Part 50.

SHUTDOWN means reactor power change to 0% power.

SITE BOUNDARY shall be that line beyond which the land is neither owned, nor leased, nor otherwise controlled by the licensee. The Figure for Liquid Effluent Site Boundary is contained in 1/2-ODC-2.01. The Figure for Gaseous Effluent Site Boundary is contained in 1/2-ODC-2.02.

STARTUP means reactor power change from 0% power.

SOURCE CHECK shall be the qualitative assessment of channel response when the channel sensor is exposed to a radioactive source.

THERMAL POWER shall be the total reactor core heat transfer rate to the reactor coolant.

UNRESTRICTED AREA means any area access to which is neither limited nor controlled by the licensee.

ATTACHMENT B
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ODCM CONTROLS: DEFINITIONS

VENTILATION EXHAUST TREATMENT SYSTEM is any system designed and installed to reduce gaseous radioiodine or radioactive material in particulate form in effluents by passing ventilation or vent exhaust gases through charcoal absorbers and/or HEPA filters for the purpose of removing iodines or particulates from the gaseous exhaust stream prior to the release to the environment (such a system is not considered to have any effect on noble gas effluents). Engineered Safety Feature (ESF) atmospheric cleanup systems are not considered to be VENTILATION EXHAUST TREATMENT SYSTEM components.

VENTING is the controlled process of discharging air or gas from a confinement to maintain temperature, pressure, humidity, concentration or other operating conditions, 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.

ATTACHMENT C
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ODCM CONTROLS: APPLICABILITY AND SURVEILLANCE REQUIREMENTS

CONTROLS: APPLICABILITY

3.0.1 Compliance with the ODCM CONTROLS in the succeeding ODCM CONTROLS is required during the OPERATIONAL MODES or other conditions specified therein; except that upon failure to meet the ODCM CONTROL, the associated ODCM ACTION requirements shall be met.

3.0.2 Non-compliance with a ODCM CONTROL shall exist when the requirements of the ODCM CONTROL and associated ODCM ACTION requirements are not met within the specified time intervals. If the ODCM CONTROL is restored prior to expiration of the specified time intervals, completion of the ODCM ACTION requirements is not required.

3.0.3 When a ODCM CONTROL is not met except as provided in the associated ODCM ACTION requirements, within one hour action shall be initiated to place the unit in a MODE in which the ODCM CONTROL does not apply by placing it, as applicable, in:

1. At least HOT STANDBY within the next 6 hours,
2. At least HOT SHUTDOWN within the following 6 hours, and
3. At least COLD SHUTDOWN within the subsequent 24 hours.

Where corrective measures are completed that permit operation under the ODCM ACTION requirements, the ODCM ACTION may be taken in accordance with the specified time limits as measured from the time of failure to meet the ODCM CONTROL. Exceptions to these requirements are stated in the individual ODCM CONTROLS.

3.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made when the conditions for the ODCM CONTROL are not met and the associated ODCM ACTION requires a shutdown if they are not met within a specified time interval. Entry into an OPERATIONAL MODE or specified condition may be made in accordance with ODCM ACTION requirements when conformance to them permits continued operation of the facility for an unlimited period of time. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ODCM ACTION requirements. Exceptions to these requirements are stated in the individual ODCM CONTROLS.

ATTACHMENT C
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ODCM CONTROLS: APPLICABILITY AND SURVEILLANCE REQUIREMENTS

CONTROLS: SURVEILLANCE REQUIREMENTS

4.0.1 Surveillance Requirements shall be met during the OPERATIONAL MODES or other conditions specified for individual ODCM CONTROLS unless otherwise stated in an individual ODCM Surveillance Requirement.

4.0.2 Each ODCM Surveillance Requirement shall be performed within the specified time interval with a maximum allowable extension not to exceed 25% of the ODCM surveillance interval.

4.0.3 Failure to perform a ODCM Surveillance Requirement within the allowed ODCM surveillance interval (defined by ODCM CONTROL 4.0.2), shall constitute non-compliance with the OPERABILITY requirements for a ODCM CONTROL. The time limits of the ODCM ACTION requirements are applicable at the time it is identified that an ODCM Surveillance Requirement has not been performed. The ODCM ACTION requirements may be delayed for up to 24 hours to permit the completion of the ODCM surveillance when the allowable outage time limits of the ODCM ACTION requirements are less than 24 hours. ODCM Surveillance Requirements do not have to be performed on inoperable equipment.

4.0.4 Entry into an OPERATIONAL MODE or other specified condition shall not be made unless the ODCM Surveillance Requirement(s) associated with the ODCM CONTROL has been performed within the stated ODCM surveillance interval or as otherwise specified. This provision shall not prevent passage through or to OPERATIONAL MODES as required to comply with ODCM ACTION requirements.

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ATTACHMENT D
Page 1 of 8
ODCM CONTROLS: RADIATION MONITORING INSTRUMENTATION

CONTROLS: RADIATION MONITORING (HIGH RANGE INSTRUMENTATION)

3.3.3.1 The radiation monitoring instrumentation channels shown in Table 3.3-6 shall be OPERABLE with their alarm/trip setpoints within the specified limits.

APPLICABILITY: As shown in Table 3.3-6.

ACTION:

a. With a radiation monitoring channel alarm/trip setpoint exceeding the value shown in ODCM Control 3.3.3.1, Table 3.3-6, adjust the setpoint to within the limit within 4 hours or declare the channel inoperable.

b. With one or more radiation monitoring channels inoperable, take the ACTION shown in ODCM Control 3.3.3.1, Table 3.3-6.

c. The provisions of ODCM Control 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.3.3.1 Each radiation monitoring instrumentation channel shall be demonstrated OPERABLE by the performance of the CHANNEL CHECK, CHANNEL CALIBRATION and CHANNEL FUNCTIONAL TEST operations during the modes and at the frequencies shown in ODCM Control 3.3.3.1, Table 4.3-3.

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ODCM CONTROLS: RADIATION MONITORING INSTRUMENTATION

TABLE 3.3-6
BV-1 RADIATION MONITORING INSTRUMENTATION

Pri = Primary Instruments, PMM = Preplanned Method of Monitoring[a]

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	SETPOINT[1]	NOMINAL MEASUREMENT RANGE	ACTION
1. Noble Gas Effluent Monitors - SPINGS[4]					
a. Reactor Building/SLCRS (CV-1; Also called Elevated Release)					
Mid Range Noble Gas Pri: (RM-1VS-110 Ch 7) 1st PMM: (RM-1VS-112 SA-10) 2nd PMM: (RM-1VS-107B) 3rd PMM: Grab Sampling every 12 hours	(1)	1, 2, 3, & 4	≤798 cpm	10^{-3}-10^{3} uCi/cc[2]	35
High Range Noble Gas Pri: (RM-1VS-110 Ch 9) 1st PMM: (RM-1VS-112 SA-9 2nd PMM: (RM-1VS-107B) 3rd PMM: Grab Sampling every 12 hours	(1)	1, 2, 3, & 4	N/A	10^{-1}-10^{5} uCi/cc[2]	35
b. Auxiliary Building Ventilation System (VV-1; Also called Ventilation Vent)					
Mid Range Noble Gas Pri: (RM-1VS-109 Ch 7) 1st PMM: (RM-1VS-111 SA-10) 2nd PMM: (RM-1VS-101B) 3rd PMM: Grab Sampling every 12 hours	(1)	1, 2, 3, & 4	≤669 cpm	10^{-3}-10^{3} uCi/cc[2]	35
High Range Noble Gas Pri: (RM-1VS-109 Ch 9) 1st PMM: (RM-1VS-111 SA-9) 2nd PMM: (RM-1VS-101B) 3rd PMM: Grab Sampling every 12 hours	(1)	1, 2, 3, & 4	N/A	10^{-1}-10^{5} uCi/cc[2]	35
c. Gaseous Waste/Process Vent System (PV-1/2)					
Mid Range Noble Gas Pri: (RM-1GW-109 Ch 7) 1st PMM: (RM-1GW-110 SA-10) 2nd PMM: (RM-1GW-108B) 3rd PMM: Grab Sampling every 12 hours	(1)	1, 2, 3, & 4	N/A	10^{-3}-10^{3} uCi/cc[3]	35
High Range Noble Gas Pri: (RM-1GW-109 Ch 9) 1st PMM: (RM-1GW-110 SA-9) 2nd PMM: (RM-1GW-108B) 3rd PMM: Grab Sampling every 12 hours	(1)	1, 2, 3, & 4	≤ 1.83E^{5} cpm	10^{-1}-10^{5} uCi/cc[3]	35

(a) Instruments or actions shown as PMM are the preplanned methods to be used when the primary instrument is inoperable. SINCE the PMM instruments shown are not considered comparable alternate monitoring channels, THEN the ODCM Surveillance Requirements do not apply to the PMM. Therefore, the reporting requirement of Action 35b would still apply when inoperability of the primary instrument exceeds 30 days.

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ODCM CONTROLS: RADIATION MONITORING INSTRUMENTATION

TABLE 3.3-6 (Continued)

BV-1 RADIATION MONITORING INSTRUMENTATION

Pri = Primary Instruments, PMM = Preplanned Method of Monitoring[a]

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	SETPOINT[1]	NOMINAL MEASUREMENT RANGE	ACTION
2. Noble Gas Effluent Steam Monitors					
a. Atmospheric Steam Dump Valve and Code Safety Relief Valve Discharge					
Pri: (RM-1MS-100A) PMM: (Form 1/2-HPP-4.02.009.F01)	(1)	1, 2, 3, & 4	≤ 50 cpm	10^{-1}-10^{3} uCi/cc	35
Pri: (RM-1MS-100B) PMM: (Form 1/2-HPP-4.02.009.F01)	(1)	1, 2, 3, & 4	≤ 50 cpm	10^{-1}-10^{3} uCi/cc	35
Pri: (RM-1MS-100C) PMM: (Form 1/2-HPP-4.02.009.F01)	(1)	1, 2, 3, & 4	≤ 50 cpm	10^{-1}-10^{3} uCi/cc	35
b. Auxiliary Feedwater Pump Turbine Exhaust					
Pri: (RM-1MS-101) PMM: (Form 1/2-HPP-4.02.009.F01)	(1)	1, 2, 3, & 4	≤ 650 cpm	10^{-1}-10^{3} uCi/cc	35

(a) Instruments or actions shown as PMM are the preplanned methods to be used when the primary instrument is inoperable. SINCE the PMM instruments shown are not considered comparable alternate monitoring channels, THEN the ODCM Surveillance Requirements do not apply to the PMM. Therefore, the reporting requirement of Action 35b would still apply when inoperability of the primary instrument exceeds 30 days.

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ODCM CONTROLS: RADIATION MONITORING INSTRUMENTATION

TABLE 3.3-6 (Continued)

BV-2 RADIATION MONITORING INSTRUMENTATION

Pri = Primary Instruments, PMM = Preplanned Method of Monitoring[a]

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABLE MODES	SETPOINT[1]	NOMINAL MEASUREMENT RANGE	ACTION
1. Noble Gas Effluent Monitors					
a. SLCRS Filtered Pathway (CV-2; Also called Elevated Release)					
Midrange Noble Gas (Xe-133)					
Pri: (2HVS-RQ109C) 1st PMM: (2HVS-RQ109D) 2nd PMM: (2HVS-RQ109B) 3rd PMM: Grab Sampling every 12 hours	(1)	1, 2, 3, & 4	N.A.	10^{-4}-10^{2} µCi/cc	35
High Range Noble Gas (Xe-133)					
Pri: (2HVS-RQ109D) 1st PMM: (2HVS-RQ109C) 2nd PMM: (2HVS-RQ109B) 3rd PMM: Grab Sampling every 12 hours	(1)	1, 2, 3, & 4	N.A.	10^{-1}-10^{5} µCi/cc	35

(a) Instruments or actions shown as PMM are the preplanned methods to be used when the primary instrument is inoperable. SINCE the PMM instruments shown are not considered comparable alternate monitoring channels, THEN the ODCM Surveillance Requirements do not apply to the PMM. Therefore, the reporting requirement of Action 35b would still apply when inoperability of the primary instrument exceeds 30 days.

