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ASSESSMENT ACTIONS

330-0 Assessment Actions	Rev. 15	10-18-82
330-1 Abnormal Personnel Exposure	Rev. 3	08-10-81
330-2 Accidental Release of Radioactivity Within the Site Boundary	Rev. 2	02-22-81
330-3 SPING Control Terminal Operation	Rev. 4	09-23-82
330-4 Estimation of Off-Site Dose from an Unplanned Release of Radioactive Effluents	Rev. 1	12-17-80
330-5 Estimating High Activity Releases during Accident Conditions	Rev. 1	12-17-80
330-6 Air Sampling Under Accident Conditions	Rev. 3	10-18-82
330-7 In-Plant Iodine-131 Measurement During Post-Accident Conditions	Rev. 5	10-18-82
330-8 Handling and Analysis of Post Accident Reactor Coolant Samples	Rev. 5	10-18-82
330-9 Estimating Plant Release Using the Stack Gas Monitors	Rev. 1	12-17-80
330-10 On-Site Environmental Sampling During Emergency Situations	Rev. 2	10-18-82
330-T1 Quad-Cities Station Environs Monitoring-Dairy Farms	Rev. 1	06-20-80
330-T2 Dose Factors for Gaseous Releases	Rev. 2	03-10-82
330-T3 Dose Factors for Liquid Releases	Rev. 1	12-17-80

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330-T4 Main Chimney Release Rate Table	Rev. 1	12-17-80
330-T5 Typical Gas Stack Monitor Calibration Curve	Rev. 1	12-17-80
330-T6 Sample Cave	Rev. 1	05-18-81
330-T7 Sample Dilution Equipment	Rev. 1	05-18-81
330-T8 On-Site Environmental Sampling Locations	Rev. 1	06-01-82
330-T9 Area Radiation Monitor System	Rev. 1	10-18-82

QEP 330-6
Revision 3
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AIR SAMPLING UNDER ACCIDENT CONDITIONS

ID/3C

A. PURPOSE

This procedure outlines the methods by which airborne radioiodine samples and particulate samples are safely obtained under conditions of potentially extremely high radioiodine, noble gas, and particulate airborne concentrations.

B. REFERENCES

1. GY-130 Silver Zeolite Technical Data Sheets.
2. H-809 VII Technical Data Sheets.
3. QCP 800-2.
4. QRP 1360-1.

C. PREREQUISITES

1. Obtain an operable, calibrated, high range exposure rate instrument.
2. Obtain 0-5R and 0-1R direct-reading dosimeters.
3. Obtain finger TLD-rings for both hands.
4. Obtain RADeCO H-809 high volume air sampler with combination cartridge-filter head, 47 mm glass fiber filter paper, and GY-130 Silver Zeolite cartridge.
5. Obtain Self Contained Breathing Apparatus, if necessary.

D. PRECAUTIONS

1. Minimize direct contact between you and the sample.
2. Take care to avoid contaminating the sampling media.
3. Plan all phases of the operation prior to entering any high radiation exposure rate areas.
4. Insure that the instrument has been calibrated.
5. The air sampler should not be used in the variable mode.

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E. LIMITATIONS AND ACTIONS

1. Take all appropriate steps to insure that the radiation exposure you receive does not exceed 3 and 18-3/4 Rems to the whole body or extremities, respectively, per quarter.

2. This procedure should only be used in such cases when QRP 1360-1, Air Sampling of Suspected Radioactive Airborne Areas, is rendered useless by conditions in the plant.

3. When using the Cutie Pie ionization survey instrument, it should be bagged to prevent noble gas intrusion into the ionization chamber.

F. PROCEDURE

1. Use a 47 mm glass fiber particulate filter. Mark the smooth side of the filter paper. This will serve as the inlet side.

2. Use a GY-130 Silver Zeolite cartridge. Draw an arrow on the side of the cartridge pointing in the direction of the flow.

3. Load the filter paper and the cartridge into the combinations sampler head. The particulate filter is supported by the honeycomb backing, and scaled by the outer aluminum ring.

