M-20, 98 9/83

PUBLIC SERVICE ELECTRIC & GAS COMPANY

ENGINEERING & RESEARCH DEPT.

REQUEST FOR REVISION TO A RESEARCH AND TESTING DIVISION PROCEDURE

1. Procedure No. RT-11-005 11

2. Procedure Name Calibration of Eberline Model RO2/1&2A

3. Page No. _____ Paragraph No. _____ Exhibit No. _____

4. Description Of Change

5. Reason

6. Prepared By Newton A Burke (Name) 5-1-84 (Date) Approved By Karl C Voight III (Name) 5/2/84 (Date)

8. It is required that the attached procedure be approved for ~~a "one-time use" as marked.~~ INTERIM USE.

Reason: AWAITING OFFICIAL APPROVAL

9. Approved By Karl C. Voight III, 5/2/84 (Name, Date)

* A copy of a field modified procedure must be attached to the work document. (MRF, Modification Memo Check - off Sheet, Calibration Card, etc.)

10. Resolution of Request:

11. By _____ (Name) _____ (Date)

12. Resolution included in Rev. _____, Section _____.

13. By _____ (Name) _____ (Date)

EXHIBIT RT-05-50001-VI

FOIA-87-228
E/1

RESEARCH AND TESTING DIVISION

IMPLEMENTING PROCEDURE

FOR

CALIBRATION OF EBERLINE MODEL RO-2/RO-2A ION CHAMBER

PHILADELPHIA ELECTRIC COMPANY
RESEARCH AND TESTING DIVISION
2301 MARKET STREET
PHILADELPHIA, PA 19101

1.0 PURPOSE

1.1 THIS PROCEDURE DESCRIBES THE METHOD TO BE USED IN THE CALIBRATION OF THE EBERLINE MODEL RO-2/RO-2A ION CHAMBER.

2.0 SCOPE

2.1 THIS PROCEDURE APPLIES TO THE CALIBRATION OF THE EBERLINE MODEL RO-2/RO-2A ION CHAMBER.

3.0 REFERENCES

3.1 EBERLINE RO-2 TECHNICAL MANUAL AND RO-2A SUPPLEMENT SHEET.

3.2 J. L. SHEPHERD INSTALLATION AND OPERATION MANUAL FOR MODEL 89 SHIELDED CALIBRATION RANGE COMPLETE WITH MODEL 78-2M CALIBRATOR AND MODEL 154 ATTENUATOR SYSTEM.

3.3 AMERICAN NATIONAL STANDARD RADIATION PROTECTION INSTRUMENTATION TEST AND CALIBRATION-ANSI-N323-1978.

4.0 RESPONSIBILITIES

4.1 THE TECHNICIAN, ASSIGNED BY HIS SUPERVISOR OR DESIGNATED ALTERNATE, SHALL BE RESPONSIBLE FOR COMPLYING WITH THE REQUIREMENTS OF THIS PROCEDURE.

4.2 THE BRANCH ENGINEER OR DESIGNATED ALTERNATE SHALL PROVIDE THE NECESSARY INFORMATION AND TESTS CRITERIA TO PERFORM THE REQUIRED TESTS.

4.3 THE BRANCH ENGINEER OR THE DESIGNATED ALTERNATE SHALL REVIEW AND APPROVE ALL DATA SHEETS.

5.0 PREREQUISITES

5.1 THE TECHNICIAN SHALL BE QUALIFIED IN ACCORDANCE WITH RESEARCH AND TESTING DIVISION PROCEDURE RT-02-50002.

5.2 THE TECHNICIAN SHALL BE QUALIFIED IN ACCORDANCE WITH RESEARCH AND TESTING DIVISION PROCEDURE RT-11-00503.

6.13.2 IF ADJUSTMENT IS NECESSARY, TURN THE CALIBRATION POT MARKED 500 MR/HR FOR THE RO-2 OR 5 R/HR FOR THE RO-2A UNTIL THE PROPER READING IS OBTAINED. READINGS SHOULD BE BETWEEN -0%, +20%.

6.13.3 REPEAT STEPS 6.11 THRU 6.13.2 AND RECORD THESE READINGS IN "AS LEFT" COLUMN OF CALIBRATION SHEET.

6.14 SET THE SELECTOR SWITCH TO THE 50 MR/HR POSITION FOR THE RO-2 OR 500 MR/HR POSITION FOR THE RO-2A.

6.15 CENTER THE INSTRUMENT IN A KNOWN FIELD OF RADIATION USING THE INDENTS ON THE SIDE OF THE BOTTOM CAN ASSEMBLY.

6.16 SET THE CALIBRATOR FOR A DOSE RATE OF APPROXIMATELY 3/4 OF FULL SCALE ON THE 50 MR/HR RANGE FOR THE RO-2 OR 500 MR/HR FOR THE RO-2A.

6.17 EXPOSE THE RO-2/2A TO THE SOURCE OF RADIATION AND RECORD READINGS IN "AS FOUND" COLUMN OF THE CALIBRATION SHEET.

6.17.1 CHECK THE INSTRUMENT, AT APPROXIMATELY 1/2 AND 1/4 OF FULL SCALE AND RECORD READINGS IN "AS FOUND" COLUMN OF CALIBRATION SHEET.

6.17.2 IF ADJUSTMENT IS NECESSARY, TURN THE CALIBRATION POT MARKED "50 MR/HR" FOR THE RO-2, OR "500 MR/HR" FOR THE RO-2A UNTIL THE PROPER READING IS OBTAINED. READINGS SHOULD BE BETWEEN -0% +20%.

6.17.3 REPEAT STEPS 6.15 THRU 6.17.2 AND RECORD THESE READINGS IN "AS LEFT" COLUMN OF CALIBRATION SHEET.

6.18 SET THE SELECTOR SWITCH TO THE 5 MR/HR POSITION FOR THE RO-2 OR 50 MR/HR POSITION FOR THE RO-2A.

6.19 CENTER THE INSTRUMENT IN A KNOWN FIELD OF RADIATION USING THE INDENTS ON THE SIDE OF THE BOTTOM CAN ASSEMBLY.

6.20 SET THE CALIBRATOR FOR A DOSE RATE OF APPROXIMATELY 3/4 OF FULL SCALE ON THE 5 MR/HR RANGE FOR THE RO-2 OR 50 MR/HR FOR THE RO-2A.

6.21 EXPOSE THE RO-2/2A TO THE SOURCE OF RADIATION AND RECORD READINGS IN "AS FOUND" COLUMN OF THE CALIBRATION SHEET.

6.21.1 CHECK THE INSTRUMENT AT APPROXIMATELY 1/2 AND 1/4 OF FULL SCALE AND RECORD READINGS IN "AS FOUND" COLUMN OF CALIBRATION SHEET.

6.21.2 IF ADJUSTMENT IS NECESSARY, TURN THE CALIBRATION POT MARKED 5 MR/HR FOR THE RO-2 OR 50 MR/HR FOR THE RO-2A UNTIL THE PROPER READING IS OBTAINED. READINGS SHOULD BE -0%, +20%.

6.21.3 REPEAT STEPS 6.19 THRU 6.21.2 AND RECORD THESE READINGS IN "AS LEFT" COLUMN OF CALIBRATION SHEET.

6.22 IF ALL READINGS CANNOT BE CALIBRATED TO WITHIN -0%, +20% OF TRUE DOSE RATE, REFER TO TECHNICAL MANUAL FOR REPAIR OF THE INSTRUMENT. IF INSTRUMENT CANNOT BE CALIBRATED IN ACCORDANCE WITH THIS PROCEDURE AFTER REPAIR IS ATTEMPTED, NOTE THIS IN "REMARKS" SECTION OF CALIBRATION SHEET.

6.23 BETA SOURCE CHECK *NOTE: When Using depleted Uranium Source Eye Protection Should be Used At All Times.*

6.23.1 SET THE FUNCTION SWITCH ON THE INSTRUMENT TO 500 MR/HR AND OPEN THE SLIDING BETA SHIELD ON THE BOTTOM OF THE CASE.

NOTE: TO OPEN OR CLOSE THE BETA SHIELD, DEPRESS THE FRICTION RELEASE BUTTON ON THE LEFT SIDE OF THE CASE AND MANUALLY MOVE THE SLIDE, OR LET IT FALL DUE TO GRAVITY. WHEN THE SHIELD IS OPEN, PROTECT THE THIN FACE AGAINST DAMAGE BY PUNCTURE.

6.23.2 USING THE DEPLETED URANIUM SOURCE, EXPOSE THE EFFECTIVE CENTER OF THE ION CHAMBER WITH THE SHIELD OPEN ON CONTACT WITH THE SOURCE. RECORD THE METER READING.

6.23.3 CLOSE THE SHIELD, AND AGAIN USING THE DEPLETED URANIUM SOURCE, EXPOSE THE EFFECTIVE CENTER OF THE ION CHAMBER WITH THE SHIELD CLOSED ON CONTACT WITH THE SOURCE. RECORD THE METER READING.