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ODCM CONTROLS: RADIATION MONITORING INSTRUMENTATION

TABLE 3.3-6 (Continued)

TABLE NOTATIONS

(1) Above background

(2) Nominal range for Ch 7 and Ch 9. The Alarm in set on Ch 7.

(3) Nominal range for Ch 7 and Ch 9. The Alarm in set on Ch 9.

(4) Other SPING-4 channels are not applicable to this ODCM Control.

ACTION STATEMENTS

ACTION 35 With the number of OPERABLE channels less than required by the Minimum Channels OPERABLE requirement, either restore the inoperable Channel(s) to OPERABLE status within 72 hours, or:

a) Initiate the preplanned alternate method of monitoring the appropriate parameter(s), and

b) Return the channel to OPERABLE status within 30 days, or, explain in the next Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

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ODCM CONTROLS: RADIATION MONITORING INSTRUMENTATION

TABLE 4.3-3 (Continued)

BV-1 RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, PMM = Preplanned Method of Monitoring[a]

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Noble Gas Effluent Monitors - SPINGS				
a. Reactor Building/SLCRS (CV-1; Also called Elevated Release)				
Mid Range Noble Gas Pri: (RM-1VS-110 Ch 7) 1st PMM: (RM-1VS-112 SA-10) 2nd PMM: (RM-1VS-107B) 3rd PMM: Grab Sampling every 12 hours	S	R	M	1, 2, 3, & 4
High Range Noble Gas Pri: (RM-1VS-110 Ch 9) 1st PMM: (RM-1VS-112 SA-9) 2nd PMM: (RM-1VS-107B) 3rd PMM: Grab Sampling every 12 hours	S	R	M	1, 2, 3, & 4
b. Auxiliary Building Ventilation System (VV-1; Also called Ventilation Vent)				
Mid Range Noble Gas Pri: (RM-1VS-109 Ch 7) 1st PMM: (RM-1VS-111 SA-10) 2nd PMM: (RM-1VS-101B) 3rd PMM: Grab Sampling every 12 hours	S	R	M	1, 2, 3, & 4
High Range Noble Gas Pri: (RM-1VS-109 Ch 9) 1st PMM: (RM-1VS-111 SA-9) 2nd PMM: (RM-1VS-101B) 3rd PMM: Grab Sampling every 12 hours	S	R	M	1, 2, 3, & 4
c. Gaseous Waste Process Vent System (PV-1,2)				
Mid Range Noble Gas Pri: (RM-1GW-109 Ch 7) 1st PMM: (RM-1GW-110 SA-10) 2nd PMM: (RM-1GW-108B) 3rd PMM: Grab Sampling every 12 hours	S	R	M	1, 2, 3, & 4
High Range Noble Gas Pri: RM-1GW-109 Ch 9) 1st PMM: (RM-1GW-110 SA-9) 2nd PMM: (RM-1GW-108B) 3rd PMM: Grab Sampling every 12 hours	S	R	M	1, 2, 3, & 4

(a) Instruments or actions shown as PMM are the preplanned methods to be used when the primary instrument is inoperable. SINCE the PMM instruments shown are not considered comparable alternate monitoring channels, THEN the ODCM Surveillance Requirements do not apply to the PMM. Therefore, the reporting requirement of Action 35b would still apply when inoperability of the primary instrument exceeds 30 days.

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ODCM CONTROLS: RADIATION MONITORING INSTRUMENTATION

TABLE 4.3-3 (Continued)

BV-1 RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, PMM = Preplanned Method of Monitoring[a]

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
2. Noble Gas Effluent Steam Monitors				
a. Atmospheric Steam Dump Valve and Code Safety Relief Valve Discharge				
Pri: (RM-1MS-100A) PMM: (Form 1/2-HPP-4.02.009.F01)	S	R	M	1, 2, 3, & 4
Pri: (RM-1MS-100B) PMM: (Form 1/2-HPP-4.02.009.F01)	S	R	M	1, 2, 3, & 4
Pri: (RM-1MS-100C) PMM: (Form 1/2-HPP-4.02.009.F01)	S	R	M	1, 2, 3, & 4
b. Auxiliary Feedwater Pump Turbine Exhaust				
Pri: (RM-1MS-101) PMM: (Form 1/2-HPP-4.02.009.F01)	S	R	M	1, 2, 3, & 4

(a) Instructions or actions shown as PMM are the preplanned methods to be used when the primary instrument is inoperable. SINCE the PMM instruments shown are not considered comparable alternate monitoring channels, THEN the ODCM Surveillance Requirements do not apply to the PMM. Therefore, the reporting requirement of Action 35b would still apply when inoperability of the primary instrument exceeds 30 days.

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ODCM CONTROLS: RADIATION MONITORING INSTRUMENTATION

TABLE 4.3-3 (Continued)

BV-2 RADIATION MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, PMM = Preplanned Method of Monitoring[(a)]

INSTRUMENT	CHANNEL CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST	MODES IN WHICH SURVEILLANCE REQUIRED
1. Noble Gas Effluent Monitors				
a. SLCRS Unfiltered Pathway (CV-2; Also called Elevated Release)				
Mid Range Noble Gas Pri: (2HVS-RQ109C) 1st PMM: (2HVS-RQ109D) 2nd PMM: (2HVS-RQ109B) 3rd PMM: Grab Sampling every 12 hours	S	R	M	1, 2, 3, & 4
High Range Noble Gas Pri: (2HVS-RQ109D) 1st PMM: (2HVS-RQ109C) 2nd PMM: (2HVS-RQ109B) 3rd PMM: Grab Sampling every 12 hours	S	R	M	1, 2, 3, & 4

(a) Instruments or actions shown as PMM are the preplanned methods to be used when the primary instrument is inoperable. SINCE the PMM instruments shown are not considered comparable alternate monitoring channels, THEN the ODCM Surveillance Requirements do not apply to the PMM. Therefore, the reporting requirement of Action 35b would still apply when inoperability of the primary instrument exceeds 30 days.

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ATTACHMENT E
Page 1 of 10
ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

CONTROLS: RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

3.3.3.9 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Item 1, the radioactive liquid effluent monitoring instrumentation channels shown in ODCM Control 3.3.3.9, Table 3.3-12 shall be OPERABLE with their alarm/trip setpoints set to ensure that the limits of ODCM CONTROL 3.11.1.1 are not exceeded. The alarm/trip setpoints of the radiation monitoring channels shall be determined in accordance with 1/2-ODC-2.01.

Applicability: During releases through the flow path.

Action:

a. With a radioactive liquid effluent monitoring instrumentation channel alarm/trip setpoint less conservative than required by the above specification, immediately suspend the release of radioactive liquid effluents monitored by the affected channel or correct the alarm/trip setpoint.

b. With one or more radioactive liquid effluent monitoring instrumentation channels inoperable, take the ACTION shown in ODCM Control 3.3.3.9, Table 3.3-12 or conservatively reduce the alarm setpoint. Exert a best effort to return the channel to operable status within 30 days, and if unsuccessful, explain in the next Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

c. The provisions of ODCM CONTROL 3.0.3 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 ODCM Control 3.3.3.9, Table 4.3-12.

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ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

TABLE 3.3-12

BV-1 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	MINIMUM CHANNELS OPERABLE	ACTION
1. Gross Activity Monitors Providing Automatic Termination Of Release		
a. Liquid Waste Effluents Monitor Pri: (RM-1LW-104)	(1)	23
b. Liquid Waste Contaminated Drain Monitor Pri: (RM-1LW-116)	(1)	23
c. Auxiliary Feed Pump Bay Drain Monitor Pri: (RM-1DA-100)	(1)	24
2. Gross Activity Monitors Not Providing Termination Of Release		
a. Component Cooling-Recirculation Spray Heat Exchangers River Water Monitor Pri: (RM-1RW-100)	(1)	24
3. Flow Rate Measurement Devices		
a. Liquid Radwaste Effluent Line Pri: (FR-1LW-104) for (RM-1LW-104)	(1)	25
b. Liquid Waste Contaminated Drain Line Pri: (FR-1LW-103) for (RM-1LW-116)	(1)	25
c. Cooling Tower Blowdown Line Pri: (FT-1CW-101-1) or Alt: (FT-1CW-101) and (2CWS-FT-101)	(1)	25
4. Tank Level Indicating Devices (for tanks outside plant building)		
a. Primary Water Storage Tank Pri: (LI-1PG-115A) for (1BR-TK-6A)	(1)	26
b. Primary Water Storage Tank Pri: (LI-1PG-115B) for (1BR-TK-6B)	(1)	26
c. Steam Generator Drain Tank Pri: (LI-1LW-110) for (1LW-TK-7A)	(1)	26
d. Steam Generator Drain Tank Pri: (LI-1LW-111) for (1LW-TK-7B)	(1)	26

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ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

TABLE 3.3-12 (continued)

BV-2 RADIOACTIVE LIQUID EFFLUENT MONITORING INSTRUMENTATION

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	MINIMUM CHANNELS OPERABLE	ACTION
1. Gross Radioactivity Monitor Providing Alarm And Automatic Termination Of Release		
a. Liquid Waste Process Effluent Monitor Pri: (2SGC-RQ100)	(1)	23
2. Gross Radioactivity Monitors Providing Alarm But Not Providing Termination Of Release		
a. None Required		
3. Flow Rate Measurement Devices		
a. Liquid Radwaste Effluent Pri: (2SGC-FS100)	(1)	25
b. Cooling Tower Blowdown Line Pri: (FT-1CW-101-1) or Alt: (FT-1CW-101) and (2CWS-FT101)	(1)	25
4. Tank Level Indicating Devices (for tanks outside plant buildings)		
a. None Required		

ATTACHMENT E
Page 4 of 10
ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

TABLE 3.3-12 (continued)

ACTION STATEMENTS

Action 23 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases may be initiated or resumed provided that prior to release:

1. At least two independent samples are analyzed in accordance with ODCM SURVEILLANCE REQUIREMENT 4.11.1.1.1, and at least two technically qualified members of the Facility Staff independently verify the release rate calculations[1] and discharge valving, or

2. Initiate monitoring with the comparable alternate monitoring channel. ODCM Surveillance requirements applicable to the inoperable channel shall apply to the comparable alternate monitoring channel when used to satisfy this ODCM CONTROL requirement.

Otherwise, suspend release of radioactive effluents via this pathway.

Action 24 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided:

1. That at least once per 12 hours grab samples are analyzed for gross radioactivity (beta or gamma) at a Lower Limit of Detection (LLD) of at least 1E-7 uCi/ml, or

2. Initiate monitoring with the comparable alternate monitoring channel. ODCM Surveillance requirements applicable to the inoperable channel shall apply to the comparable alternate monitoring channel when used to satisfy this ODCM CONTROL requirement.

[1] Since the computer software used for discharge permit generation automatically performs the release rate calculations, then the independent signatures on the discharge permit for "preparer" and "reviewer" satisfy the requirement for "...two technically qualified members of the Facility Staff independently verify the release rate calculations..."