4. Preparation of the sampler should if possible, be performed in a low exposure rate area.

5. To sample, place the VAR-OFF-HI switch in the Hi position.

6. Note the sample start time, and flow rate.

7. The sample time should be selected such that an adequate amount of activity is collected, and personnel radiation exposure is minimized. In areas of suspected extremely high airborne radioactive material concentrations, the sampling time should be limited to avoid sample preparation and analysis problems.

NOTE

A 1 minute sample should be adequate to assess radioiodine concentrations that would require respiratory protective measures, if isotopic analysis is available. If conditions allow, a 5-minute sample should be taken to assure more accurate results for both radioiodine and particulate analysis.

8. When the sample is completed note the flow rate and time, and turn the sampler off.

9. Return the cartridge and filter paper to the designated area for analysis.

10. The GY-130 silver zeolite cannisters display a low retention for noble gases. Radioiodines of all species should be retained with a high efficiency. The glass fiber particulate filter will be used for the particulate analysis as it has a high efficiency for particulate retention.

11. The batch number of the cannister should be recorded, should specific information on the cannister efficiency be needed.

12. Perform the analysis as specified by QCP 800-2. For particulate analysis.

13. The analysis results should be reported to Radiation Protection supervision promptly.

G. CHECKLISTS

1. None.

H. TECHNICAL SPECIFICATION REFERENCES

1. None.

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QEP 330-7
Revision 5
October 1982

IN-PLANT IODINE-131 MEASUREMENT DURING POST-ACCIDENT CONDITIONS

ID/3F

A. PURPOSE

The purpose of this procedure is to outline the methods for measuring I-131 in the plant following an accident, in order to assess the airborne radiological conditions.

B. REFERENCES

1. Quad-Cities Station, Project No. 5954-00 Sargent & Lundy; Post-Accident Radiation Levels, A Review of the Quad-Cities Station in Response to Item 2.1.6.b of NUREG-0578.

C. PREREQUISITES

1. Obtain self-contained breathing apparatus, if necessary.

D. PRECAUTIONS

1. Verify that while performing this procedure, radiation levels are monitored.

2. Measure sample cartridges for radiation level to insure samples are safe to handle.

3. Based upon the analyses of Reference 1, exposure rates under post-accident conditions may severely limit residence time in many plant locations. In particular, the following areas should be carefully assessed prior to I-131 sampling and analysis.

   a. All of the reactor building.

   b. Turbine building elevation 639'.

   c. Turbine building between units, elevation 611'6".

   d. HPCI access tunnel.

E. LIMITATIONS AND ACTIONS

1. This procedure is designed for use during a post-accident situation when a "go-no go" decision needs to be made concerning entry into an area where airborne I-131 is present.

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2. This procedure assumes a sample volume of 30 ft^3. If another volume is used, adjust the 4100 net peak area accordingly. A 4100 net peak area for a 30 ft^3 sample is equal to 1 MPC for I-131, 9 X 10^{-9} uci/cc.

3. When using the Cutie Pie ionization survey instrument, it should be bagged to prevent noble gas intrusion into the ionization chamber.

F. PROCEDURE

1. Equipment needed.

   a. Post-Accident Radionuclide - Analysis Portable System (PARAPS).

   b. Portable air sampler.

   c. Silver zeolite cartridge.

   d. Glass fiber filter paper.

2. Start up of the detection system.

   a. Turn on the AC line conditioner.

   b. Turn on the nim bin power supply.

   c. Turn power on to the detector bias supply.

   d. Using the 10 turn pot on the bias supply, raise the voltage to 3,000 volts.

   e. Turn the 11/34 computer power switch to the "DC ON" position.

   f. Turn on the disc drive and put the RUN/LOAD switch in the run position. The disc ready light should light in a few minutes.

   g. Turn on the 7050 MCA.

   h. Turn on the line printer.

3. Proceed with the air sampler and sample media to the area where the sample is to be taken. Place a silver zeolite cartridge in the sample holder, and a glass fiber filter paper in the filter holder. Turn the air sampler on, note the flow rate, sample time, and sample for 10 minutes.