6.23.4 SUBTRACT THE READING OBTAINED IN STEP 6.23.3, CLOSED SHIELD READING, FROM THE READING OBTAINED IN STEP 6.23.2, OPEN SHIELD READING.

6.21 EXPOSE THE RO-2/2A TO THE SOURCE OF RADIATION AND RECORD READINGS IN "AS FOUND" COLUMN OF THE CALIBRATION SHEET.

6.21.1 CHECK THE INSTRUMENT AT APPROXIMATELY 1/2 AND 1/4 OF FULL SCALE AND RECORD READINGS IN "AS FOUND" COLUMN OF CALIBRATION SHEET.

6.21.2 IF ADJUSTMENT IS NECESSARY, TURN THE CALIBRATION POT MARKED 5 MR/HR FOR THE RO-2 OR 50 MR/HR FOR THE RO-2A UNTIL THE PROPER READING IS OBTAINED. READINGS SHOULD BE -0%, +20%.

6.21.3 REPEAT STEPS 6.19 THRU 6.21.2 AND RECORD THESE READINGS IN "AS LEFT" COLUMN OF CALIBRATION SHEET.

6.22 IF ALL READINGS CANNOT BE CALIBRATED TO WITHIN -0%, +20% OF TRUE DOSE RATE, REFER TO TECHNICAL MANUAL FOR REPAIR OF THE INSTRUMENT. IF INSTRUMENT CANNOT BE CALIBRATED IN ACCORDANCE WITH THIS PROCEDURE AFTER REPAIR IS ATTEMPTED, NOTE THIS IN "REMARKS" SECTION OF CALIBRATION SHEET.

6.23 BETA SOURCE CHECK *NOTE: When Using depleted Uranium Source Eye Protection Should be Used At All Times.*

6.23.1 SET THE FUNCTION SWITCH ON THE INSTRUMENT TO 500 MR/HR AND OPEN THE SLIDING BETA SHIELD ON THE BOTTOM OF THE CASE.

NOTE: TO OPEN OR CLOSE THE BETA SHIELD, DEPRESS THE FRICTION RELEASE BUTTON ON THE LEFT SIDE OF THE CASE AND MANUALLY MOVE THE SLIDE, OR LET IT FALL DUE TO GRAVITY. WHEN THE SHIELD IS OPEN, PROTECT THE THIN FACE AGAINST DAMAGE BY PUNCTURE.

6.23.2 USING THE DEPLETED URANIUM SOURCE, EXPOSE THE EFFECTIVE CENTER OF THE ION CHAMBER WITH THE SHIELD OPEN ON CONTACT WITH THE SOURCE. RECORD THE METER READING.

6.23.3 CLOSE THE SHIELD, AND AGAIN USING THE DEPLETED URANIUM SOURCE, EXPOSE THE EFFECTIVE CENTER OF THE ION CHAMBER WITH THE SHIELD CLOSED ON CONTACT WITH THE SOURCE. RECORD THE METER READING.

6.23.4 SUBTRACT THE READING OBTAINED IN STEP 6.23.3, CLOSED SHIELD READING, FROM THE READING OBTAINED IN STEP 6.23.2, OPEN SHIELD READING.

6.23.5 DETERMINE THE BETA CORRECTION FACTOR BY DIVIDING THE NUMBER OBTAINED IN STEP 6.23.4 INTO 230 MR/HR. (230 MR/HR IS CALIBRATED BETA DOSE FOR THE SOURCE.) NOTE BETA CORRECTION FACTOR ON CALIBRATION SHEET.

6.24 REPLACE OLD CALIBRATION STICKER WITH A NEW STICKER LEAVING THE CORRECT CALIBRATION DUE DATE.

6.25 RECORD RESPONSE DATA ON THE CALIBRATION SHEET AND ENTER PERTINENT INFORMATION IN THE HISTORY CALIBRATION LOG.

7.0 DOCUMENTATION

7.1 THE TECHNICIAN PERFORMING THE TESTS SHALL ENTER MEASURED TEST VALUES, HIS INITIALS, DATE, AND TEST INSTRUMENT NUMBER, INCLUDING CALIBRATION DUE DATES, ON ALL APPROPRIATE DATA SHEETS.

7.2 THE BRANCH ENGINEER OR A DESIGNATED ALTERNATE SHALL PREPARE THE DATA SHEET PRIOR TO THE TESTS AND REVIEW ALL DATA SHEETS AT THE COMPLETION OF THE TESTS. THE INITIALS OF THE DATA SHEET PREPARER WILL APPEAR ON THE DATA SHEET AND THE SUPERVISOR, OR DESIGNATED ALTERNATE, SHALL APPROVE EACH COMPLETED DATA SHEET.

7.3 THE NUMBER OF THE APPLICABLE RESEARCH AND TESTING DIVISION PROCEDURE SHALL BE INCLUDED ON DATA SHEETS.

7.4 MODIFICATION AND MAINTENANCE REQUEST FORM NUMBERS SHOULD BE INCLUDED ON DATA SHEETS WHEN APPLICABLE.

7.5 A COPY OF THE DATA SHEET SHALL BE FORWARDED TO THE NUCLEAR RECORDS MANAGEMENT SYSTEM.

8.0 Exhibit

RT-12-00511-I Survey Instrument Calibration Sheet

Eberline

A DIVISION OF Thermo Electron CORPORATION

7021 Pan American Hwy., N.E.
P.O. Box 3874
Albuquerque, New Mexico 87190
(505) 345-3461

Report of Calibration

S# S-3573

DEPLETED URANIUM
Certificate of Calibration

A depleted uranium slab, similar to the one supplied with this certificate, was calibrated by the U.S. Department of Commerce, National Bureau of Standard (NBS) during December 1981.

The beta particle absorbed dose rate at the surface of the approximately 7 mg/cm^2 covering on the source was measured by NBS using an extropolation ionization chamber. This device is a parallel-plate ion chamber in which the plate spacing may be varied. The current that is collected by the ion chamber is proportional to the plate spacing. As the spacing becomes very small, this correlation becomes linear and is proportional to the absorbed dose rate.

The absorbed dose rate to water as measured by NBS was 0.65 micrograms per second (234 mRad/hour). A copy of this NBS certification can be supplied to you upon request.

To estimate the absorbed dose rate at the surface of the 7 mg/cm^2 covering on the depleted uranium slab supplied with this certification, five tissue equivalent lithium fluoride thermoluminescent dosimeters (Harshaw TLD-100's) were placed on the slab. Five TLD's from the same manufacturing batch were also placed on the NBS calibrated slab. The analytical results of these ten TLD's were compared and the estimated absorbed dose rate at the surface of the slab supplied with this certification is 234±19% mRad/hour. The error term associated with this value is the one sigma historical deviation from evaluation of a large number of similar slabs.

April 24, 1984
Date

Asst Lab Q.C.

J.M.A.

NRMS

85-1-5

1850170810

Data Sheet HPO/CO-23
PHILADELPHIA ELECTRIC COMPANY
OFF-GAS SAMPLE FORM

UNIT 3 POWER LEVEL 2688 MWt DATE 1 FEB 85
%PWR. 82.0 875 MWe CAVEX 8274

	1	2	3
Vial Identification	U/3 OFFGAS		
Evacuated Vial ("Hg)	29.5"		
Sample Vacuum ("Hg or PSI)	3.0"		
Correction Factor (1)	1.113		
Sample Time	0752:00		
Well Count Time	0757:00		
Well Count	1.53E6		
Corrected Well Count	1.70E6		

Downstream Pressure ("Hg) 15.0" (Throttle Pressure)

Upstream Pressure ("Hg or PSI) 0.0 (SJAE Pressure)

Sample Flow (SCFH) 7.5

Hold-Up Pipe Flow (CFM) 20

Off-Gas Flow (CFM) 118.4 (120 x 1 π. + H.U.P. Flow)
98.4 + 20

Main Stack Flow (CFM) 3.1E4

Off-Gas Monitor Reading (mr/hr) A) 100 B) 87

Main Stack Monitor Reading (CPS) A) 64 B) 72

Correction Factors (Off-Gas Mon.) A) 2.25 B) 2.58

Hold-Up Time in Days NA

SUM of 6 For Offgas 26,600 uCi/sec.