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ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

Table 3.3-12 (continued)

ACTION STATEMENTS

Action 25 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided:

1. The flow rate is estimated at least once per 4 hours during actual releases. (Pump curves may be used to estimate flow), or

2. Initiate monitoring with the comparable alternate monitoring channel. ODCM Surveillance requirements applicable to the inoperable channel shall apply to the comparable alternate monitoring channel when used to satisfy this ODCM CONTROL requirement.

Action 26 With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, liquid additions to this tank may continue provided:

1. The tank liquid level is estimated during all liquid additions to the tank, or

2. Initiate monitoring with the comparable alternate monitoring channel. ODCM Surveillance requirements applicable to the inoperable channel shall apply to the comparable alternate monitoring channel when used to satisfy this ODCM CONTROL requirement.

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ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

TABLE 4.3-12

BV-1 RADIOACTIVE LIQUID EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Gross Beta or Gamma Radioactivity Monitors Providing Alarm And Automatic Termination Of Release				
a. Liquid Radwaste Effluent Line Pri: (RM-1LW-104)	D	P(5)	R(3)	Q(1)
b. Liquid Waste Contaminated Drain Line Pri: (RM-1LW-116)	D	P(5)	R(3)	Q(1)
c. Auxiliary Feed Pump Bay Drain Monitor Pri: (RM-1DA-100)	D	D	R(3)	Q(1)
2. Gross Beta Or Gamma Radioactivity Monitors Providing Alarm But Not Providing Automatic Termination Of Release				
a. Component Cooling - Recirculation Spray Heat Exchangers River Water Monitor Pri: (RM-1RW-100)	D	M(5)	R(3)	Q(2)
3. Flow Rate Monitors				
a. Liquid Radwaste Effluent Lines Pri: (FR-1LW-104) for (RM-1LW-104)	D(4)	NA	R	Q
b. Liquid Waste Contaminated Drain Line Pri: (FR-1LW-103) for (RM-1LW-116)	D(4)	NA	R	Q
c. Cooling Tower Blowdown Line Pri: (FT-1CW-101-1) or Alt: (FT-1CW-101) and (2CWS-FT-101)	D(4)	NA	R	Q

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ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

TABLE 4.3-12 (continued)

BV-1 RADIOACTIVE LIQUID EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
4. Tank Level Indicating Devices (for tanks outside plant buildings)				
a. Primary Water Storage Tank Pri: (LI-1PG-115A) for (1BR-TK-6A)	D*	NA	R	Q
b. Primary Water Storage Tank Pri: (LI -1PG-115B) for (1BR-TK-6B)	D*	NA	R	Q
c. Steam Generator Drain Tank Pri: (LI-1LW-110) for (1LW-TK-7A)	D*	NA	R	Q
d. Steam Generator Drain Tank Pri: (LI-1LW-111) for (1LW-TK-7B)	D*	NA	R	Q

*During liquid additions to the tank.

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ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

TABLE 4.3-12 (continued)

BV-2 RADIOACTIVE LIQUID EFFLUENT MONITORING
INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Gross Radioactivity Monitor Providing Alarm And Automatic Termination Of Release				
a. Liquid Waste Process Effluent Pri: (2SGC-RQ100)	D	P(5)	R(8)(3)	Q(7)
2. Flow Rate Measurement Devices				
a. Liquid Radwaste Effluent Pri: (2SGC-FS100)	D(4)	NA	R	Q
b. Cooling Tower Blowdown Line Pri: (FT-1CW-101-1) or Alt: (FT-1CW-101) and (2CWS-FT101)	D(4)	NA	R	Q
3. Tank Level Indicating Devices (for tanks outside plant buildings)				
a. None Required				

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TABLE 4.3-12 (continued)

TABLE NOTATION

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and Control Room Alarm Annunciation occurs if any of the following conditions exist:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Downscale failure.
3. Instrument controls not set in operate mode.

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that Control Room Alarm Annunciation occurs if any of the following conditions exist:

1. Instrument indicates measured levels above the alarm/trip setpoint.
2. Downscale failure.
3. Instrument controls are not set in operate mode.

(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/NIST) or using standards that have been obtained from suppliers that participate in measurement assurance activities with NBS/NIST. 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 18 months. This can normally be accomplished during refueling outages. (Existing plants may substitute previously established calibration procedures for this requirement).

(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.

(5) A SOURCE CHECK may be performed utilizing the installed means or flashing the detector with a portable source to obtain an upscale increase in the existing count rate to verify channel response.

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ODCM CONTROLS: RETS INSTRUMENTATION FOR LIQUID EFFLUENTS

TABLE 4.3-12 (continued)

TABLE NOTATION

(6) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and Control Room Alarm Annunciation occurs when the instrument indicates measured levels above the Alarm/Trip Setpoint.

The CHANNEL FUNCTIONAL TEST shall also demonstrate that Control Alarm Annunciation occurs if any of the following conditions exists:

1. Downscale failure.

2. Instrument controls are not set in operate mode.

(7) 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.

(8) The CHANNEL CALIBRATION shall also demonstrate that Control Room Alarm Annunciation occurs if either of the following conditions exist:

1. Downscale failure.

2. Instrument controls are not set in operate mode.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

CONTROLS: RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

3.3.3.10 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Item 1, the radioactive gaseous effluent monitoring instrumentation channels shown in ODCM Control 3.3.3.10, Table 3.3-13 shall be operable with their alarm/trip setpoints set to ensure that the limits of ODCM CONTROL 3.11.2.1 are not exceeded. The alarm/trip setpoints of the radiation monitoring channels shall be determined in accordance with 1/2-ODC-2.02.

Applicability: During releases through the flow path.

Action:

a. With a radioactive gaseous process or effluent monitoring instrumentation channel alarm/trip setpoint less conservative than a value which will ensure that the limits of ODCM CONTROL 3.11.2.1 are met, immediately suspend the release of radioactive gaseous effluents monitored by the affected channel or correct the alarm/trip setpoint.

b. With one or more radioactive gaseous effluent monitoring instrumentation channels inoperable, take the ACTION shown in ODCM Control 3.3.3.10, Table 3.3-13 or conservatively reduce the alarm setpoint. Exert a best effort to return the channel to operable status within 30 days, and if unsuccessful, explain in the next Annual Radioactive Effluent Release Report why the inoperability was not corrected in a timely manner.

c. The provisions of ODCM CONTROL 3.0.3 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 ODCM Control 3.3.3.10, Table 4.3-13.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 3.3-13

BV-1 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1. Gaseous Waste/Process Vent System (PV-1,2)			
a. Noble Gas Activity Monitor Pri: (RM-1GW-108B) or **Alt For Continuous Release: (RM-1GW-109 Ch 5)** This channel may only be used as the comparable alternate monitoring channel for continuous releases via this pathway. **Alt For Batch Releases: (See Action 27)** RM-1GW-109 Ch 5 SHALL NOT be used as the comparable alternate monitoring channel for batch releases of the BV-1 GWDT's or the BV-2 GWST's. Specifically, SINCE this channel does not perform the same automatic isolation function as the primary channel, THEN ACTION 27 shall be followed for batch releases of the BV-1 GWDT's or the BV-2 GWST's via this pathway.	(1)	*	27,29,30A,30B
b. Particulate and Iodine Sampler Pri: (Filter Paper & Charcoal Cartridge for RM-1GW-109) or 1st Alt: (Filter Paper & Charcoal Cartridge for RM-1GW-110) or 2nd Alt: (Continuous collection via RASP Pump) or 3rd Alt: (Grab samples every 12 hours)	(1)	*	32
c. System Effluent Flow Rate Measuring Device Pri: (FR-1GW-108) or Alt: (RM-1GW-109 Ch 10)	(1)	*	28A
d. Sampler Flow Rate Measuring Device Used for Sample Collection Pri: (RM-1GW-109 Ch 15) or Alt: (Rotometer: FM-1GW-101, and Vacuum Gauge: PI-1GW-13)	(1)	*	28B
2. Auxiliary Building Ventilation System (VV-1; Also called Ventilation Vent)			
a. Noble Gas Activity Monitor Pri: (RM-1VS-101B) or Alt: (RM-1VS-109 Ch 5)	(1)	*	29,30A
b. Particulate and Iodine Sampler Pri: (Filter Paper & Charcoal Cartridge for RM-1VS-109) or 1st Alt: (Filter Paper & Charcoal Cartridge for RM-1VS-111) or 2nd Alt: (Continuous collection via RASP Pump) or 3rd Alt: (Grab samples every 12 hours)	(1)	*	32
c. System Effluent Flow Rate Measuring Device Pri: (FR-1VS-101) or Alt: (RM-1VS-109 Ch 10)	(1)	*	28A
d. Sampler Flow Rate Measuring Device Used for Sample Collection Pri: (RM-1VS-109 Ch 15) or Alt: (Rotometer: FM-1VS-102, and Vacuum Gauge: PI-1VS-659)	(1)	*	28B

*During Releases via this pathway.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 3.3-13 (continued)

BV-1 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
3. Reactor Building/SLCRS (CV-1; Also called Elevated Release)			
a. Noble Gas Activity Monitor Pri: (RM-1VS-107B) or Alt: (RM-1VS-110 Ch 5)	(1)	*	29,30A
b. Particulate and Iodine Sampler Pri: (Filter Paper & Charcoal Cartridge for RM-1VS-110) or 1st Alt: (Filter Paper & Charcoal Cartridge for RM-1VS-112) or 2nd Alt: (Continuous collection via RASP Pump) or 3rd Alt: (Grab samples every 12 hours)	(1)	*	32
c. System Effluent Flow Rate Measuring Device Pri: (FR-1VS-112) or Alt: (RM-1VS-110 Ch 10)	(1)	*	28A
d. Sampler Flow Rate Measuring Device Used for Sample Collection Pri: (RM-1VS-110 Ch 15) or Alt: (Rotometer: FM-1VS-103, and Vacuum Gauge: PI-1VS-660)	(1)	*	28B

*During Releases via this pathway.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 3.3-13 (continued)

BV-2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
1. SLCRS Unfiltered Pathway (VV-2; Also called Ventilation Vent)			
a. Noble Gas Activity Monitor Pri: (2HVS-RQ101B)	(1)	*	29, 30B
b. Particulate and Iodine Sampler Pri: (Filter Paper & Charcoal Cartridge for 2HVS-RQ101) or 1st Alt: (Continuous collection via RASP Pump) or 2nd Alt: (Grab samples every 12 hours)	(1)	*	32
c. Process Flow Rate Monitor Pri: (Monitor Item 29 for 2HVS-VP101)	(1)	*	28A
d. Sampler Flow Rate Monitor Used for Sample Collection Pri: (2HVS-FIT101)	(1)	*	28B
2. SLCRS Filtered Pathway (CV-2; Also called Elevated Release)			
a. Noble Gas Activity Monitor Pri: (2HVS-RQ109B)	(1)	*	29, 30B
b. Particulate and Iodine Sampler Pri: (Filter Paper & Charcoal Cartridge for 2HVS-RQ109 High Flow Path) or 1st Alt: (Continuous collection via RASP Pump) or 2nd Alt: (Grab samples every 12 hours)	(1)	*	32
c. Process Flow Rate Monitor Pri: (Monitor Item 29 for 2HVS-FR22) or 1st Alt: (2HVS-FI22A and FI22C) or 2nd Alt: (2HVS-FI22B and FI22D)	(1)	*	28A
d. Sampler Flow Rate Monitor Used for Sample Collection Pri: (Monitor Items 28 and 72 for 2HVS-DAU109B)	(1)	*	28B
3. Decontamination Building Vent (DV-2)			
a. Noble Gas Activity Monitor Pri: (2RMQ-RQ301B)	(1)	*	29
b. Particulate and Iodine Sampler Pri: (Filter Paper & Charcoal Cartridge for 2RMQ-RQ301) or 1st Alt: (Continuous collection via RASP Pump) 2nd Alt: (Grab samples every 12 hours)	(1)	*	32
c. Process Flow Rate Monitor	None	None	None
d. Sampler Flow Rate Monitor Used for Sample Collection Pri: (2RMQ-FIT301)	(1)	*	28B