4. Remove cartridge and filter from sampler. Place samples in separate plastic sample bags; label each sample. Place cartridge, in the sample bag on the 10 cm shelf.

5. Steps 6 through 10 is the primary method to determine the samples activity. If either the 11/34 computer or the disc drive is not working, steps 11 through 26 can be used to determine if the area sampled may be entered.

6. Initialize the system using the Automated Analytical Instrumentation System's (AAIS) Central System Procedure (CSP).

7. Set the system prime using the AAIS's CSP.

8. Log on the sytem using the AAIS's CSP.

9. Determine the iodine activity by running the AAIS's Central Chemical Procedure for iodine radionuclide analysis.

10. If another sample is to be analyzed, repeat step 13.

11. On the Ortec 7050 MCA, depress "LT".

12. Depress "600" on the data entry pad.

13. Depress "ENTER".

14. Depress "STOP".

15. Depress both "ERASE" buttons at the same time.

16. Depress "START". The 7050 MCA will now start a count for 10 minutes.

17. Check the deadtime. If over 30%, stop count. Call a chemist.

18. Observe the MCA screen and find the cursor.

19. Move the cursor to channel 729.

20. Depress horizontal expand button 5 times. If a peak is present, it is Iodine 131.

21. After the count is over depress "SET" on the region of interest pad so that the "SET" light comes on. The cursor will become brighter.

22. Move the cursor to highlight the entire peak. As you highlight each channel it will become brighter.

    a. If you make a mistake depress "CLEAR" and remove the highlight from the affected channels. Then repeat step 20.

23. Depress "SET" so that the "OFF" light goes on.

24. Depress the "GROSS-NET" button so that "NET" is lit.

25. Observe the net peak area in the upper right hand corner of the screen, second row down. It will say: AREA(N)=_____ (net peak area).

    a. If the net peak area after a ten minute count is less than 4100 counts, it is safe to enter the area without supplied air.

    b. If the area is greater than 4100 counts, do not enter the area unless supplied air is used.

    c. If the net peak area exceeds 4,100,000 counts, do not enter the area and contact the Radiation Chemical Supervisor.

26. If another sample is to be analyzed, repeat steps 14 through 25.

G. CHECKLISTS

1. None.

H. TECHNICAL SPECIFICATION REFERENCES

1. None.

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QEP 330-8
Revision 5
October 1982

HANDLING AND ANALYSIS OF POST ACCIDENT REACTOR COOLANT SAMPLES

ID/3D

A. PURPOSE

This procedure outlines the methods by which high activity reactor coolant samples may be analyzed with minimal personnel radiation exposure.

B. REFERENCES

1. CCP-0031.
2. QEP 330-T6.
3. QEP 330-T7.

C. PREREQUISITES

1. Obtain an operable, calibrated, high range exposure rate instrument.
2. Obtain 0-5R and 0-1R direct-reading dosimeters.
3. Obtain finger TLD-rings for both hands.

D. PRECAUTIONS

1. Minimize any direct contact between you and the sample.
2. Sample hood flows should be maximized. Close all hoods to 18 inches or less.

E. LIMITATIONS AND ACTIONS

1. Take all appropriate steps to insure that the radiation exposure you receive does not exceed 3 and 18-3/4 Rems to the whole body or extremities, respectively, per quarter.
2. Samples may be counted in the counting room on Ge(Li) detector #1 if the room is habitable or they may be counted on PARAPS located at the TSC.
3. Shielded handling areas should be in readiness at the hot lab in case further dilution of samples is needed.
4. When using the Cutie Pie ionization survey instrument, it should be bagged to prevent noble gas intrusion into the ionization chamber.

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F. PROCEDURE

1. If the dose rate on the sample is minimal and no further dilution is needed; count the sample immediately at the TSC using PARAPS or in the counting room using Ge(Li) detector #1.

2. Initiate procedure CCP-0031 (BWR Coolant Radionuclide Analysis).

3. After the isotopic analysis is complete, properly dispose of all refuse.

4. If further dilution is required to perform the isotopic, take the sample to the hot lab using the freight elevator. Complete steps F.5. thru F.8 before performing an isotopic analysis.