(1)
$$\frac{(VAC)\text{-Evacuated Vial ("Hg)}}{\text{Evacuated Vial ("Hg)} - \text{Sample Vacuum ("Hg)}} = \text{or } \frac{(PRESS)-14.7}{14.7 + \text{Vacuum (PSI)}} =$$

FOIA-87-228
E/2

PEACH BOTTOM NUCLEAR POWER PLANT
RD#1, DELTA, PA., 17314

UNITS 2&3 OFFGAS CALCULATIONS

1 FEB 1985 9:14:11 AM

U/3 RX OFFGAS

OFF-GAS FLOW (CFM) : 118.4
DECAY TIME (MIN): 0
PRESSURE CORRECTION FACTOR: 1.113

UC/ML KR-85M = 2.358E-02
UC/SEC = 1.318E 03
A/YL = 2.267E 09

UC/ML KR-87 = 5.164E-02
UC/SEC = 2.886E 03
A/YL = 8.023E 08

UC/ML KR-88 = 5.771E-02
UC/SEC = 3.225E 03
A/YL = 1.284E 09

UC/ML XE-133 = 3.660E-02
UC/SEC = 2.045E 03
A/YL = 1.986E 10

UC/ML XE-135 = 1.120E-01
UC/SEC = 6.257E 03
A/YL = 4.430E 09

UC/ML XE-138 = 1.946E-01
UC/SEC = 1.087E 04
A/YL = 2.142E 08

SUM OF SIX = 2.660E 04

NRMS

01-FEB-85 09:04:[illegible]

1850170810

U/3 RX OFFGAS

SH

SAMPLE DATE: 01-FEB-85 07:52:00
SAMPLE IDENTIFICATION: RX OFFGAS
TYPE OF SAMPLE: GASEOUS
SAMPLE QUANTITY: 14.40000 UNITS: CC'S
SAMPLE GEOMETRY: 14.4 ML VIAL
EFFICIENCY FILE NAME: EFF.SOG3,,

ACQUIRE DATE: 01-FEB-85 08:53:14
PRESET TIME(LIVE): 600. SEC
ELAPSED REAL TIME: 649. SEC
ELAPSED LIVE TIME: 600. SEC

* FWHM(1332) 2.206
* SENSITIVITY: 5.000
* SHAPE PARAMETER : 30.0 %
* NBR ITERATIONS: 8.

DETECTOR: GELI-3
CALIB DATE: 01-FEB-85 07:43:18
KEV/CHNL: 1.0054048
OFFSET: -0.8378231 KEV

* LIBRARY:NUCL.GAS
* ENERGY TOLERANCE: 2.200KV
* HALF LIFE RATIO: 8.00
* ABUNDANCE LIMIT: 65.00%

> R PEAK

ENERGY WINDOW 49.43 TO 2058.23

PK	IT	ENERGY	AREA	BKGND	FWHM	CHANNEL	LEFT	FW	CTS/SEC	%ERR	FIT
1	0	81.28	86676.	66668.	1.17	81.68	77	10	1.44E 02	0.5	
2	0	138.35	2247.	35211.	1.92	138.44	136	6	3.74E 00	12.0	
3	0	151.28	81640.	58394.	1.95	151.30	146	11	1.36E 02	0.5	
4	0	158.61	1247.	26702.	1.78	158.5	157	6	2.08E 00	18.7	
5	0	166.02	8959.	33402.	1.30	165.96	162	8	1.49E 01	3.1	
6	4	193.01	4881.	24382.	2.68	192.80	190	11	8.14E 00	4.7	1.06E 02
7	4	196.46	53786.	15493.	1.47	196.24	190	11	8.96E 01	0.5	
8	0	227.67	1706.	21600.	2.10	227.28	225	6	2.84E 00	12.4	
9	0	249.60	341688.	51013.	1.84	249.09	244	11	5.69E 02	0.2	
10	0	258.34	8568.	14382.	1.26	257.79	254	8	1.43E 01	2.3	
11	0	304.65	7787.	12588.	1.33	303.65	299	10	1.30E 01	2.3	
12	0	362.22	2248.	9344.	1.36	361.10	359	9	3.75E 00	6.4	
13	3	390.34	842.	4381.	1.75	389.07	384	28	1.40E 00	11.6	1.05E 02
14	3	396.78	2436.	5967.	2.25	395.48	384	28	4.06E 00	4.9	
15	3	402.46	32375.	4161.	1.56	401.13	384	28	5.40E 01	0.6	
16	3	408.74	3521.	4881.	1.98	407.38	384	28	5.87E 00	3.3	
17	0	421.43	184.	4460.	1.17	420.00	418	6	3.06E-01	52.0	
18	0	434.24	3207.	6377.	1.38	432.74	428	9	5.34E 00	3.9	
19	0	462.35	17787.	7648.	1.43	460.70	455	11	2.96E 01	1.0	
20	0	471.46	385.	3798.	1.34	469.76	468	6	6.41E-01	23.2	
21	0	510.47	1785.	5915.	2.73	508.55	504	10	2.97E 00	6.5	
22	0	526.08	8712.	6612.	2.12	524.08	518	12	1.45E 01	1.7	
23	0	546.53	5187.	5588.	1.88	544.43	539	10	8.65E 00	2.5	
24	0	607.65	3956.	6639.	2.15	605.22	599	12	6.59E 00	3.3	
25	0	674.23	715.	4520.	1.47	671.43	668	9	1.19E 00	13.8	
26	0	813.69	347.	3118.	2.58	810.15	807	8	5.78E-01	23.4	
27	0	834.37	6662.	4175.	1.80	830.72	824	11	1.11E 01	1.8	
28	0	845.14	2398.	3733.	1.85	841.43	836	10	4.00E 00	4.1	
29	0	862.13	377.	2849.	2.20	858.38	856	7	6.29E-01	18.9	

31	0	897.60	6762.	4274.	1.87	893.61	887	13	1.13E 01	1.8	
32	0	985.99	830.	3627.	2.47	981.32	975	13	1.38E 00	10.8	
33	0	1009.39	8149.	4676.	1.99	1004.80	998	14	1.36E 01	1.6	
34	0	1031.90	515.	2560.	2.68	1027.18	1023	9	8.59E-01	14.6	
35	0	1039.89	189.	2011.	2.65	1035.14	1032	7	3.15E-01	34.3	
36	6	1141.68	426.	1690.	1.80	1136.38	1133	13	7.10E-01	14.5	8.57E-
37	6	1147.42	244.	1681.	1.83	1142.08	1133	13	4.07E-01	24.6	
38	5	1175.16	878.	3407.	4.13	1169.67	1165	18	1.46E 00	10.6	8.28E
39	5	1179.99	477.	2711.	2.52	1174.48	1165	18	7.94E-01	16.1	
40	0	1195.38	291.	2900.	3.19	1189.79	1187	8	4.84E-01	26.9	
41	0	1249.26	714.	3102.	4.82	1243.37	1238	11	1.19E 00	11.6	
42	0	1325.16	219.	1672.	2.47	1318.87	1315	8	3.65E-01	27.3	
43	0	1343.91	170.	1706.	2.23	1337.52	1334	8	2.82E-01	35.3	
44	0	1369.60	1551.	2010.	2.39	1363.07	1357	11	2.59E 00	4.8	
45	0	1382.65	244.	2045.	2.75	1376.65	1371	10	4.06E-01	27.0	
46	0	1435.91	15410.	3353.	2.52	1429.03	1422	15	2.57E 01	1.0	
47	0	1445.92	172.	1796.	2.38	1438.98	1436	10	2.86E-01	35.7	
48	0	1518.86	612.	1536.	2.61	1511.53	1507	8	1.02E 00	9.9	
49	0	1530.37	3421.	3264.	2.39	1522.98	1516	17	5.70E 00	2.9	
50	0	1685.81	272.	1278.	3.49	1677.58	1674	8	4.53E-01	19.6	
51	0	1741.53	359.	1856.	2.95	1733.00	1727	13	5.99E-01	17.8	
52	0	1769.31	617.	1404.	2.47	1760.63	1756	9	1.03E 00	9.5	
53	0	1836.93	5430.	2310.	2.67	1827.89	1821	15	9.05E 00	1.6	
54	0	1882.04	728.	1579.	3.54	1872.76	1868	11	1.21E 00	8.6	
55	0	2006.04	174.	1109.	1.97	1996.09	1992	9	2.90E-01	28.1	
56	0	2015.53	787.	1527.	6.34	2005.53	2000	12	1.31E 00	7.9	
57	3	2031.50	990.	1293.	3.23	2021.41	2015	18	1.65E 00	6.0	2.02E
58	3	2037.30	726.	1033.	2.56	2027.18	2015	18	1.21E 00	7.3	

PEAK SEARCH COMPLETED (REV 13)

1850170810

> R SPLIN
> R NID
> RUN PB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMP
N-13	510.47	1.78E 02	5.92E 02	6.5	[illegible]	6.874E-01
KR-85M	151.28	8.16E 03	5.84E 03	0.5	[illegible]	3.051E-01
KR-87	402.46	3.24E 03	4.16E 02	0.6	[illegible]	6.682E-01
	845.14	2.40E 02	3.73E 02	4.1	5.332E-02	7.678E-01
KR-88	196.46	5.38E 03	1.55E 03	0.5	[illegible]	7.467E-01
XE-133	81.28	8.67E 03	6.67E 03	0.5	[illegible]	4.735E-01
XE-135	249.60	3.42E 04	5.10E 03	0.2	[illegible]	1.449E 00
	607.65	3.96E 02	6.64E 02	3.3	9.436E-02	1.359E 00
XE-135M	526.08	8.71E 02	6.61E 02	1.7	[illegible]	1.618E 00
XE-138	258.34	8.57E 02	1.44E 03	2.3	[illegible]	2.583E 00
	434.24	3.21E 02	6.38E 02	3.9	[illegible]	2.517E 00
XE-131M	166.02	8.96E 02	3.34E 03	3.1	[illegible]	1.133E 00