*During Releases via this pathway.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 3.3-13 (continued)

BV-2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	MINIMUM CHANNELS OPERABLE	APPLICABILITY	ACTION
4. Condensate Polishing Building Vent (CB-2)			
a. Noble Gas Activity Monitor Pri: (2HVL-RQ112B)	(1)	*	29
b. Particulate and Iodine Sampler Pri: (Filter Paper & Charcoal Cartridge for 2HVL-RQ112) 1st Alt: (Continuous collection via RASP Pump) 2nd Alt: (Grab samples every 12 hours)	(1)	*	32
c. Process Flow Rate Monitor	None	None	None
d. Sampler Flow Rate Monitor Used for Sample Collection Pri: (2HVL-FIT112)	(1)	*	28B
5. Waste Gas Storage Vault Vent (WV-2)			
a. Noble Gas Activity Monitor Pri: (2RMQ-RQ303B)	(1)	*	29
b. Particulate and Iodine Sampler Pri: (Filter Paper & Charcoal Cartridge for 2RMQ-RQ303) 1st Alt: (Continuous collection via RASP Pump) 2nd Alt: (Grab samples every 12 hours)	(1)	*	32
c. Process Flow Rate Monitor	None	None	None
d. Sampler Flow Rate Monitor Used for Sample Collection Pri: (2RMQ-FIT303)	(1)	*	28B

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*During Releases via this pathway.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 3.3-13 (continued)

ACTION STATEMENTS

Action 27 APPLICABLE FOR BATCH RELEASES OF BV-1 GASEOUS WASTE DECAY TANKS OR BV-2 GASEOUS WASTE STORAGE TANKS

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, the contents of the Unit 1 Gaseous Waste Decay Tanks (GWDT's) or the Unit 2 Gaseous Waste Storage Tanks (GWST's) may be released to the environment provided that prior to initiating the release:

1. At least two independent samples of the tank's content are analyzed and at least two technically qualified members of the Facility Staff independently verify the release rate calculations and discharge valve lineup, or
2. Initiate continuous monitoring with the comparable alternate monitoring channel. ODCM Surveillance requirements applicable to the inoperable channel shall apply to the comparable alternate monitoring channel when used to satisfy this ODCM Control requirement.

Otherwise, suspend releases of radioactive effluents via this pathway.

Action 28A APPLICABLE FOR BV-1 SYSTEM EFFLUENT FLOW RATE MEASURING DEVICES OR BV-2 PROCESS FLOWRATE MONITORS

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided:

1. The system/process flow rate is estimated at least once per 4 hours (or assumed to be at the ODCM design value[(1)]), or
2. Initiate continuous monitoring with the comparable alternate monitoring channel. ODCM Surveillance requirements applicable to the inoperable channel shall apply to the comparable alternate monitoring channel when used to satisfy this ODCM Control requirement.

(1) In lieu of estimating the system/process flow rate at least once per 4 hours, the system/process flow rate can be assumed to be at the following ODCM design values:

1,450 cfm = BV-1 Gaseous Waste/Process Vent System (PV-1,2)
62,000 cfm = BV-1 Auxiliary Building Ventilation System (VV-1)
49,300 cfm = BV-1 Reactor Building/SLCRS (CV-1)
23,700 cfm = BV-2 SLCRS Unfiltered Pathway (VV-2)
59,000 cfm = BV-2 SLCRS Filtered Pathway (CV-2)

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TABLE 3.3-13 (continued)

ACTION STATEMENTS

Action 28B APPLICABLE FOR BV-1 SAMPLER FLOW RATE MEASURING DEVICES OR BV-2 SAMPLER FLOWRATE MONITORS

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided:

1. The sampler flow rate is estimated at least once per 4 hours, or
2. Initiate continuous monitoring with the comparable alternate monitoring channel. ODCM Surveillance requirements applicable to the inoperable channel shall apply to the comparable alternate monitoring channel when used to satisfy this ODCM Control requirement.

Action 29 APPLICABLE FOR CONTINUOUS RELEASES

With the number of channels OPERABLE less than required by the Minimum Channels OPERABLE requirement, effluent releases via this pathway may continue provided:

1. Grab samples (or local monitor readings)(1) are taken at least once per 12 hours. If grab samples are taken, these samples are to be analyzed for gross activity within 24 hours, or
2. Initiate continuous monitoring with the comparable alternate monitoring channel. ODCM Surveillance requirements applicable to the inoperable channel shall apply to the comparable alternate monitoring channel when used to satisfy this ODCM CONTROL requirement.

(1) For BV-2, there are situations where the local monitor (e.g.; the RM-80) is capable of performing the intended monitoring function, but the communications are lost to the Control Room. In this case, the local monitor can be read at least once per 12 hours in-lieu of obtaining grab samples at least once per 12 hours.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 3.3-13 (continued)

ACTION STATEMENTS

Action 30A APPLICABLE FOR THE INITIAL BATCH PURGE OF THE BV-1 REACTOR CONTAINMENT

With the number of channels OPERABLE less than required by minimum Channels OPERABLE requirement, immediately suspend PURGING of Reactor Containment via this pathway if both RM-VS-104A and B are not OPERABLE with the purge/exhaust system in service. The following should also be noted:

1. As stated, this Action is applicable for INOPERABLE monitors only when performing the initial batch purge of the reactor containment atmosphere (i.e.; immediately after reactor containment atmosphere equalization).

2. Since all other releases of reactor containment atmosphere (i.e.; after the initial batch purge) are considered continuous releases, then this Action is not applicable. Therefore, Action 29 is applicable for INOPERABLE monitors when performing a continuous release of the reactor containment atmosphere.

Action 30B APPLICABLE FOR THE INITIAL BATCH PURGE OF THE BV-2 REACTOR CONTAINMENT

With the number of channels OPERABLE less than required by Minimum Channels OPERABLE requirement, immediately suspend PURGING of Reactor Containment via this pathway if both 2HVR-RQ104A and 104B are not OPERABLE with the purge/exhaust system in service. The following should also be noted:

1. As stated, this Action is applicable for INOPERABLE monitors only when performing the initial batch purge of the reactor containment atmosphere (i.e.; immediately after reactor containment atmosphere equalization).

2. Since all other releases of reactor containment atmosphere (i.e.; after the initial batch purge) are considered continuous releases, then this Action is not applicable. Therefore, Action 29 is applicable for INOPERABLE monitors when performing a continuous release of the reactor containment atmosphere.

Action 32 APPLICABLE FOR CONTINUOUS RELEASES

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 ODCM Control 3.11.2.1, Table 4.11-2, or sampled and analyzed once every 12 hours.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 4.3-13

BV-1 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. Gaseous Waste/Process Vent System (PV-1,2)				
a. **Noble Gas Activity Monitor** Pri: (RM-1GW-108B) **Alt For Continuous Release: (RM-1GW-109 Ch5)** This channel may only be used as the comparable alternate monitoring channel for continuous releases via this pathway. **Alt For Batch Releases: (See Action 27):** RM-1GW-109 Ch 5 SHALL NOT be used as the comparable alternate monitoring channel for batch releases of the BV-1 GWDT's or the BV-2 GWST's. Specifically, SINCE this channel does not perform the same automatic isolation function as the primary channel, THEN ACTION 27 shall be followed for batch releases of the BV-1 GWDT's or the BV-2 GWST's via this pathway	P	P(4)	R(3)	Q(1)
b. **Particulate and Iodine Sampler** Pri: (Filter Paper & Charcoal Cartridge for RM-1GW-109) or 1st Alt: (Filter Paper & Charcoal Cartridge for RM-1GW-110) or 2nd Alt: (Continuous collection via RASP Pump) or 3rd Alt: (Grab samples every 12 hours)	W	NA	NA	NA
c. **System Effluent Flow Rate Measuring Device** Pri: (FR-1GW-108) or Alt: (RM-1GW-109 Ch 10)	P	NA	R	Q
d. **Sampler Flow Rate Measuring Device Used for Sample Collection** Pri: (RM-1GW-109 Ch 15) or Alt: (Rotometer: FM-1GW-101, and Vacuum Gauge: PI-1GW-13)	D*	NA	R	Q
2. Auxiliary Building Ventilation System (VV-1; Also called Ventilation Vent)				
a. **Noble Gas Activity Monitor** Pri: (RM-1VS-101B) or Alt: (RM-1VS-109 Ch 5)	D	M(4), P(4)***	R(3)	Q(2)
b. **Particulate and Iodine Sampler** Pri: (Filter Paper & Charcoal Cartridge for RM-1VS-109) or 1st Alt: (Filter Paper & Charcoal Cartridge for RM-1VS-111) or 2nd Alt: (Continuous collection via RASP Pump) or 3rd Alt: (Grab samples every 12 hours)	W	NA	NA	NA
c. **System Effluent Flow Rate Measurement Device** Pri: (FR-1VS-101) or Alt: (RM-1VS-109 Ch 10)	D	NA	R	Q
d. **Sampler Flow Rate Measuring Device Used for Sample Collection** Pri: (RM-1VS-109 Ch 15) or Alt: (Rotometer: FM-1VS-102, and Vacuum Gauge: PI-1VS-659)	D	NA	R	Q

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* During Releases via this pathway.
*** During purging of Reactor Containment via this pathway.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 4.3-13

BV-1 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
3. Reactor Building/SLCRS (CV-1; Also called Elevated Release)				
a. **Noble Gas Activity Monitor** Pri: (RM-1VS-107B)or Alt: (RM-1VS-110 Ch 5)	D	M[4], P[4]***	R[3]	Q[2]
b. **Particulate and Iodine Sampler** Pri: (Filter Paper & Charcoal Cartridge for RM-1VS-110) or 1st Alt: (Filter Paper & Charcoal Cartridge for RM-1VS-112) or 2nd Alt: (Continuous collection via RASP Pump) or 3rd Alt: (Grab samples every 12 hours)	W	NA	NA	NA
c. **System Effluent Flow Rate Measuring Device** Pri: (FR-1VS-112) or Alt: (RM-1VS-110 Ch 10)	D	NA	R	Q
d. **Sampler Flow Rate Measuring Device Used for Sample Collection** Pri: (RM-1VS-110 Ch 15) or Alt: (Rotometer: FM-1VS-103, and Vacuum Gauge: PI-1VS-660)	D	NA	R	Q

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*During releases via this pathway.
***During purging of Reactor Containment via this pathway.