5. Equipment.

   a. Tongs.

   b. Lead bricks.

   c. Two hypodermic needles (about 18G x 2").

   d. Separatory funnel 1000 ml.

   e. Funnel.

   f. Flask with tabulation, 1000 ml.

   g. Flask with tabulation, 500 ml.

   h. Erlenmeyer flask 1000 ml.

   i. Glass wool.

   j. Tygon tubing, 1/4" ID.

   k. Hamilton connectors, Iver lock and male.

   l. One size 8 one hole stopper.

   m. One size 7 one hole stopper.

   n. One size 6 no hole stopper.

   o. Pipette, 1 ml.

   p. Pipette suction bulb.

   q. Ring stand with ring clamp.

6. Build a sample cave made out of lead bricks in a radioisotope hood in the hot lab. Use QEP 330-T6 as a guide. Set up the sample dilution equipment as shown in QEP 330-T7 (sample vial will be added later).

7. Pour 1000 ml of demin water into both the separatory funnel and Erlenmeyer flask.

8. Analysis.

   a. Place the two hypodermic needles into the septum of the vial. Make sure the needles touch the bottom of the vial.

   b. Turn on the lab vacuum pump and open the hood vacuum valve.

   c. Oper the stopcock on the separatory funnel. The demin water will move into and out of the vial into the 1000 ml flask.

   d. Turn off the lab vacuum pump and close the hood vacuum valve after the separatory funnel is empty of the 1000 ml demin water.

   e. Remove the stopper from the flask with the sample.

   f. Pipette 1 ml of the diluted sample into the Erlenmeyer flask that is in compartment C (the Erlenmeyer flask should contain 1000 ml of demin water).

   g. Place the size 8 no hole stopper on the Erlenmeyer flask and mix the contents. Use this dilution as the stock solution in further analyses.

9. Follow-up.

   a. Insure that the Radiation-Chemical Supervisor is promptly notified of:

      (1) The results of the analysis.

      (2) Personnel radiation exposure received.

      (3) The disposition of associated material.

      (4) The exposure rates observed in the various procedure phases.

G. CHECKLISTS

1. None.

H. TECHNICAL SPECIFICATION REFERENCES

1. None.

QEP 330-10
Revision 2
October 1982

ON-SITE ENVIRONMENTAL SAMPLING DURING EMERGENCY SITUATIONS

ID/5D

A. PURPOSE

The purpose of this procedure is to outline the steps necessary to assure proper on-site environmental sampling during emergency situations.

B. REFERENCES

1. QEP 330-T8, On-Site Environmental Sampling Locations.
2. EG-11, Environmental Sample Collection Procedures and Transport of Low-Specific Activity (≤.002 μCi/g) Environmental Radiological Samples.
3. QEP 550-T2, Operational Support Center Emergency Supplies Cabinet.
4. Post Accident Radiation Levels - Quad-Cities Station, Sargent and Lundy.

C. PREREQUISITES

1. Only instruments calibrated within the frequency designated for those instruments should be used. The calibration due date shall be indicated on the instrument.

D. PRECAUTIONS

1. Environmental dose rates during accident situations may be higher than usual.

E. LIMITATIONS AND ACTIONS

1. The Radiation-Chemistry Director will instruct on-site health physics teams on which samples are needed.
2. The equipment stored in the Operational Support Center (designated in QEP 550-T2) may be used for on-site environmental sampling if deemed necessary by the Radiation-Chemistry Director.
3. When using the Cutie Pie ionization survey instrument, it should be bagged to prevent noble gas intrusion into the ionization chamber.

F. PROCEDURE

1. The health physics teams should be chosen by the Radiation-Chemistry Director or his alternate from the Radiation Chemistry personnel assembled in the Operational Support Center (OSC). After completing assigned sampling, the teams will return to the O.S.C.

2. Sample locations will be chosen by the Radiation-Chemistry Director or his alternate using QEP 330-T8, On-Site Environmental Sampling Locations. Sampling points are designated by a capital "X".