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
138.35	2.15E 02	3.52E 03	12.0
158.61	1.25E 02	2.67E 03	18.7
193.01	4.88E 02	3.44E 03	4.7
227.67	1.71E 02	2.16E 03	12.4
304.65	7.79E 02	1.26E 03	2.3
362.22	3.25E 02	9.34E 02	6.4

[illegible]	[illegible]	[illegible]	[illegible]
396.76	2.44E 02	5.97E 02	4.9
408.74	3.52E 02	4.68E 02	3.3
421.43	1.54E 01	4.46E 02	57.0
462.35	1.78E 03	7.65E 02	1.0
471.46	3.85E 01	3.80E 02	23.2
546.53	5.19E 02	5.59E 02	2.5
674.23	7.15E 01	4.52E 02	13.8
803.69	3.47E 01	3.12E 02	23.4
834.37	6.66E 02	4.17E 02	1.8
862.13	3.77E 01	2.35E 02	18.9
871.35	1.58E 02	3.36E 02	5.8
897.60	6.76E 02	4.27E 02	1.8
985.99	8.30E 01	3.63E 02	10.8
1009.39	8.15E 02	4.65E 02	1.6
1031.90	5.15E 01	2.59E 02	14.6
1039.89	1.89E 01	2.01E 02	34.3
1141.68	4.26E 01	1.70E 02	14.5
1147.42	2.44E 01	1.68E 02	24.6
1175.16	8.78E 01	3.41E 02	10.0
1179.99	4.77E 01	2.71E 02	16.1
1195.38	2.90E 01	2.90E 02	26.9
1249.26	7.14E 01	3.10E 02	11.6
1325.16	2.19E 01	1.67E 02	27.3
1343.91	1.70E 01	1.71E 02	35.3
1369.60	1.55E 02	2.01E 02	4.8
1382.65	2.44E 01	2.05E 02	27.0
1435.91	1.54E 03	3.35E 02	1.0
1445.92	1.72E 01	1.80E 02	35.7
1518.86	6.17E 01	1.54E 02	9.9
1530.37	3.42E 02	3.26E 02	2.9
1685.81	2.72E 01	1.28E 02	19.6
1741.55	3.57E 01	1.86E 02	17.8
1769.31	6.17E 01	1.40E 02	9.5
1836.93	5.43E 02	2.31E 02	1.8
1882.04	7.28E 01	1.58E 02	8.6
2006.04	1.74E 01	1.11E 02	28.1
2015.53	7.87E 01	1.53E 02	7.9
2031.50	9.90E 01	1.29E 02	6.0
2037.30	7.26E 01	1.93E 02	7.5

TOTAL SPECTRUM COUNTS = 2517186.

> R PRINT

ENTER DATA SOURCE AND LOCATIONS: # DATA.GELI3,50,200

50:	6274.	6229.	6224.	6150.	6301.	6144.
56:	6169.	6141.	6133.	6092.	6131.	6151.
62:	6090.	6331.	6344.	6243.	6226.	6375.
68:	6372.	6296.	6490.	6360.	6431.	6783.
74:	6955.	7385.	7961.	8151.	9039.	9967.
80:	11357.	17734.	67363.	12648.	5252.	5182.
86:	5241.	5314.	5285.	5233.	5377.	5487.
92:	5426.	5448.	5518.	5565.	5752.	5735.
98:	5877.	5998.	5892.	5949.	6040.	5841.
104:	6090.	6004.	6078.	5987.	6171.	6375.
110:	6312.	6247.	6402.	6517.	6530.	6588.
116:	6525.	6602.	6711.	6655.	6569.	6528.
122:	6427.	6641.	6088.	6274.	6166.	6227.
128:	6317.	6460.	6360.	6159.	6158.	5959.
134:	5988.	6125.	6107.	6077.	7175.	6809.
140:	5781.	5570.	5672.	5631.	5876.	5970.
146:	6383.	6729.	7207.	8228.	10565.	36173.
152:	44166.	5118.	6141.	4929.	4395.	4486.
158:	4957.	5184.	4397.	4391.	4447.	4473.

1850170810

167:	4010.	3771.	3760.	3781.	4010.	3771.
170:	3972.	4045.	3922.	3986.	3982.	3900.
176:	3945.	3994.	3939.	3947.	3878.	3843.
182:	3858.	3878.	3926.	3736.	3934.	4031.
188:	3982.	4159.	4349.	4663.	5452.	5467.
194:	6517.	8792.	36143.	20098.	3577.	3534.

1850170810

> RUN@AUTO.BSFBAS

?ERR 1 INTEGER OVERFLOW

IN ROUTINE ".MAIN." LINE 63

> SCHED 0+0,0.AUTO.PRINT3
> R SKIP

1850128040

DATA SHEET ST 7.6.1.j-3

NET ACTIVITY (3 ROOF VENT)

ACTIVITY RELEASED (3 ROOF VENT)

Date	Time Start / Time Stop		Gross cpm	− Bkgd cpm	= Net cpm	X Press. Correc	= Net Corrected cpm	Ave Stack Flow Rate CFM	µCi/Sec	X Sec Duration	= µCi Released
3-25	0900	A	300	196	104	1.20	125				
3-26	0900	B	210	147	63	1.15	72	2.1E5	15.5	2.4E4	1.34E6
3-26	0900	A	200	196	4	1.21	4.8				
	0930	B	153	147	6	1.17	7	2.1E5	.84	1.9E3	1.5E3
3-26	0930	A	405	196	209	1.21	253				
3-26	1130	B	337	147	190	1.16	216	2.1E5	32	7.2E3	2.30E5
3-26	1130	A	200	196	4	1.21	4.8				
3-27	0900	B	153	147	6	1.17	7	2.1E5	.84	7.9E3	6.50E6
3-27	0900	A	260	196	64	1.21	77				
3-28	0900	B	150	147	3	1.17	4	2065	3.5	7.6E4	7.3E5
3-28	0900	A	260	196	64	1.21	77				
3-28	0900	B	150	147	3	1.17	4	1.8E5	8.6	3.2E4	2.7E5
3-29	1200	A	282	196	86	1.21	104				
X1	0900	B	224	147	77	1.17	90	1.8E5	12	5.4E4	6.48E5
3-1	0900	A	300	196	104	1.20	125				
	1130	B	270	147	123	1.16	143	1.8E5	24	9000	2.16E5
3-1	1130	A	690	196	494	1.20	593				
	1240	B	535	147	388	1.16	450	1.8E5	68	4200	2.86E5
3-1	1240	A	2893	196	2697	1.20	3179				
	1530	B	2268	147	2121	1.16	2460	1.8E5	380	1.02E4	3.88E6
3-1	1530	A	233	196	38	1.20	46				
3-2	0680	B	197	147	50	1.16	58	1.8E5	6	5.52E4	3.31E5
3-2	0680	A	412	196	216	1.20	253				
	0815	B	294	147	147	1.16	171	1.8E5	28	5100	1.43E5
3-2	0815	A	239	196	38	1.20	46				
	1400	B	197	147	50	1.16	58	1.8E5	6	2.07E4	1.24E5
3-2	1400	A	320	196	124	1.20	149				
	2330	B	220	147	73	1.16	85	1.8E5	16	3.92E4	5.47E5
3-2	2330	A	341	196	145	1.20	174				
3-3	0900	B	297	147	150	1.16	174	1.35E5	19	3.92E4	6.50E5
3-3	0900	A	458	−196	262	1.21	307				
3-4	1630	B	300	182	118	1.17	138	.9E5	34	2.7E4	9.18E5

TOTAL ^uCi 1.039E7

uCi x 1E6 = Ci TOTAL ^Ci 10.39

FOIA-87-228
E13

DATA SHEET ST 7.6.1.3-4

MAIN STACK

DATE 2-26-85 / 2-26-85

TIME 1630 / 1800

5 CPS (Rec. @ Peak-Max.) - 4 CPS (BKGD. @ Peak-Max.) = 1 CPS (NET CPS) x 11.5 (P.C.) (Press. Corr.) = 12 CPS (Net Corr.)

2954 CPM (Flow Rate @ Peak Max.) 25 µCi/sec. (QS) (From Conv. Graph)

UNIT TWO ROOF VENT

800 CPM (Rec. @ Peak-Max.) - 170 CPM (BKGD. @ Peak-Max.) = 630 CPM (NET CPM) x 1.32 (P.C.) (Press. Corr.) = 832 CPM (Net Corr.)

1955 CPM (Flow Rate @ Peak Max.) 110 µCi/sec. (QV2) (From Conv. Graph)

UNIT THREE ROOF VENT

153 CPM (Rec. @ Peak-Max.) - 147 CPM (BKGD. @ Peak-Max.) = 6 CPM (NET CPM) x 1.17 (P.C.) (Press. Corr.) = 7 CPM (Net Corr.)