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 4.3-13 (continued)

BV-2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
1. SLCRS Unfiltered Pathway (VV-2; Also called Ventilation Vent)				
a. **Noble Gas Activity Monitor** Pri: (2HVS-RQ101B)	D	M(4), P(4)***	R(3)(6)	Q(5)
b. **Particulate and Iodine Sampler** Pri: (Filter Paper & Charcoal Cartridge for 2HVS-RQ101) or 1st Alt: (Continuous collection via RASP Pump) or 2nd Alt: (Grab samples every 12 hours)	W	NA	NA	NA
c. **Process Flow Rate Monitor** Pri: (Monitor Item 29 for 2HVS-VP101)	D	NA	R	Q
d. **Sampler Flow Rate Monitor Used for Sample Collection** Pri: (2HVS-FIT101)	D	NA	R	Q
2. SLCRS Filtered Pathway (CV-2; Also called Elevated Release)				
a. **Noble Gas Activity Monitor** Pri: (2HVS-RQ109B)	D	M(4), P(4)***	R(3)(6)	Q(5)
b. **Particulate and Iodine Sampler** Pri: (Filter Paper & Charcoal Cartridge for 2HVS-RQ109 High Flow Path) or 1st Alt: (Continuous collection via RASP Pump) or 2nd Alt: (Grab samples every 12 hours)	W	NA	NA	NA
c. **Process Flow Rate Monitor** Pri: (Monitor Item 29 for 2HVS-FR22) or 1st Alt: (2HVS-FI22A and FI22C) or 2nd Alt: (2HVS-FI22B and FI22D)	D	NA	R	Q
d. **Sampler Flow Rate Monitor Used for Sample Collection** Pri: (Monitor Items 28 and 72 for 2HVS-DAU109B)	D	NA	R	Q
3. Decontamination Building Vent (DV-2)				
a. **Noble Gas Activity Monitor** Pri: (2RMQ-RQ301B)	D	M(4)	R(3)(6)	Q(5)
b. **Particulate and Iodine Sampler** Pri: (Filter Paper & Charcoal Cartridge for 2RMQ-RQ301) or 1st Alt: (Continuous collection via RASP Pump) or 2nd Alt: (Grab samples every 12 hours)	W	NA	NA	NA
c. **Process Flow Rate Monitor**	NA	NA	NA	NA
d. **Sampler Flow Rate Monitor Used for Sample Collection** Pri: (2RMQ-FIT301)	D	NA	R	Q

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ODCM CONTROLS: RETS INSTRUMENT FOR GASEOUS RELEASES

TABLE 4.3-13 (continued)

BV-2 RADIOACTIVE GASEOUS EFFLUENT MONITORING INSTRUMENTATION SURVEILLANCE REQUIREMENTS

Pri = Primary Instruments, Alt = Alternate Instruments

INSTRUMENT	CHANNEL CHECK	SOURCE CHECK	CHANNEL CALIBRATION	CHANNEL FUNCTIONAL TEST
4. Condensate Polishing Building Vent (CB-2)				
a. **Noble Gas Activity Monitor** Pri: (2HVL-RQ112B)	D	M[4]	R[3][6]	Q[5]
b. **Particulate and Iodine Sampler** Pri: (Filter Paper & Charcoal Cartridge for 2HVL-RQ112) or 1st Alt: (Continuous collection via RASP Pump) or 2nd Alt: (Grab samples every 12 hours)	W	NA	NA	NA
c. **Process Flow Rate Monitor**	NA	NA	NA	NA
d. **Sampler Flow Rate Monitor Used for Sample Collection** Pri: (2HVL-FIT112)	D	NA	R	Q
5. Waste Gas Storage Vault Vent (WV-2)				
a. **Noble Gas Activity Monitor** Pri: (2RMQ-RQ303B)	D	M[4]	R[3][6]	Q[5]
b. **Particulate and Iodine Samples** Pri: (Filter Paper & Charcoal Cartridge for 2RMQ-RQ303) or 1st Alt: (Continuous collection via RASP Pump) or 2nd Alt: (Grab samples every 12 hours)	W	NA	NA	NA
c. **Process Flow Rate Monitor**	NA	NA	NA	NA
d. **Sampler Flow Rate Monitor Used for Sample Collection** Pri: (2RMQ-FIT303)	D	NA	R	Q

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TABLE 4.3-13 (continued)

TABLE NOTATION

(1) The CHANNEL FUNCTIONAL TEST shall also demonstrate that automatic isolation of this pathway and Control Room Alarm Annunciation occurs if any of the following conditions exist:

a. Instrument indicates measured levels above the alarm/trip setpoint.
b. Downscale failure.
c. Instrument controls not set in operate mode.

(2) The CHANNEL FUNCTIONAL TEST shall also demonstrate that Control Room Alarm Annunciation occurs if any of the following conditions exist:

a. Instrument indicates measured levels above the alarm/trip setpoint.
b. Downscale failure.
c. Instrument controls not set in operate mode.

(3) The initial CHANNEL CALIBRATION for radioactivity measurement instrumentation shall be performed using one or more of the reference standards certified be 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 18 months. This can normally be accomplished during refueling outages.

(4) A SOURCE CHECK may be performed utilizing the installed means or flashing the detector with a portable source to obtain an upscale increase in the existing count rate to verify channel response.

(5) The CHANNEL FUNCTIONAL TEST shall also demonstrate that Control Room Alarm Annunciation occurs if the instrument indicates measured levels above the alarm/trip setpoint.

(6) The CHANNEL CALIBRATION shall also demonstrate that Control Room Alarm Annunciation occurs if either of the following conditions exist:

1. Downscale failure.
2. Instrument controls are not set in operate mode.

ATTACHMENT G
Page 1 of 5
ODCM CONTROLS: LIQUID EFFLUENT CONCENTRATION

CONTROLS: LIQUID EFFLUENT CONCENTRATION

3.11.1.1 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Items 2 and 3, the concentration of radioactive material released at any time from the site (see 1/2-ODC-2.01, Figure 5-1) shall be limited to 10 times the EC's specified in 10 CFR Part 20, Appendix B (20.1001-20.2401), Table 2, Column 2 for radionuclides other than dissolved or entrained noble gases. This is referred to as the ODCM Effluent Concentration Limit (OEC). For dissolved or entrained noble gases, the concentration shall be limited to 2E-4 uCi/ml total activity.

Applicability: At all times.

Action:

a. With the concentration of radioactive material released from the site to unrestricted areas exceeding the above limits; immediately restore the concentration within the above limits, and

b. Submit a Special Report to the Commission within 30 days in accordance with 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1).

c. The provisions of ODCM CONTROL 3.0.3 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 ODCM Control 3.11.1.1, Table 4.11-1*.

4.11.1.1.2 The results of radioactive analysis shall be used in accordance with 1/2-ODC-2.01 to assure that the concentration at the point of release are maintained within the limits of ODCM CONTROL 3.11.1.1.

4.11.1.1.3 When BV-1 primary to secondary leakage exceeds 0.1 gpm (142 gpd), samples of the Turbine Building Sump shall be obtained every 8 hours to ensure that the Turbine Building Sump concentration does not exceed 1 OEC. Once it is determined that an OEC is reached, the Turbine Building Sump shall be routed to the Chemical Waste Sump.

ATTACHMENT G
Page 2 of 5
ODCM CONTROLS: LIQUID EFFLUENT CONCENTRATION

SURVEILLANCE REQUIREMENTS (continued)

4.11.1.1.4 When BV-2 primary to secondary leakage exceeds 0.1 gpm (142 gpd), samples of the Turbine Building Sump shall be obtained every 8 hours to ensure that the Turbine Building Sump concentration does not exceed 1 OEC. Once it is determined that an OEC is reached, the Turbine Building Sump shall be routed to Steam Generator blowdown hold tank (2SGC-TK21A or 2SGC-TK21B).

4.11.1.1.5 Prior to the BV-2 Recirculation Drain Pump(s) (2DAS-P215A/B) discharging to catch basin 16, a grap sample will be taken. The samples will be analyzed for gross activity at a sensitivity of at least 1E-7 uCi/ml. Water volume discharged shall be estimated from the number of pump operations unless alternate flow or volume instrumentation is provided.

* Radioactive liquid discharges are normally via batch modes. BV-1 and BV-2 Turbine Building Drains shall be monitored as specified in ODCM SURVEILLANCE REQUIREMENT 4.11.1.1.3 and 4.11.1.1.4. The BV-2 Recirculation drain pump discharge shall be monitored as specified in ODCM SURVEILLANCE REQUIREMENT 4.11.1.1.5, respectively.

ATTACHMENT G
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ODCM CONTROLS: LIQUID EFFLUENT CONCENTRATION

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) (uCi/ml)[a]
A. Batch Waste Release Tanks[d]	P Each Batch[h]	P Each Batch[h]	Principal Gamma Emitters[f]	5E-7
			I-131	1E-6
	P One Batch/M[h]	M	Dissolved And Entrained Gases (Gamma Emitters)	1E-5
	P Each Batch[h]	M Composite[b]	H-3	1E-5
			Gross Alpha	1E-7
	P Each Batch[h]	Q Composite[b]	Sr-89, Sr-90	5E-8
			Fe-55	1E-6
B. Continuous Releases[e][g]	Grab Sample[g]	W Composite[c]	Principal Gamma Emitters[f]	5E-7
			I-131	1E-6
	Grab Sample[g]	M	Dissolved And Entrained Gases (Gamma Emitters)	1E-5
	Grab Sample[g]	M Composite[c]	H-3	1E-5
			Gross Alpha	1E-7
	Grab Sample[g]	Q Composite[c]	Sr-89, Sr-90	5E-8
			Fe-55	1E-6

ATTACHMENT G
Page 4 of 5
ODCM CONTROLS: LIQUID EFFLUENT CONCENTRATION

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 radiochemical separation):

$$LLD = \frac{4.66\ S_b}{(E)(V)(2.22)(Y)\exp(-\lambda\Delta T)}$$

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 sample collection (or end of the sample collection period) and time of counting (for environmental samples, not plant effluent samples).

The value of S_b used in the calculation of the LLD for a detection system shall be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. Typical values of E, V, Y and ΔT should be used in the calculations.

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.

ATTACHMENT G
Page 5 of 5
ODCM CONTROLS: LIQUID EFFLUENT CONCENTRATION

TABLE 4.11-1 (continued)

TABLE NOTATION

(b) A composite sample is one in which the quantity of liquid sampled is proportional to the quantity of liquid waste discharged and in which the method of sampling employed results in a specimen which is representative of the liquids released.

(c) To be representative of the quantities and concentrations of radioactive materials in liquid effluents, samples shall be collected continuously in proportion to the rate of flow of the effluent stream. Prior to analyses, all samples taken for the composite shall be thoroughly mixed in order for the composite sample to be representative of the effluent release.

(d) A batch release exists when the discharge of liquid wastes is from a discrete volume. Prior to sampling for analyses, each batch shall be isolated, and then thoroughly mixed to assure representative sampling.

(e) A continuous release exists when the discharge of liquid wastes is from a non-discrete volume; e.g., from a volume of a system having an input flow during the continuous release. Releases from the Turbine Building Drains and the AFW Pump Bay Drain System and Chemical Waste Sump are considered continuous when the primary to secondary leak rate exceeds 0.1 gpm (142 gpd).

(f) 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, Ce-141, and Ce-144. 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 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 should 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 Annual Radioactive Effluent Release Report.

(g) When radioactivity is identified in the secondary system, a RWDA-L should be prepared on a monthly basis to account for the radioactivity that will eventually be discharged to the Ohio River.

(h) Whenever the BV-2 Recirculation Drain Pump(s) are discharging to catch basin 16, sampling will be performed by means of a grab sample taken every 4 hours during pump operation.