3. All samples should be obtained using the procedures outlines in EG-11 unless otherwise specified by the Radiation-Chemistry Director. The Sample Collection Data Sheet in EG-11 should be used to log all samples.

4. Samples will usually be transported to the Technical Support Center, where they will be analyzed using the PARAPS analytical equipment located in the TSC storeroom.

G. CHECKLISTS

1. EG-11, page 8 - Sample Collection Data Sheet.

H. TECHNICAL SPECIFICATION REFERENCES

1. None.

STATION NO.	BUILDING	ELEV	COLUMN	DETECTOR LOCATION	RANGE (MR/HR)	READING (MR/HR)
739-1	Rx Bldg	690-6		Reactor Bldg Crane	0.1-1000	
1	Rx Bldg	690-6	H-15	Refueling Floor Low Range	.01-100	
2	Rx Bldg	690-6	H-15	Refueling Floor High Range	10-1,000,000	
3	Rx Bldg	690-6	N-14	Refueling Floor Equip. Hatch	0.01-100	
4	Rx Bldg	666-6	N-14	New Fuel Storage Area	0.0-1000	
5	Rx Bldg	666-6	L-18-19	Contaminated Equipment Storage	0.01-100	
6	Rx Bldg	647-6	M-15	Fuel Pool Pump Area	0.01-100	
7	Rx Bldg	647-6	M-18	Control Rod Drive Storage & Repair Room	0.01-1000	
8	Rx Bldg	647-6	J-17	Cleanup Instrument Rack Area	0.01-100	
9	Rx Bldg	623-0	J-18-19	Cleanup Pump Area	0.01-100	
10	Rx Bldg	623-0	M-13-41	Mezzanine Floor Access Area	0.01-100	
11	Rx Bldg	595-0	K-18-19	South CRD Module Area	0.01-100	
12	Rx Bldg	595-0	K-13-14	North CRD Module Area	0.01-100	
13	Rx Bldg	595-0	J-H-13	TIP Drive Area	0.01-100	
14	Rx Bldg	595-0	H-14-15	TIP Cubicle	1-10,000	
15	Rx Bldg	554-0	N-17	Torus Area	1-10,000	
16	Rx Bldg	554-0	G-15	HPCI Cubicle	1-10,000	
17	Rx Bldg	554-0	G-14	RCIC Cubicle	1-10,000	
18	Turb Bldg	639-0	E-25	Operating Floor Access - South	0.01-100	
19	Turb Bldg	639-0	D-14	Operating Floor Elevator Area	0.01-100	
20	Turb Bldg	626-6	C-20-21	Air Ejector Area - 1B	0.01-100	
21	Turb Bldg	626-6	C-18-19	Air Ejector Area - 1A	0.01-100	
22	Turb Bldg	623-0	G-25	Reactor Control Room	0.01-100	
23	Turb Bldg	595-0	C-19	Feedwater Heater Area W. Hallway	0.01-1000	
24	Turb Bldg	595-0	G-21	Feedwater Pump Area	0.01-100	
25	Turb Bldg	572-6	D-18	Control Rod Drive Feed Pump Area	0.01-1000	
26	Turb Bldg	547-0	D-E-19	Condensate/Booster Pump	0.01-100	
27	Radwaste	597-0	C-14	Radwaste Control Room	0.01-100	