2165 CPM (Flow Rate @ Peak Max.) .24 µCi/sec. (QV3) (From Conv. Graph)

Total Body

100 x (QS x 9.4497 + (QV2 + QV3) x 1.5765) = 0.12 % Tech. Spec.

Skin

100 x (QS x 5.3897 + (QV2 + QV3) x 2.9365) = 0.04 % Tech. Spec.

FOIA-87-228
E/4

DATA SHEET ST 7.6.1.1-4

MAIN STACK

DATE 2-1-85 / 2-1-85

TIME 1240 / 1520

220 CPS (Rec. @ Peak-Max.) − 4 CPS (ENGD. @ Peak-Max.) = 216 CPS (NET CPS) × 1.2 (P.C.) = 231 CPS (Net Corr.)

2254 CFM (Flow Rate @ Peak Max.); ≈4,000 µCi/sec. (QS) (From Conv. Graph)

UNIT TWO ROOF VENT

410 CPM (Rec. @ Peak-Max.) − 170 CPM (ENGD. @ Peak-Max.) = 240 CPM (NET CPM) × 1.31 (P.C.) = 314 CPM (Net Corr.)

3025 CFM (Flow Rate @ Peak Max.); 61 µCi/sec. (QV2) (From Conv. Graph)

UNIT THREE ROOF VENT

5000 CPM (Rec. @ Peak-Max.) − 196 CPM (ENGD. @ Peak-Max.) = 4804 CPM (NET CPM) × 1.29 (P.C.) = 6195 CPM (Net Corr.)

1845 CFM (Flow Rate @ Peak Max.); 720 µCi/sec. (QV3) (From Conv. Graph)

Total Body

100 × (QS × 9.4487 + (QV2 + QV3) × 1.5785) = 3.49 @ Tech. Spec.

Skin

100 × (QS × 5.3887 + (QV2 + QV3) × 2.9386) = 1.52 @ Tech. Spec.

THE USE OF BETA / GAMMA RATIOS IN MAINTAINING BETA EXPOSURE ALARA

by: J. Brian Adams
Engineer - Health Physics Technical Support
Peach Bottom Atomic Power Station
Philadelphia Electric Company

During maintenance work at an operating nuclear power plant, exposure from beta particles is a problem that must be addressed. Many jobs, especially those within secondary containment, entail high beta exposures while the exposure from gamma radiation may not be as critical. This can be the case in much of the work involving recirculation piping and the associated valves. Beta dose rates in these jobs can be in the area of Rads/hr beta, while the gamma dose rates may be below one hundred mRem/hr.

The first method to control beta exposure would be to calibrate alarming digital dosimeters to record beta exposure. Attempting this can become futile, because of the digital dosimeters inherant insensitivity to beta particles. A study that I performed in January, 1984 showed that the average beta energy for solid contamination at Peach Bottom to be 280 keV, or approximately 300 keV. According to the Radiological Health Handbook, the maximum penetration for a 300 keV beta particle in steel is 0.0038 inches, much less than the 0.03 inch thickness of the case of a digital dosimeter. The idea of detecting the beta particles that penetrate the shell of the dosimeter also assumes that the dosimeter is equipped with a Geiger-Mueller tube. Some of the newer alarming digital dosimeters are using CdTe detector tubes, which do not respond to beta radiation. Because of these problems, a different method of measuring a person's beta exposure must be used.

Another method that can be used consists of developing a beta / gamma ratio for the area that a person would be receiving the beta exposure. This idea entails comparing the beta dose rates in the work area to the gamma dose rates, and setting the alarming digital dosimeter for the gamma exposure that would give the individual his maximum beta exposure.

For example: an individual is working on a valve in secondary containment. The gamma dose rate in the area is 100 mRem/hr, and the beta dose rate is 1 Rad/hr. This individual could receive a gamma exposure of 300 mRem, and still stay within the limits set for his daily whole body exposure. The problem occurs in that in the three hours required for him to receive the

300 mRem, he would have also received 3 rad beta exposure. If his beta exposure limit were set at 600 mRad beta, he would have exceeded his exposure limit by a factor of five. Instead, the worker's digital dosimeter would be set to alarm at 50 mRem instead of 300 mRem. This would allow him to work in the area for 1/2 hour, at which time the digital dosimeter would alarm: the worker would exit the area, and he would have received only 500 mRad beta. By doing this the worker would exit the area before any of his exposure limits had been exceeded.

This beta / gamma ratio would be a simple calculation for the health physics technician responsible for keeping radiation exposures on entries within limits. After consulting the most recent radiation survey for the work area, he would calculate a ratio of the worker's beta exposure limit to the beta dose rate. This ratio, multiplied by the gamma dose rate would yield the gamma exposure that would be set on the alarming digital dosimeter. Quantitativly, this calculation is as follows:

DOSIMETER SET POINT (mR) = (BEL / BD) * GD

where:

BEL = BETA EXPOSURE LIMIT (mRad)
BD = BETA DOSE RATE (mRad/hr)
GD = GAMMA DOSE RATE (mR/hr)

By using this equation, the technician in charge would be able to calculate the neccessary gamma exposure set point.

Calculating the beta / gamma ratio for work would not be neccessary for every entry. 10 CFR 20.101 allows for exposure to the skin of 7 1/2 Rem / Quarter. This limit is a factor of six higher than the whole body limit of 1 1/4 Rem / Quarter. Subtracting the whole body limit from the skin limit, in order to be conservative, still allows a beta / gamma factor of five. Therefore, before calculating a beta / gamma ratio is considered, the beta dose rate would have to exceed the gamma dose rate by a factor of five. If this were not the case, the exposure from the gamma radiation would control, and limits based on that dose rate would be used. Because of this, if an individual's whole body exposure limit is set at 300 mRem /day, his beta exposure limit should be 1500 mRad / day. If the work area would give a beta exposure of 1500 mRad, but a whole body exposure of less than 300 mRem, the beta / gamma ratio should be used. A similar methodology would be used if worked was being performed on a dose extension.

Following this idea of calculating beta / gamma ratios for radiation work will help to maintain beta exposure, in addition to gamma exposure, ALARA.

REFERENCES

Radiological Health Handbook. US Department of Health, Education, and Welfare. (1970)

Code of Federal Regulations, Title 10, part 20.101 (1983)

RHH p140

lane surface β $\frac{2.25 \times 10^{-2}}{6 \times 10^{-4}}$ = 37.5 R.F for 0.3 Mev β

6"

(37.5) (6 $\frac{\text{skin } \beta}{\gamma}$) = 225.0

γ (225) = β exposure rate

surface-contact

300 m/day (225) = 67,500 mrad/day

= 67.5 rads/day @ surface

> 30 mrads/ft² = rainsuit & fresh air

HPO/CO-5 - coverall with rainsuit = 0.3 reduction

67.5 rads/day × 3.3

≈ 200 rads/day exposure

or for 4 hour work day

≈ 50 rads/~~day~~ hour measured at contact-surface

= 1.8 rads/day exposure

SINK IN RAD WASTE PERSONAL DECON
O.O.S. DRAIN TRAP BROKE
HIS SCANNED OK TO USE UAC IN CONTROL.

[D. WEBB] SICK
[CUTTING] SICK

1830 - [Bill Schlegel] informs me that [T. Parkinson] broke up records, comp. job due to open wounds, rt ankle. [Parkinson] told maint mach. that he would be until at least 1900. [Parkinson] then called me to ask me examine his wound to determine if he could work. I informed [Parkinson] that I am not medical, and would not examine his wound. I informed [J. Chrostowski] and [A. Bayard] of the situation. In the mean time I asked [Kevin Carney] to cover the job, he refused because he didn't want to cover [Parkinson's] job. [Dave Thompson] was then assigned to the job. By this time [Tom Parkinson] decided he would cover the job. [A. Bayard & J. Chrostowski] all aware of the whole situation.

[Mark Frey]

FOIA-87-228
E/6

1-3-85
TO

2/28/85 "Y" SHIFT CONT

CONT → TUNNEL WITH WET BOOTS / SHOES. DRIED THEM AS MUCH AS POSSIBLE AND FRISKED THEM <100 CPM [CW]

2315 ALL WORKERS OUT PULLED A/S. TURNED IN RWP'S [CB]

3-1-85 X SHIFT

0700 [R Casler] HERE. ALL CAT WORKERS PRESENT.

0730 GIFFORD HERE NOW. CATS STARTING TO SHOW.

0800 CAT'S START ENTERING WORK AREA. WORK TODAY INCLUDES CLEANUP & PIPE HANGERS

→ 0810 A/S STARTED @ COL #27

0815 HP OFFICE INFORMS THAT RX3 IS @ 22% POWER THIS TIME. HP'S TO MONITOR AREA & POST ACCORD.

0830 4" S.S. pipe is again posted Hi-Rad Area. Cat laborers are here for Gen. Clean up. As per [Art Beward] the coal from shed is now rad-waste it will be drumed befor moving

"NOTE" Area reposted "radiation area" at this time (sump pipe)

0900 GREEN TAGGED (32) COAL DRUMS

→ 0915 START A/S @ COL # 4. PLACED [illegible] # 43-80 @ SOUTH UNDER TUNNEL

0930 HP OUT. ALL ATB [illegible] [illegible]

BEC HAS A WORKER ASSIGNED TO CLEAN UP & KEEP THE WATER [illegible] [illegible] [illegible] [illegible] ALL SHIFT.