ATTACHMENT H
Page 1 of 1
ODCM CONTROLS: LIQUID EFFLUENT DOSE

CONTROLS: LIQUID EFFLUENT DOSE

3.11.1.2 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Items 4 and 5, the dose or dose commitment to MEMBER(S) OF THE PUBLIC from radioactive materials in liquid effluents released from the reactor unit (see 1/2-ODC-2.01 Figure 5-1) shall be limited:

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

b. During any calendar year to less than or equal to 3 mrem to the total body and to less than or equal to 10 mrem 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, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1), a Special Report which identifies the cause(s) for exceeding the limit(s) and defines the corrective actions to be taken to reduce the releases, and the proposed corrective actions to be taken to assure the subsequent releases will be within the above limits. (This Special Report shall also include (1) the results of radiological analyses of the drinking water source and (2) the radiological impact on finished drinking water supplies with regard to the requirements of 40 CFR 141, Safe Drinking Water Act).*

b. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.2.1 Dose Calculations. Cumulative dose contributions from liquid effluents shall be determined in accordance with 1/2-ODC-2.01 at least once per 31 days.

* Applicable only if drinking water supply is taken from the receiving water body within three miles of the plant discharge (three miles downstream only).

ATTACHMENT I
Page 1 of 1
ODCM CONTROLS: LIQUID RADWASTE TREATMENT SYSTEM

CONTROLS: LIQUID RADWASTE TREATMENT SYSTEM

3.11.1.3 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Item 6, the Liquid Radwaste Treatment System shall be used to reduce the radioactive materials in each liquid waste batch prior to its discharge when the projected doses due to liquid effluent releases from the reactor unit (see 1/2-ODC-2.01 Figure 5-1) when averaged over 31 days would exceed 0.06 mrem to the total body or 0.2 mrem to any organ.

Applicability: At all times.

Action:

a. With liquid waste being discharged without treatment and exceeding the limits specified, prepare and submit to the Commission within 30 days pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1) a Special Report which includes the following information:

1. Identification of the inoperable equipment or subsystems and the reason for inoperability.

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

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

b. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.3.1 Doses due to liquid releases shall be projected at least once per 31 days, in accordance with 1/2-ODC-2.01.

ATTACHMENT J
Page 1 of 1
ODCM CONTROLS: LIQUID HOLDUP TANKS

CONTROLS: LIQUID HOLDUP TANKS

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3.11.1.4 In accordance with BV-1 and BV-2 Technical Specification 6.8.6c, the quantity of radioactive material contained in each of the following tanks shall be limited to the values listed below, excluding tritium and dissolved or entrained noble gases.

a. ≤ 10 Curies: BR-TK-6A (Unit 1 Primary Water Storage Tank)
b. ≤ 10 Curies: BR-TK-6B (Unit 1 Primary Water Storage Tank)
c. ≤ 10 Curies: LW-TK-7A (Unit 1 Steam Generator Drain Tank)
d. ≤ 10 Curies: LW-TK-7B (Unit 1 Steam Generator Drain Tank)
e. ≤ 4.2 Curies: QS-TK-1 (Unit 1 Refueling Water Storage Tank-RWST)
f. ≤ 4.2 Curies: 2QSS-TK21 (Unit 2 Refueling Water Storage Tank-RWST)
g. ≤ 10 Curies: Unit 1 and Unit 2 miscellaneous temporary outside radioactive liquid storage tanks.

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

b. Submit a Special Report in accordance with 10 CFR 50.4 (b) (1) within 30 days and include a schedule and a descritpion of activities planned and/or taken to reduce the contents to within the specific limiits.

c. The provisions ODCM Control 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.1.4.1 The quantity of radioactive material contained in each of the above listed tanks (except the Unit 1 and 2 RWST's) shall be determined to be within the above limit by analyzing a representative sample of the tank's contents at least once per 7 days when radioactive materials are being added to the tank.

4.11.1.4.2 SINCE additions of radioactive material to the Unit 1 and 2 RWST's are normally made at the end of a refueling outage (i.e.; drain down of the reactor cavity back to the RWST), THEN compliance to this limit shall be performed as follows:

The quantity of radioactive material contained in the Unit 1 and 2 RWST's shall be determined to be within the above limit by analyzing a representative sample of the tank's contents within 7 days after transfer of reactor cavity water to the respective Unit's RWST.

ATTACHMENT K
Page 1 of 4
ODCM CONTROLS: GASEOUS EFFLUENT DOSE RATE

CONTROLS: GASEOUS EFFLUENT DOSE RATE

3.11.2.1 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Items 3 and 7, the dose rate in the unrestricted areas (see 1/2-ODC-2.02 Figure 5-1) due to radioactive materials released in gaseous effluents from the site shall be limited to the following values:

a. The dose rate limit for noble gases shall be ≤ 500 mrem/yr to the total body and ≤ 3000 mrem/yr to the skin*, and

b. The dose rate limit, inhalation pathway only, for I-131, tritium and all radionuclides in particulate form (excluding C-14) with half-lives greater than eight days shall be ≤ 1500 mrem/yr to any organ.

Applicability: At all times.

Action:

a. With the dose rate(s) exceeding the above limits, immediately decrease the release rate to comply with the above limits(s), and

b. Submit a Special Report to the Commission within 30 days pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1).

c. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.1.1 The dose rate due to noble gaseous effluents shall be determined to be within the above limits in accordance with 1/2-ODC-2.02.

4.11.2.1.2 The dose rate, inhalation pathway only, for I-131, tritium and all radionuclides in particulate form (excluding C-14) with half-lives greater than eight days in gaseous effluents, shall be determined to be within the above limits in accordance with the methods and procedures of the ODCM by obtaining representative samples and performing analyses in accordance with the sampling and analysis program specified in ODCM Control 3.11.2.1, Table 4.11-2.

*During containment purge the dose rate may be averaged over 960 minutes.

ATTACHMENT K
Page 2 of 4
ODCM CONTROLS: GASEOUS EFFLUENT DOSE RATE

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) (uCi/ml)[a]
A. Waste Gas Storage Tank	P Each Tank Grab Sample	P Each Tank	Principal Gamma Emitters[g]	1E-4
	Each Tank* Grab Sample	Each Tank*	H-3*	1E-6
B. Containment Purge	P Each Purge[b] Grab Sample	P Each Purge[b]	Principal Gamma Emitters[g]	1E-4
			H-3	1E-6
C. Ventilation Systems[h] VV-1 CV-1 PV-1/2 VV-2 CV-2 DV-2 WV-2 CB-2	M[b][c][e] Grab Sample	M[b]	Principal Gamma Emitters[g]	1E-4
			H-3	1E-6

* The H-3 concentration shall be estimated prior to release and followed up with an H-3 grab sample from the Ventilation System during release.

ATTACHMENT K
Page 3 of 4
ODCM CONTROLS: GASEOUS EFFLUENT DOSE RATE

TABLE 4.11-2 (continued)

RADIOACTIVE GASEOUS WASTE SAMPLING AND ANALYSIS PROGRAM

GASEOUS RELEASE TYPE	SAMPLING FREQUENCY	MINIMUM ANALYSIS FREQUENCY	TYPE OF ACTIVITY ANALYSIS	LOWER LIMIT OF DETECTION (LLD) (uCi/ml)[a]
D. All Systems Listed Above Which Produce Continuous Release	Continuous[f]	W[d] Charcoal Sample	I-131	1E-12
			I-133	1E-10
	Continuous[f]	W[d] Particulate Sample	Principal Gamma Emitters[g] (I-131, Others)	1E-11
	Continuous[f]	M Composite Particulate Sample	Gross Alpha	1E-11
	Continuous[f]	Q Composite Particulate Sample	Sr-89, Sr-90	1E-11
	Continuous[f]	Noble Gas Monitor	Noble Gases Gross Beta And Gamma	1E-6

ATTACHMENT K
Page 4 of 4
ODCM CONTROLS: GASEOUS EFFLUENT DOSE RATE

TABLE 4.11-2 (continued)

TABLE NOTATION

(a) The Lower Limit of Detection (LLD) is defined in Table Notation (a) of ODCM Control 3.11.1.1, Table 4.11-1 for ODCM Surveillance Requirement 4.11.1.1.

(b) Sampling and analysis shall also be performed following SHUTDOWN, STARTUP, or a THERMAL POWER change exceeding 15% of RATED THERMAL POWER within a 1 hour period. This requirement does not apply if (1) analysis shows that the Dose Equivalent I-131 concentration in the primary coolant has not increased more than a factor of 3; and (2) the noble gas monitor shows that effluent activity has not increased more than a factor of 3.

All samples or surveillances used to satisfy note[b] above shall be obtained within 24 hours of reaching the intended steady state power level, and analyzed within 48 hours of reaching the intended steady state power level.

(c) Tritium grab samples shall be taken at least once per 24 hours (from the appropriate ventilation release path) when the refueling canal is flooded.

(d) Samples shall be changed at least once per 7 days and analyses shall be completed within 48 hours after changing, or after removal from sampler. Sampling shall also be performed at least once per 24 hours for at least 7 days following each SHUTDOWN, STARTUP, or THERMAL POWER change exceeding 15% of RATED THERMAL POWER within a 1 hour period and analyses shall be completed within 48 hours of changing. When samples collected for 24 hours are analyzed, the corresponding LLDs may be increased by a factor of 10. This requirement does not apply if: (1) analysis shows that the DOSE EQUIVALENT I-131 concentration in the reactor coolant has not increased more than a factor of 3; and (2) the noble gas monitor shows that effluent activity has not increased more than a factor of 3.

(e) Tritium grab samples shall be taken at least once per 7 days (from the appropriate ventilation release path of the spent fuel pool area) whenever spent fuel is in the spent fuel pool.

(f) The average 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 ODCM CONTROLS 3.11.2.1, 3.11.2.2, and 3.11.2.3.

(g) 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 measurable and identifiable, together with the above nuclides, shall also be identified and reported. Nuclides which are below the LLD for the analyses should not be reported as being present at the LLD level for that nuclide. When unusual circumstances result in LLD's higher than required, the reasons shall be documented in the Annual Radioactive Effluent Release Report.

(h) Only when this release path is in use.

ATTACHMENT L
Page 1 of 1
ODCM CONTROLS: DOSE- NOBLE GASES

CONTROLS: DOSE-NOBLE GASES

3.11.2.2 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Items 5 and 8, the air dose from the reactor unit in unrestricted areas (see 1/2-ODC-2.02 Figure 5-1) due to noble gases released in gaseous effluents shall be limited to the following:

a. During any calendar quarter, to ≤ 5 mrad for gamma radiation and ≤ 10 mrad for beta radiation.

b. During any calendar year, to ≤ 10 mrad for gamma radiation and ≤ 20 mrad 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, prepare and submit to the Commission with in 30 days, pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1), a Special Report which identifies the cause(s) for exceeding the limit(s) and defines the corrective actions taken to reduce the releases and the proposed corrective actions to be taken to assure the subsequent releases will be within the above limits.

b. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.2.1 Dose Calculations. Cumulative dose contributions shall be determined in accordance with 1/2-ODC-2.02 at least once every 31 days.

ATTACHMENT M
Page 1 of 1
ODCM CONTROLS: DOSE - RADIOIODINES AND PARTICULATES

CONTROLS: DOSE-RADIOIODINES, RADIOACTIVE MATERIAL IN PARTICULATE FORM, AND RADIONUCLIDES OTHER THAN NOBLE GASES

3.11.2.3 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Items 5 and 9, the dose to MEMBER(S) OF THE PUBLIC from radioiodines and radioactive materials in particular form (excluding C-14), and radionuclides (other than noble gases) with half-lives greater than eight days in gaseous effluents releases from the reactor unit (see 1/2-ODC-2.02 Figure 5-1) shall be limited to the following:

a. During any calendar quarter to ≤ 7.5 mrem to any organ, and

b. During any calendar year to ≤ 15 mrem to any organ.

Applicability: At all times.