AREA RADIATION MONITOR SYSTEM

QEP 330-T9
Revision 1

UNIT ONE

STATION NO.	BUILDING	ELEV	COLUMN	DETECTOR LOCATION	RANGE (MR/HR)	READING (MR/HR)
28	Radwaste	597-0	B-13-14	Radwaste Operating Area - South Wall	0.01-100	_____
29	Radwaste	572-0	-------	Radwaste Pump Room Access	0.01-100	_____
30	Radwaste	620-0	-------	Radwaste Centrifuge Access	0.01-100	_____
1-1743A	Rx Bldg.	690-6	N-15	Refueling Floor West Wall	1.0-1,000,000	_____
1-1743B	Rx Bldg.	690-6	H-14	Refueling Floor East Wall	1.0-1,000,000	_____
1-1735A	Turb Bldg.	658-10	G-H-16	Rx Bldg Vent System	.01-100	_____
1-1735B	Turb Bldg	658-10	G-H-6	Rx Bldg Vent System	.01-100	_____
31	Filter	574-6		Carbon Bed Vault	1.0-1,000,000	_____
32	Turbine	648-6	CD-18	Recombiner Area Level 1	.01-100	_____
33	Turbine	668-0	CD-18	Recombiner Area Level 2	.01-100	_____
34	Radwaste	605-0		Radwaste Catwalk Shield - East Wall	1-10,000	_____
35	Radwaste	595-0		Radwaste North Truckbay - North Wall	0.1-1,000	_____

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AREA RADIATION MONITOR SYSTEM

QEP 330-T9
Revision 1

UNIT TWO

STATION NO.	BUILDING	ELEV	COLUMN	DETECTOR LOCATION	RANGE (MR/HR)	READING (MR/HR)
1	Rx Bldg.	690-6	H-11	Refueling Floor Low Range	0.01-100	
2	Rx Bldg.	690-6	H-11	Refueling Floor High Range	$10-10^6$	
3	Rx Bldg.	647-6	M-11	Fuel Pool Pump Area	0.01-100	
4	Rx Bldg.	647-6	J-9	Cleanup Inst. Rack Area	0.01-100	
5	Rx Bldg.	623-0	J-7-8	Cleanup Pump Area	0.01-100	
6	Rx Bldg.	595-0	K-13	South CRD HYD Area	0.01-100	
7	Rx Bldg.	595-0	K-7	North CRD HYD Area	0.01-100	
8	Rx Bldg.	595-0	H-13	Tip Drive Area	0.01-100	
9	Rx Bldg.	595-0	H-11-12	Tip Cubicle	1-10,000	
10	Rx Bldg.	554-0	N-9	Torus Area	1-10,000	
11	Rx Bldg.	554-0	G-11	HPCI Cubicle	1-10,000	
12	Rx Bldg.	554-0	G-12	RCIC Cubicle	1-10,000	
13	Turb. Bldg.	639-0	F-1	Operating Floor	0.01-100	
14	Turb. Bldg.	626-6	C-5	Air Ejector Area	0.01-100	
15	Turb. Bldg.	626-6	C-8-9	Air Ejector Area	0.01-100	
16	Rx Bldg.	666-6	N-17	Standby Gas Treatment Unit 1	0.01-100	
17	Turb. Bldg.	595-0	C-7	Feedwater Heater Area	0.1-1000	
18	Turb. Bldg.	595-0	G-5	Feedwater Pump Area	0.01-100	
19	Turb. Bldg.	595-0	D-13	Condensate Demin. Panel	0.01-100	
20	Serv. Bldg.	595-0		Machine Shop Area	[illegible]-1000	
21	Turb. Bldg.	572-6	D-8	CRD Feedwater Pump Area	0.1-1000	
22	Turb. Bldg.	547-0	E-7	Condensate Booster Pump Area	0.01-100	
23	Rx Bldg.	666-6	N-9	Standby Gas Treatment Unit 2	0.01-100	
24	Serv. Bldg.			Service Bldg. Office	0.01-100	
1-1743A	Rx Bldg.	690-6		Refueling Floor	1.0-1,000,000	
1-1743B	Rx Bldg.	690-6		Refueling Floor	1.0-1,000,000	
1-1735A	Turb. Bldg.	658-10		Rx Bldg. Vent System	.01-100	
1-1735B	Turb. Bldg.	658-10		Rx Bldg. Vent System	.01-100	
25	Filter Bldg.	574-6		Charcoal Vault	1.0-1,000,000	
26	Turb. Bldg.	648-6		Recombiner Level 1	.01-100	
27	Turb. Bldg.	668-0		Recombiner Level 2	.01-100	
28	Filter Bldg.			Filter House Level 1	.01-100	
29	Filter Bldg.			Filter House Level 2	.01-100	
30	Filter Bldg.			Filter House Level 3	.01-100	

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