1100 Green Tagged (32) Coal drums

1115 HP [illegible] to escort (2) T.E.'s into U/S off gas pipe tunnel. Saftey man is also going in.

[illegible] Hi-Vol pulled at [illegible] was very Hi 9 N'8 short lived

FOIA-87-228
E/7

1340 HP Rad A/S @ CP & 1/5 U/2 OGPT.
1345 All personnel out of tunnel
→ U/3 SCRAM.

3/1/85 "4" Shift P. Walter

1530 Relieved T/O Relieved Log. No workers in at this time A/S running [illegible].
→ 1600 Changed out A/S at Col #4 and Col #27 [illegible]
1610 Moved trash + P.C. barrels out of OGPT and onto undress pad o/s OGPT [illegible].
1630 Dose rated + tagged bags of P.C.s + trash that were ~~out~~ checkpoint when I arrived [illegible]
1630 CAT workers show up. They informed me that they were going to be working on the hangers at the south end of U/2 OGPT, and would be bringing out scrap pipe and materials. [illegible]
1645 Tagged bags with fickers on TD-3 116'el. [illegible]
1700 CAT workers bringing material off sup. Some cleared at <100 cpm smearable + No fixed. Rest was bagged as rad waste and tagged. [illegible]
1705 [illegible] called down and said he was tracking the ~~[illegible]~~ airborne from the U/3 Scrm. He asked me to pull two Hi vols [illegible]
1720 Pulled Hi Vol right o/s door to U/3 OGPT.
1730 Pulled Hi Vol at HP checkpoint. [illegible]
1800 Finished tagging material (from 1700) [illegible]
1900 Updated Δ's from Days shift [illegible]
1930 CAT workers coming out for lunch break [illegible]
2115 CAT workers coming back from lunch [illegible]
2200 Completed clean area survey - All smears <100 cpm/cm^2. [illegible]

cont. next pg

3/1/85 "Y" SHIFT CONT.

2230 CAT BRINGING OUT MORE MATERIAL. SHEARED SOME CLEAN. ~~TAGGED~~ DOSE RATED & TAGGED THE REST. [redacted]

2295 UPDATED MPC's FROM DAYSHIFT. LOGGED & FILED H/S RESULT SHEETS. [redacted]

→ 2300 ALL WORKERS OUT OF OGPT. DELEED H/S. [redacted]

2315 TURNED IN RWP.

2330 CAT WORKERS DID NOT MOVE BARRELS OF CHARCOAL THAT ARE OUTSIDE TB-3 116' N. ROLL UP DOOR. [redacted] (THEY ALSO DID NOT MOVE BAGGED-UP FILTERS FROM I/S ROLL UP DOOR ON 116' el.) [redacted]

0730 'X' shift 3-2-85 [Deneen] here no T/C received, reviewed log for last two shifts

0800 [J. Reid] called & said they plan to go in and wipe down piping a little later

0815 Found H/S from 'Y' shift in office logged & filed same

0830 ΔT's from 'Y' shift 3-1 being done

0850 [J. Hurney] [illegible] insp. [Deneen] in to start H/S & insp.

0900 [Hanley] out H/S started @ N end & col #2

0905 [Deneen] out

0940 3 const. workers in to inspect welds

1000 Clean Area survey done all dose rates < 2 mR/hr and all smears < 100 cpm/ft² with Masslin

1120 Const. out of area will be back after lunch.

1330 Const. in to [illegible] for more insp ections.

1850160840

AIR ANALYSIS DATA SHEET
PEACH BOTTOM STATION

UNIT 2 ☐ 3 ☑

MOD. NO.

WORK LOCATION TB 3 165' @ Control Rm. door

PWP NUMBER N/A

WORK CONDITIONS post unit screen air check

COUNTING DATE

SAMPLE COLLECTION

	DATE	TIME	FLOW RATE SCFM
OFF	3/	1245	21.0
ON	/1	1240	

TYPE - (HI VOL) LOW VOL LABEL (CIRCLE ONE)

SERIAL NO. S-B3

MEDIUM - (PARTICULATE) CHARCOAL
(CIRCLE MEDIUM USED)

TECHNICIAN UNKN

SAMPLE DURATION 6 MIN. × AVG. FLOW RATE 126 CFM = SAMPLE VOLUME 126 FT³

(BETA) ALPHA (CIRCLE ONE)

TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING	5 MIN.	
COUNTING EQUIPMENT AND IDENTIFICATION NUMBER	3	
GROSS COUNTS		
LENGTH OF COUNT (MIN.)	1	
GROSS CPM	52351	
BACKGROUND CPM	70	
(1) NET CPM	52281	
(2) COUNTER EFF.	.625	
(3) VOLUME (FT^3)	126	
(4) ACTIVITY ($\mu C_i/cm^3$)	1.11 N8	

$$\frac{\text{(1) NET CPM}}{\text{(2) COUNTER EFF.} \times \text{(3) VOL. } (FT^3) \times 6.8 \times 10^{10}} = \text{(4)} \ \mu C_i/cm^3$$

FOIA-87-228
E/8

01-MAR-85 13:00:26

TB3 165' @ CONTROL ROOM DOOR

DOE 1800160840

LE DATE: 01-MAR-85 12:40:00
MPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
MPLE QUANTITY: 126.0000 UNITS: CU.FT.
MPLE GEOMETRY: MILLIMORE
FFICIENCY FILE NAME: EFF.MLF;1

ACQUIRE DATE: 01-MAR-85 12:23:48
PRESET TIME(LIVE): 300. SEC
ELAPSED REAL TIME: 301. SEC
ELAPSED LIVE TIME: 300. SEC

FWHM(1332) 2.043
SENSITIVITY: 0.000
SHAPE PARAMETER : 10.0 A
NEW ITERATIONS: 0.

ETECTOR: INTR-2
CALIB DATE: 15-FEB-85 06:46:56
KEV/CHNL: 0.9992610
OFFSET: 0.2561029 KEV

LIBRARY:NUCL.MLL
ENERGY TOLERANCE: 2.200 V
HALF LIFE RATIO. 8.00
ABUNDANCE LIMIT: 75.00%

RUN MB.REPORT

DENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
TC-99M	139.67	1.82E 01	3.92E 01	24.2	2.43E-06	3.07E-04
RB-88	898.22	1.93E 01	4.95E 00	12.5	1.71E-05	2.16E-03
	1836.07	1.44E 01	6.50E-01	12.3	1.43E-04	1.80E-02
CS-138	139.67	1.82E 01	3.92E 01	24.2	1.10E-04	1.39E-02
	228.41	1.08E 01	2.52E 01	32.4	1.07E-04	1.37E-02
	409.32	9.08E 00	1.43E 01	30.4	8.62E-05	1.08E-02
	463.00	6.08E 01	1.20E 01	6.8	9.10E-05	1.15E-02
	547.96	2.36E 01	7.13E 00	11.7	1.23E-04	1.55E-02
	1009.96	3.30E 01	3.13E 00	8.5	1.24E-04	1.56E-02
	1433.96	3.11E 01	3.90E 00	8.7	1.03E-04	1.30E-02
TE-132	228.41	1.08E 01	2.52E 01	32.4	2.52E-06	3.18E-04

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
671.95	8.67E 00	3.60E 00	30.-

SPECTRUM COUNTS - 10517.

RUN MB.MAC

NUCLIDE	UC/CC	MPC	% MPC
TC-99M	1.036E-10	1.00E-03	0.0
RB-86	5.854E-09	1.00E 13	0.0
CS-138	3.73ME-09	1.00E 13	0.0
TE-132	8.923E-11	1.00E-07	0.1

1850160840

TOTAL UC/CC = 8.986E-09
TOTAL MPC FRACTIONS (LESS IODINES) = 9.026E-04
TOTAL IODINE MPC FRACTIONS = 0.000E-01

STAY TIME, 2 MPC HRS., IN MASK = xxxxxxx HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., IN AIR = xxxxxxx HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., NO MASK = 2215.72 HRS.
MPC FACTOR (NO MASK) MPC HRS./HR. = 0.001

$SCHED 0+0,0,AUTO.MKINT2
ENDJOB,,T

$ STREAM COMPLETED

AIR ANALYSIS DATA SHEET
PLEASANTON
STATION

M-2? 902 1 AIR
DOCTYPE 000

UNIT 1 ☐ 2 ☐
MOD. NO.