Action:

a. With the calculated dose from the release of radioiodines, radioactive materials in particulate form, (excluding C-14), and radionuclides (other than noble gases) with half-lives greater than eight days, in gaseous effluents exceeding any of the above limits, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1), a Special Report, which identifies the cause(s) for exceeding the limit and defines the corrective actions taken to reduce the releases and the proposed corrective actions to be taken to assure the subsequent releases will be within the above limits.

b. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.3.1 Dose Calculations. Cumulative dose contributions shall be determined in accordance with 1/2-ODC-2.02 at least once every 31 days.

ATTACHMENT N
Page 1 of 1
ODCM CONTROLS: GASEOUS RADWASTE TREATMENT SYSTEM

CONTROLS: GASEOUS RADWASTE TREATMENT SYSTEM

3.11.2.4 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Item 6, the Gaseous Radwaste Treatment System and the Ventilation Exhaust 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 from the reactor unit (see 1/2-ODC-2.02 Figure 5-1), when averaged over 31 days, would exceed 0.2 mrad for gamma radiation and 0.4 mrad for beta radiation. The appropriate portions of 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 from the reactor unit (see 1/2-ODC-2.02 Figure 5-1) when averaged over 31 days would exceed 0.3 mrem to any organ.

Applicability: At all times.

Action:

a. With gaseous waste being discharged without treatment and in excess of the above limits, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1), a Special Report which includes the following information.

1. Identification of the inoperable equipment or subsystems and the reason for inoperability,

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

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

b. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.4.1 Doses due to gaseous releases from the site shall be projected at least once per 31 days, in accordance with 1/2-ODC-2.02.

ATTACHMENT O
Page 1 of 1
ODCM CONTROLS: GAS STORAGE TANKS

CONTROLS: GAS STORAGE TANKS

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3.11.2.5 In accordance with BV-1 and BV-2 Technical Specification 6.8.6c, the quantity of radioactivity contained in the following gas storage tanks(s) shall be limited to the noble gas values listed below (considered as Xe-133).

a. ≤52,000 Curies: Each BV-1 Waste Gas Decay Tank (GW-TK-1A, or GW-TK-1B, or GW-TK-1C)

b. ≤19,000 Curies: Any connected group of BV-2 Gaseous Waste Storage Tanks (2GWS-TK25A thru 2GWS-TK25G)

APPLICABILITY: At all times.

ACTION:

a. With the quantity of radioactive material in any gas storage tank 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, nad

b. Submit a Special Report in accordance with 10 CFR 50.4 (b)(1) within 30 days and include a schedule and a description of activities planned and/or taken to reduce the contents to within the specified limits.

c. The provisions of ODCM Control 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.2.5.1 For BV-1 Waste Gas Decay Tanks: The quantity of radioactive material contained in each BV-1 Waste Gas Decay Tank shall be determined to be within the above limit at least once per 24 hours when radioactive materials are being added to the tank. Performance of this surveillance is required when the gross concentration of the primary coolant is greater than 100 uCi/ml.

For BV-2 Gaseous Waste Storage Tanks: The quantity of radioactive material contained in any connected group of BV-2 Gaseous Waste Storage Tanks shall be determined to be within the above limit at least once per 24 hours when radioactive materials are being added to the tanks.

ATTACHMENT P
Page 1 of 1
ODCM CONTROLS: TOTAL DOSE

CONTROLS: TOTAL DOSE

3.11.4.1 In accordance with BV-1 and BV-2 Technical Specification 6.8.6a, Item 10, 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 ≤ 25 mrems to the whole body or any organ, except the thyroid, which shall be limited 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 ODCM CONTROL 3.11.1.2a, 3.11.1.2b, 3.11.2.2a, 3.11.2.2b, 3.11.2.3a, or 3.11.2.3b, calculations shall be made including direct radiation contributions from the units (including outside storage tanks, etc.) to determine whether the above limits of ODCM CONTROL 3.11.4.1 have been exceeded. If such is the case, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1), 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 20.405(c), 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 ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.11.4.1.1 Cumulative dose contributions from liquid and gaseous effluents shall be determined in accordance with ODCM SURVEILLANCE REQUIREMENTS 4.11.1.2.1, 4.11.2.2.1, and 4.11.2.3.1.

4.11.4.1.2 Cumulative dose contributions from direct radiation from the units (including outside storage tanks, etc.) shall be determined in accordance with 1/2-ODC-2.04. This requirement is applicable only under conditions set forth in Action a. of ODCM CONTROL 3.11.4.1.

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ODCM CONTROLS: REMP-PROGRAM REQUIREMENTS

CONTROLS: RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

3.12.1 In accordance with BV-1 and BV-2 Technical Specification 6.8.6b, Item 1, the radiological environmental monitoring program shall be conducted as specified in ODCM Control 3.12.1, Table 3.12-1.

Applicability: At all times.

Action:

a. With the radiological environmental monitoring program not being conducted as specified in ODCM Control 3.12.1, Table 3.12-1, prepare and submit to the Commission, in the Annual Radiological Environmental Report, a description of the reasons for not conducting the program as required and the plans for preventing a recurrence. Deviations are permitted from the required sampling schedule if specimens are unobtainable due to hazardous conditions, seasonal unavailability, malfunction of automatic sampling equipment and other legitimate reasons. If specimens are unobtainable due to sampling equipment malfunction, every effort shall be made to complete corrective action prior to the end of the next sampling period.

b. With the level of radioactivity in an environmental sampling medium at one or more of the locations specified in ODCM Control 3.12.1, Table 3.12.1 exceeding the limits of ODCM Control 3.12.1, Table 3.12-2 when averaged over any calendar quarter, prepare and submit to the Commission within 30 days from the end of affected calendar quarter a Special Report pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1) which includes an evaluation of any release conditions, environmental factors or other aspects which caused the limits of ODCM Control 3.12.1, Table 3.12-2 to be exceeded. This report is not required if the measured level of radioactive was not the result of plant effluents; however, in such an event, the condition shall be reported and described in the Annual Radiological Environmental Report.

When more than one of the radionuclides in ODCM Control 3.12.1, Table 3.12-2 are detected in the sampling medium, this report shall be submitted if:

$$\frac{\text{Concentration (1)}}{\text{Limit Level (1)}} + \frac{\text{Concentration (2)}}{\text{Limit Level (2)}} + \ldots \geq 1.0$$

c. With milk or fresh leafy vegetable samples unavailable from the required number of locations selected in accordance with ODCM CONTROL 3.12.2 and listed in the ODCM, obtain replacement samples. The locations from which samples were unavailable may then be deleted from those required by ODCM Control 3.12.1, Table 3.12-1 and the ODCM provided the locations from which the replacement samples were obtained are added to the environmental monitoring program as replacement locations, if available.

d. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.1.1 The radiological environmental monitoring samples shall be collected pursuant to ODCM Control 3.12.1, Table 3.12-1 from the locations given in the ODCM and shall be analyzed pursuant to be requirements of ODCM Control 3.12.1, Tables 3.12-1 and 4.12-1.

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ODCM CONTROLS: REMP-PROGRAM REQUIREMENTS

TABLE 3.12-1

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES AND LOCATIONS	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY[a] OF ANALYSIS
1. AIRBORNE a. Radioiodine And Particulates	5 locations 1. One sample from a control location 10-20 miles distant and in the least prevalent wind direction 2. One sample from vicinity of community having the highest calculated annual average ground level D/Q.	Continuous operation of sampler with sample collection at least weekly.	Each radioiodine canister. Analyze for I-131; Particulate sampler. Analyze for gross beta weekly [b]; Perform gamma isotopic analysis on composite (by location) sample at least quarterly.
2. DIRECT RADIATION	40 locations ≥ 2 TLDs or a pressurized ion chamber at each location.	Continuous measurement with collection at least quarterly.	Gamma dose, quarterly.

[a] Analysis frequency same as sampling frequency unless otherwise specified.

[b] Particulate samples are not counted for ≥ 24 hours after filter change. Perform gamma isotopic analysis on each sample when gross beta is >10 times the yearly mean of control samples.

**Sample locations are given on figures and tables in 1/2-ODC-2.03.

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ODCM CONTROLS: REMP-PROGRAM REQUIREMENTS

TABLE 3.12-1 (continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES AND LOCATIONS**	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY[a] OF ANALYSIS
3. WATERBORNE a. Surface	2 locations. 1. One sample upstream. 2. One sample downstream.	Composite* sample collected over a period not to exceed 1 month.	Gamma isotopic analysis of composite sample by location monthly; Tritium analysis of composite sample at least quarterly.
b. Drinking	2 locations.	Composite* sample collected over a period not to exceed 2 weeks.	I-131 analysis of each composite sample; Gamma isotopic analysis of composite sample (by location) monthly; Tritium analysis of composite sample quarterly.
c. Groundwater	N/A - No wells in lower elevations between plant and river		
d. Sediment From Shoreline	1 location.	Semi-annually.	Gamma isotopic analysis semi-annually.

[a] Analysis frequency same as sampling frequency unless otherwise specified.

*Composite samples shall be collected by collecting an aliquot at intervals not exceeding two hours. For the upstream surface water location, a weekly grab sample, composited each month based on river flow at time of sampling, is also acceptable.

**Sample locations are given on figures and tables in 1/2-ODC-2.03.

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ODCM CONTROLS: REMP-PROGRAM REQUIREMENTS

TABLE 3.12-1 (continued)

RADIOLOGICAL ENVIRONMENTAL MONITORING PROGRAM

EXPOSURE PATHWAY AND/OR SAMPLE	NUMBER OF SAMPLES AND LOCATIONS**	SAMPLING AND COLLECTION FREQUENCY	TYPE AND FREQUENCY[a] OF ANALYSIS
4. INGESTION a. Milk	4 locations.[b] 1. Three samples selected on basis of highest potential thyroid dose using milch census data. 2. One local large dairy.	Atleast bi-weekly when animals are on pasture; at least monthly at other times.	Gamma isotopic and I-131 analysis of each sample.
b. Fish	2 locations.	Semi-annual. One sample of available species.	Gamma isotopic analysis on edible portions.
c. Food Products (Leafy Vegetables)	4 locations. 1. Three locations within 5 miles. 2. One control location.	Annually at time of harvest.	Gamma isotopic analysis and I-131 analysis on edible portion.

[a] Analysis frequency same as sampling frequency unless otherwise specified.

[b] Other dairies may be included as control station or for historical continuity. These would not be modified on basis of milch animal census.

**Sample locations are given on figures and tables in 1/2-ODC-2.03.

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ODCM CONTROLS: REMP-PROGRAM REQUIREMENTS

TABLE 3.12-2

REPORTING LEVELS FOR RADIOACTIVITY CONCENTRATIONS IN ENVIRONMENTAL SAMPLES

ANALYSIS	WATER (pCi/l)	REPORTING LEVELS			
		AIRBORNE PARTICULATE OR GASES (pCi/m^3)	FISH (pCi/kg, WET)	MILK (pCi/l	BROAD LEAF VEGETABLES (pCi/kg, WET)
H-3	2E+4[a]				
Mn-54	1E+3		3E+4		
Fe-59	4E+2		1E+4		
Co-58	1E+3		3E+4		
Co-60	3E+2		1E+4		
Zn-65	3E+2		2E+4		
Zr/Nb-95	4E+2				
I-131	2[b]	0.9		3	1E+2
Cs-134	30	10	1E+3	60	1E+3
Cs-137	50	20	2E+3	70	2E+3
Ba/La-140	2E+2			3E+2	

(a) For drinking water samples. This is a 40 CFR Part 141 value. If no drinking water pathway exists, a value of 3E+4 pCi/l may be used.

(b) If no drinking water pathway exists, a value of 20 pCi/l may be used.