WORK LOCATION T&3 165 o/s A RFPT
WORK CONDITIONS Airborne Cleanup

RWP NUMBER NA
COUNTING DATE

SAMPLE COLLECTION	DATE	TIME	FLOW RATE (CFM)
OFF	3-1	1213	28
ON		1230	

TYPE - HI VOL LOW VOL LABEL (CIRCLE ONE)
SERIAL NO.
MEDIUM - PARTICULATE CHARCOAL
(CIRCLE MEDIUM USED)
TECHNICIAN [illegible]

SAMPLE DURATION 5 MIN. × AVG. FLOW RATE 20 CFM = SAMPLE VOLUME FT³

		BETA	ALPHA (CIRCLE ONE)
	TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING		
	COUNTING EQUIPMENT AND IDENTIFICATION NUMBER		
	GROSS COUNTS		
	LENGTH OF COUNT (MIN.)		
	GROSS CPM		
	BACKGROUND CPM		
(1)	NET CPM		
(2)	COUNTER EFF.		
(3)	VOLUME (FT^3)		
(4)	ACTIVITY ($\mu Ci/cm^3$)		

$$\frac{\text{(1) NET CPM}}{\text{(2) COUNTER EFF.} \times \text{(3) VOL. } (FT^3) \times 6.0 \times 10^{10}} = \underline{\quad 48 \quad} \mu Ci/cm^3$$

FOIA-87-228
E/9

01-MAR-85 12:55:53

003 165' REPT "A" BAY

DOC 1850160840

LE DATE: 01-MAR-85 12:43:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 100.0000 UNITS: CU.FT.
SAMPLE GEOMETRY: MILLIPORE
EFFICIENCY FILE NAME: EFF.MLP...

ACQUIRE DATE: 01-MAR-85 12:49:13
PRESET TIME(LIVE): 300. SEC
ELAPSED REAL TIME: 301. SEC
ELAPSED LIVE TIME: 300. SEC

FWHM(1332) 2.302
SENSITIVITY: 0.000
SHAPE PARAMETER = 30.0 %
PEAK ITERATIONS: 0.

DETECTOR: GELI)
ENLIB DATE: 01-MAR-85 12:41:59
KEV/CHNL: 0.9965855
OFFSET: 1.3130399 KEV

LIBRARY: MULL HILL
ENERGY TOLERANCE: 2.200KV
HALF LIFE RATIO: 8.00
ABUNDANCE LIMIT: 75.00%

RUN MB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
TC-99M	138.35	5.18E 01	1.21E 02	14.8	9.244E-06	9.244E-04
RB-88	898.04	1.66E 02	4.00E 01	4.2	1.557E-03	1.557E-01
	1837.14	1.14E 02	9.80E 00	4.5	1.223E-03	1.223E-01
CS-138	138.35	5.18E 01	1.21E 02	14.8	3.363E-04	3.363E-02
	227.89	3.87E 01	1.11E 02	18.6	4.276E-04	4.276E-02
	408.98	5.55E 01	4.44E 01	9.7	5.864E-04	5.864E-02
	462.69	3.49E 02	5.98E 01	2.8	5.787E-04	5.787E-02
	546.83	1.13E 02	5.10E 01	5.8	6.443E-04	6.443E-02
	1089.77	1.75E 02	3.54E 01	4.0	7.192E-04	7.192E-02
	1436.28	3.13E 02	1.36E 01	2.6	7.153E-04	7.153E-02
TE-132	227.89	3.87E 01	1.11E 02	18.6	1.025E-05	1.025E-03

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
512.97	3.05E 01	8.32E 01	20.0
871.69	3.97E 01	2.75E 01	10.0

TOTAL SPECTRUM COUNTS = 60587.

RUN MB.MPC

NUCLIDE	UC/CC	MPC	% MPC
TC-99M	3.264E-10	1.00E-03	0.0
KR-88	3.498E-08	1.00E 13	0.0
CS-138	2.526E-08	1.00E 13	0.0
IE-132	3.619E-10	1.00E-07	0.4

18501-0240

TOTAL UC/CC = 8.092E-08
TOTAL MPC FRACTIONS (LESS IODINES) = 3.631E-03
TOTAL IODINE MPC FRACTIONS = 0.000E-01

STAY TIME, 2 MPC HRS., IN MASK = ******** HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., IN AIR = ******** HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

****

STAY TIME, 2 MPC HRS., NO MASK = 547.75 HRS.
MPC FACTOR (NO MASK) MPC HRS./HR. = 0.004

****

> SCHED 0+0,C,AUTO.MKINT1
> ENDJUB,,T

STREAM COMPLETED

1290160840

AIR ANALYSIS DATA SHEET
PEACHBOTTOM STATION

HI-219Q2 1/82
DOCTYPE 000

UNIT 2☐ 3☐
MOD. NO.

WORK LOCATION TB 116' COMMONS
WORK CONDITIONS UNIT 3 SCRAM

RWP NUMBER N/A
COUNTING DATE N/A

TYPE (HI VOL) LOW VOL LAPEL (CIRCLE ONE)
SERIAL NO. 7-83
MEDIUM (PARTICULATE) CHARCOAL
(CIRCLE MEDIUM USED)

TECHNICIAN Webb

SAMPLE COLLECTION	DATE	TIME	FLOW RATE (CFM)
OFF	3/11/86	1443	21.5
ON		1438	

SAMPLE DURATION		AVG. FLOW RATE		SAMPLE VOLUME
5 MIN.	x	21.5 CFM	=	107.5 FT³

		(BETA)	ALPHA (CIRCLE ONE)
	TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING	2 MIN	
	COUNTING EQUIPMENT AND IDENTIFICATION NUMBER	4	
	GROSS COUNTS	10701	
	LENGTH OF COUNT (MIN.)	1	
	GROSS CPM	10701	
	BACKGROUND CPM	62	
(1)	NET CPM	10639	
(2)	COUNTER EFF.	0.5006	
(3)	VOLUME (FT^3)	107.5	
(4)	ACTIVITY ($\mu Ci/cm^3$)	3.08E-9	

$$\frac{\text{(1) NET CPM}}{\text{COUNTER EFF. (2)} \times \text{VOL. } (FT^3) \text{ (3)} \times 6.2 \times 10^{10}} = \text{(4) } \mu Ci/cm^3$$

FOIA-87-228
E/10

01-MAR-85 16:03:49

TB 116' COMMONS

MEC 1.5016084

SAMPLE DATE: 01-MAR-85 14:43:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 107.000 UNITS: CU.FT.
SAMPLE GEOMETRY: MILLIPORE
EFFICIENCY FILE NAME: EFF.MLP

ACQUIRE DATE: 01-MAR-85 15:31:31
PRESET TIME(LIVE): 600. SEC
ELAPSED REAL TIME: 600. SEC
ELAPSED LIVE TIME: 600. SEC

* FWHM(1.33): 2.00
* SENSITIVITY: 1.00
* SHAPE PARAMETER: 81.0 %
* PEAK ITERATIONS: 5.

DETECTOR: GELI-A
CALIB DATE: 09-DEC-85 13:19:51
KEV/CHNL: 1.002/138
OFFSET: -1.169758 KEV
0. COEFF.: -1.39ZE-06 KEV/CHNZ

* LIBRARY: NULL.MLL
* ENERGY TOLERANCE: 2.00KV
* HALF LIFE RATIO: 5.00
* AREA UNCERTAINTY LIMIT: 25.00%

> RUN MB:REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/CMPL
RE-88	848.88	8.50E-01	1.60E 00	74.9	0.39VE-0_	*.0_==-0
	1836.36	1.40E 00	0.00E-01	20.7	1.01VE-04	*.*3VE-11

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR

NO UNIDENTIFIED PEAKS IN SPECTRUM

TAL SPECTRUM COUNTS = 875.

RUN MB.MAC

: SUMMARY REPORT:

NUCLIDE	UC/CC	MAC	% ERR

[redacted] MPC FRACTIONS (LESS IODINES) = 6.9[redacted]E-22
[redacted]TAL IODINE MPC FRACTIONS = 0.000E-01

[redacted]AY TIME, 2 MPC HRS., IN MASK = [redacted] HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

ST[redacted] TIME, 2 MPC HRS., IN AIR = [redacted] HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

[redacted]

STAY TIME, 2 MPC HRS., NO MASK = [redacted] HRS.
MPC FACTOR (NO MASK) MPC HRS./HR. = 0.000

> SCHED 0+0,0,AUTO.MKINT3
> ENDJUE,,T

JOB STREAM COMPLETED

18501608

1850160840

AIR ANALYSIS DATA SHEET
PEACH BOTTOM STATION

UNIT 2 ☐ 3 ☒

MOD. NO.

WORK LOCATION TB 3 116' Fuse Booth

WORK CONDITIONS Backup A's.