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ODCM CONTROLS: REMP-PROGRAM REQUIREMENTS

TABLE 4.12-1

MAXIMUM VALUES FOR THE LOWER LIMITS OF DETECTION (LLD)[a][e]

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	1E-2				
H-3	2000[d]					
Mn-54	15		130			
Fe-59	30		260			
Co-58,60	15		130			
Zn-65	30		260			
Zr-95	30[c]					
Nb-95	15[c]					
I-131	1[b]	7E-2		1	60	
Cs-134	15	5E-2	130	15	60	150
Cs-137	18	6E-2	150	18	80	180
Ba-140	60[c]			60		
La-140	15[c]			15		

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ODCM CONTROLS: REMP-PROGRAM REQUIREMENTS

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):

$$LLD = \frac{4.66\ S_b}{(E)(V)(2.22)(Y)\exp(-\lambda\Delta T)}$$

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 sample collection (or end of the sample collection period) and time of counting (for environmental samples, not plant effluent samples).

The value of S_b used in the calculation of the LLD for a detection system shall be based on the actual observed variance of the background counting rate or of the counting rate of the blank samples (as appropriate) rather than on an unverified theoretically predicted variance. In calculating the LLD for a radionuclide determined by gamma-ray spectrometry, the background shall include the typical contributions of other radionuclides normally present in the samples (e.g., potassium-40 in milk samples). Typical values of E, V, Y and ΔT should be used in the calculations.

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ODCM CONTROLS: REMP-PROGRAM REQUIREMENTS

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 LLD's will be achieved under routine conditions. Occasionally, background fluctuations, unavoidable small sample sizes, the presence of interfering nuclides, or other uncontrollable circumstances may render these LLD's unachievable. In such cases, the contributing factors shall be identified and described in the Annual Radiological Environmental Report.

(b) If no drinking water pathway exists, a value of 15 pCi/l may be used.

(c) If parent and daughter are totaled, the most restrictive LLD should be applied.

(d) If no drinking water pathway exists, a value of 3000 pCi/l may be used.

(e) 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 in the Annual Radiological Environmental Report.

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ODCM CONTROLS: REMP - LAND USE CENSUS

CONTROLS: RADIOLOGICAL ENVIRONMENTAL MONITORING - LAND USE CENSUS

3.12.2 In accordance with BV-1 and BV-2 Technical Specification 6.8.6b, Item 2, a land use census shall be conducted and shall identify the location of the nearest milk animal, the nearest residence, and the nearest garden of greater than 500 square feet producing broad leaf vegetation in each of the 16 meteorological sectors within a distance of five miles. For elevated releases as defined in Regulatory Guide 1.111, (Rev. 1), July, 1977, the land use census shall also identify the locations of all milk animals and all gardens of greater than 500 square feet producing fresh leafy vegetables in each of the 16 meteorological sectors within a distance of three miles.

Applicability: At all times.

Action:

a. With a land use census identifying a location(s) which yields a calculated dose or dose commitment greater than the values currently being calculated in ODCM SURVEILLANCE REQUIREMENT 4.11.2.3.1, prepare and submit to the Commission within 30 days, pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1), a Special Report, which identifies the new location(s).

b. With a land use census identifying a milk animal location(s) which yields a calculated dose or dose commitment (via the same exposure pathway) 20% greater than at a location from which samples are currently being obtained in accordance with ODCM CONTROL 3.12.1 prepare and submit to the Commission within 30 days, pursuant to 10 CFR 20.2203(a)(2)(v) and 10 CFR 50.4(b)(1), a Special Report, which identifies the new location. The new location shall be added to the radiological environmental monitoring program within 30 days, if possible. The milk sampling program shall include samples from the three active milk animal locations, having the highest calculated dose or dose commitment. Any replaced location may be deleted from this monitoring program after October 31 of the year in which this land use census was conducted.

c. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.2.1 The land use census shall be conducted at least once per 12 months between the dates of June 1 and October 1 using that information which will provide the best results, such as by a door-to-door survey*, aerial survey, or by consulting local agriculture authorities.

* Confirmation by telephone is equivalent to door-to-door.

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ODCM CONTROLS: REMP - INTERLABORATORY COMPARISON PROGRAM

CONTROLS: RADIOLOGICAL ENVIRONMENTAL MONITORING - INTERLABORATORY COMPARISON PROGRAM

3.12.3 In accordance with BV-1 and BV-2 Technical Specification 6.8.6b, Item 3, analyses shall be performed on radioactive materials supplied as part of an Interlaboratory Comparison Program.

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 Report.

b. The provisions of ODCM CONTROL 3.0.3 are not applicable.

SURVEILLANCE REQUIREMENTS

4.12.3.1 The results of analyses performed as part of the above required Interlaboratory Comparison Program shall be included in the Annual Radiological Environmental Report.

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ODCM CONTROLS: ANNUAL REMP REPORT

CONTROLS: ANNUAL REMP REPORT

ANNUAL RADIOLOGICAL ENVIRONMENTAL OPERATING REPORT [3]

6.9.2 (old TS 6.9.1.10) The Annual Radiological Environmental Operating Report covering the operation of the unit during the previous calendar year shall be submitted before May 15 of each year. The report shall include summaries, interpretations, and analyses of trends of the results of the Radiological Environmental Monitoring Program for the reporting period. The material provided shall be consistent with the objectives outlined in the Offsite Dose Calculation Manual (ODCM) and in 10 CFR Part 50 Appendix I Sections IV.B.2, IV.B.3, and IV.C.

The annual radiological environmental reports shall include:

- Summaries, interpretations, and statistical evaluation of the results of the radiological environmental surveillance activities for the report period, including a comparison with pre-operational studies, operational controls (as appropriate), and previous environmental surveillance reports, and an assessment of the observed impacts of the plant operation on the environment.
- The results of the land use censuses required by ODCM CONTROL 3.12.2.
- If harmful effects or evidence of irreversible damage are detected by the monitoring, the report shall provide an analysis of the problem and a planned course of action to alleviate the problem.
- Summarized and tabulated results in the format of ODCM Control 6.9.1.10, Table 6.9-1 of all radiological environmental samples taken during the report period. In the event that some 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.
- A summary description of the radiological environmental monitoring program.
- A map of all sampling locations keyed to a table giving distances and directions from one reactor.
- The results of licensee participation in the Interlaboratory Comparison Program required by ODCM CONTROL 3.12.3.

(3) A single submittal may be made for a multiple unit site. The submittal should combine those sections that are common to all units at the station.

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ODCM CONTROLS: ANNUAL REMP REPORT

TABLE E:6.9-1

ENVIRONMENTAL RADIOLOGICAL MONITORING PROGRAM SUMMARY

Name Of Facility ____________________ Docket No. ____________

Location Of Facility ____________________ Reporting Period __________
(County, State)

MEDIUM OF PATHWAY SAMPLED (UNIT OF MEASUREMENT)	TYPE AND TOTAL NUMBER OF ANALYSES PERFORMED	LOWER LIMITS OF DETECTION[a] (LLD)	ALL INDICATOR LOCATIONS MEAN(F)[b] RANGE[b]	LOCATIONS WITH HIGHEST ANNUAL MEAN		CONTROL LOCATIONS MEAN(F)[b] RANGE[b]	NONROUTINE REPORTED MEASUREMENTS
				NAME DISTANCE AND DIRECTION	MEAN(F)[b] RANGE[b]		

[a] Nominal Lower limits of Detection (LLD) as defined in Table Notation [a] of Table 4.12-1 of ODCM CONTROL 3.11.1.1.
[b] Mean and range based upon detectable measurement only. Fraction of detectable measurement at specified locations is indicated in parenthesis (f).

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ODCM CONTROLS: ANNUAL RETS REPORTS

CONTROLS: ANNUAL RETS REPORT

ANNUAL RADIOACTIVE EFFLUENT RELEASE REPORT [4]

8/2002

6.9.3
(old TS 6.9.1.11)

The Annual Radioactive Effluent Release Report (ARERR) covering the operation of the unit during the previous year shall be submitted prior to May 1 of each year in accordance with 10 CFR 50.36a. The report shall include a summary of the quantities of radioactive liquid and gaseous effluents and solid waste released from the unit. The material provided shall be consistent with the objectives outlined in the ODCM and Process Control Program (PCP) and in conformance with 10 CFR 50.36a and 10 CFR Part 50, Appendix I Section IV.B.1.

This report is prepared and submitted in accordance with 1/2-ENV-01.05, and at a minimum, shall contain the following:

- A summary of the quantities of radioactive liquid and gaseous effluent and solid waste released from the unit as outlined in Regulatory Guide 1.21, Revision 1, June, 1974, "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," with data summarized on a quarterly basis following the format of Appendix B thereof.
- An assessment of radiation doses from the radioactive liquid and gaseous effluents released from the unit during each calendar quarter as outlined in Regulatory Guide 1.21. In addition, the unrestricted area boundary maximum noble gas gamma air and beta air doses shall be evaluated. The assessment of radiation doses shall be performed in accordance with this manual.
- Any licensee initiated changes to the ODCM made during the 12 month period.
- Any radioactive liquid or gaseous effluent monitoring instrumentation channels not returned to OPERABLE status within 30 days, and why the inoperability was not corrected in a timely manner. This applies to the liquid or gaseous effluent monitoring instrumentation channels required to be OPERABLE per ODCM CONTROLS 3.3.3.9 and 3.3.3.10.
- Any ODCM SURVEILLANCE REQUIREMENT deficiencies. This applies to monitoring, sampling and analysis and dose projection.
- The reasons when unusual circumstances result in LLD's higher than required by ODCM CONTROL 3.11.1.1, Table 4.11-1 and ODCM CONTROL 3.11.2.1, Table 4.11-2.

(4) A single submittal may be made for a multiple unit site. The submittal should combine those sections that are common to all units at the station; however, for units with separate radwaste systems, the submittal shall specify the releases of radioactive material from each unit.

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ODCM CONTROLS: ANNUAL RETS REPORTS

CONTROLS: ANNUAL RETS REPORT (continued)

- The following information for each type of solid waste shipped offsite during the report period:

  - container volume
  - total curie quantity (determined by measurement or estimate)
  - principal radionuclides (determined by measurement or estimate)
  - type of waste (e.g., spent resin, compacted dry waste, evaporator bottoms)
  - type of container (e.g., LSA, Type A, Type B, Large Quantity)
  - solidification agent (e.g., cement)
  - classification and other requirements specified by 10 CFR Part 61

- 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 of wind speed, wind direction, atmospheric stability, and precipitation (if measured) on magnetic tape, or in the form of joint frequency distributions of wind speed, wind direction, and atmospheric stability.

- 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.

- An assessment of the radiation doses from radioactive effluents to MEMBER(S) OF THE PUBLIC due to their activities inside the site boundary see 1/2-ODC-2.01 Figure 5.1 and 1/2-ODC-2.02 Figure 5-1 during the report period. All assumptions used in making these assessments (e.g., specific activity, exposure time, and location) shall be included in these reports. The assessment of radiation doses shall be performed in accordance with 1/2-ODC-2.04.

- An assessment of radiation doses to the likely most exposed real individual from reactor releases for the previous calendar year to show conformance with 40 CFR 190, Environmental Radiation Protection Standards For Nuclear Power Operation. Acceptable methods for calculating the dose contribution from liquid and gaseous effluents are given in Regulatory Guide 1.109, Revision 1. The SKYSHINE Code (available from Radiation Shielding Information Center, (ORNL)) is acceptable for calculating the dose contribution from direct radiation due to N-16.

- If quantities of radioactive materials released during the reporting period are significantly above design objectives, the report must cover this specifically.