RWP NUMBER —

COUNTING DATE 3-1-85

SAMPLE COLLECTION

	DATE	TIME	FLOW RATE SCFM
OFF	3-1-85	1503	22.0
ON	3-1-85	1458	

TYPE (HI VOL) LOW VOL LABEL (CIRCLE ONE)

SERIAL NO. 18-83

MEDIUM – PARTICULATE CHARCOAL
(CIRCLE MEDIUM USED)

TECHNICIAN E. Webb

SAMPLE DURATION 5 MIN. × AVG. FLOW RATE 22 CFM = SAMPLE VOLUME 110 FT³

BETA (CIRCLE) ALPHA (CIRCLE ONE)

TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING	24m	
COUNTING EQUIPMENT AND IDENTIFICATION NUMBER	4	
GROSS COUNTS	7149	
LENGTH OF COUNT (MIN.)	1	
GROSS CPM	7149	
BACKGROUND CPM	62	
(1) NET CPM	7087	
(2) COUNTER EFF.	.536	
(3) VOLUME (FT^3)	110	
(4) ACTIVITY ($\mu Ci/cm^3$)		

$$\frac{(1)\ \text{NET CPM}}{(2)\ \text{COUNTER EFF.} \times (3)\ \text{VOL.}\ (FT^3) \times 6.8 \times 10^{10}} = \underline{\quad (4) \quad}\ \mu Ci/cm^3$$

FOIA-87-228

E/11

01-MAR-85 15:50:55

116' FRISKEN BUOY M

MEC

1850160840

LE DATE: 01-MAR-85 15:03:00
LE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY. 110.0000 UNITS. CU.FT.
SAMPLE GEOMETRY: MILLIMORE
EFFICIENCY FILE NAME: EFF.MLP3..

ACQUIRE DATE:	01-MAR-85 15:44:13	FWHM(1332)	2.206
PRESET TIME(LIVE):	300. SEC	SENSITIVITY:	5.0
ELAPSED REAL TIME:	300. SEC	SHAPE PARAMETER :	30.0 %
ELAPSED LIVE TIME:	300. SEC	MAX ITERATIONS.	8.

DETECTOR: GELI-3
CALIB DATE: 06-FEB-85 13:14:51
KEV/CHNL: 1.0027138
OFFSET: -1.1695758 KEV
2. COEFF. : -1.342E-06 KEV/CHN2

LIBRARY:NULL.MLL
ENERGY TOLERANCE. 1.2000 KEV
HALF LIFE RATIO: 5.00
ABUNDANCE LIMIT: 75.00%

RUN MB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CONCENTR. UC/UNIT	CORRECTED UC/SMPL
Ru-88	848.99	5.00E 00	0.00E-01	20.0	1.020E-04	1.672E-02
	1836.94	5.20E 00	0.00E-01	19.6	1.839E-04	1.023E-02

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR

NO UNIDENTIFIED PEAKS IN SPECTRUM

TOTAL SPECTRUM COUNTS = 981.

RUN MB.MPC

MPC SUMMARY REPORT:

NUCLIDE	UC/CC	MPC	% MPC

[illegible] MPC FRACTIONS (LEAD SHIELDED) = 0.7778E-22
[illegible] IODINE MPC FRACTIONS = 0.888E-01

16501608

STAY TIME, 2 MPC HRS., IN MASK = XXXXXXXX HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., IN AIR = XXXXXXXX HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., NO MASK = XXXXXXXX HRS.
MPC FACTOR (NO MASK) MPC HRS./HR. = 0.000

> SUMED 0,0,0,AUTO.MKINT3
> ENDJOB,,T

JOB STREAM COMPLETED

1

1850160840

M-2190 1/82
DOCTYPE 600

AIR ANALYSIS DATA SHEET
PLASSNETTOR STATION

UNIT ;☐ ;☐
MOD. NO.

WORK LOCATION TR 3116' A/O Shack
WORK CONDITIONS A/C Check

RWP NUMBER

COUNTING DATE 3/4/87

TYPE (HI VOL) LOW VOL (CIRCLE ONE)
SERIAL NO. 2-80
MEDIUM (PARTICULATE) CHARCOAL
(CIRCLE MEDIUM USED)
TECHNICIAN [signature]

SAMPLE COLLECTION	DATE	TIME	FLOW RATE (CFM)
OFF	3/	1412	
ON	/1	1407	

SAMPLE DURATION (MIN.) = AVG. FLOW RATE 20 (CFM) = SAMPLE VOLUME (FT³)

	BETA	ALPHA (CIRCLE ONE)
TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING		
COUNTING EQUIPMENT AND IDENTIFICATION NUMBER		
GROSS COUNTS		
LENGTH OF COUNT (MIN.)		
GROSS CPM		
BACKGROUND CPM		
(1) NET CPM		
(2) COUNTER EFF.		
(3) VOLUME (FT^3)	100	
(4) ACTIVITY ($\mu Ci/cm^3$)		

$$\frac{\text{(1) NET CPM}}{\text{(2) COUNTER EFF.} \times \text{(3) VOL. } (FT^3) \times 6.8 \times 10^9} = \text{(4)} \quad \mu Ci/cm^3$$

FOIA-87-228

E/12

01-MAR-85 14:34:28

18:0160840

TM 3 116' W/O SHACK

SAMPLE DATE: 01-MAR-85 14:12:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 100.0000 UNITS: C.F.I.
SAMPLE GEOMETRY: MILLIMORE
EFFICIENCY FILE NAME: EFF.MLP1..

ACQUIRE DATE: 01-MAR-85 14:27:50
PRESET TIME(LIVE): 300. SEC
ELAPSED REAL TIME: 305. SEC
ELAPSED LIVE TIME: 300. SEC

FWHM(1332): 2.302
SENSITIVITY: 7.000
SHAPE PARAMETER: 0.6
MAX ITERATIONS: 8.

DETECTOR: GELI 1
CALIB DATE: 01-MAR-85 12:41:59
KEV/CHNL: 0.9963855
OFFSET: -1.3130399 KEV

LIBRARY:NUCL.OLB
ENERGY TOLERANCE: 2.000KV
HALF LIFE RATIO: 8.00
ABUNDANCE LIMIT: 75.00%

> RUN ME.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
RB-88	847.94	1.34E 03	1.33E 02	1.3	1.63?E-02	1.635E 00
	1837.28	1.07E 03	5.28E 01	1.4	1.67?E-02	1.676E 00
SR-92	1383.05	4.96E 01	6.20E 01	13.0	7.49?E-03	7.49?E-03
CS-138	409.22	2.88E 01	2.09E 02	32.8	3.7?3E-04	3.73E-02
	462.75	1.03E 02	1.89E 02	9.5	2.04?E-04	2.048E-02
	546.96	2.54E 01	1.63E 02	33.0	1.7??E-04	1.78?E-02
	1087.80	5.06E 01	7.52E 01	12.5	2.55?E-04	2.55?E-02
	1436.50	9.68E 01	1.31E 02	8.8	2.7?9E-04	2.71?E-02

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
511.18	3.78E 01	1.99E 02	24.7
819.18	4.30E 01	9.24E 01	25.
1325.23	5.43E 01	8.88E 01	22.3
1781.15	1.33E 01	2.70E 01	27.

TOTAL SPECTRUM COUNTS - 176240.

> RUN MB.MAC

NUCLIDE	UC/CC	MPC	% MPC
RB-88	6.481E-07	1.00E 13	0.0
KR-92	2.646E-04	3.00E-07	0.9
CS-138	9.602E-09	1.00E 13	0.0

1850160040

TOTAL UC/CC = 6.604E-07

TOTAL MPC FRACTIONS (LESS IODINES) - 8.821E-03
TOTAL IODINE MPC FRACTIONS - 0.000E-01

STAY TIME, 2 MPC HRS., IN MASK - ******** HRS.
MPC FACTOR (MASK), MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., IN AIR = ******** HRS.
MPC FACTOR (AIR) MPC HRS./HR. - 0.000

STAY TIME, 2 MPC HRS., IN MASK = 226.73 HRS.
MPC FACTOR (IN MASK) MPC HRS./HR. - 0.009

$SCHED 0+0,0,AUTO.MKINT1
$ENDJOB,,1

JOB STREAM COMPLETED

1850160240

AIR ANALYSIS DATA SHEET
PEACH BOTTOM STATION

UNIT 2 ☒ 3 ☐

PROD. NO. 967

WORK LOCATION: North end of TB3 116'El near roll up door

RWP NUMBER: N/A

WORK CONDITIONS: exterior s/s off gas tunnel

COUNTING DATE:

TYPE: (HI VOL) LOW VOL LABEL (CIRCLE ONE)

SERIAL NO. 4-84

MEDIUM – (PARTICULATE) CHARCOAL
(CIRCLE MEDIUM USED)

SAMPLE COLLECTION	DATE	TIME	FLOW RATE SCFM
OFF	3/1	1222	22
ON	3/1	1217	22

TECHNICIAN: H Fuchs

SAMPLE DURATION: 5 MIN. × AVG. FLOW RATE: 22 CFM = SAMPLE VOLUME: 110 FT³

		(BETA) ALPHA (CIRCLE ONE)
TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING		
COUNTING EQUIPMENT AND IDENTIFICATION NUMBER		
GROSS COUNTS	12074	
LENGTH OF COUNT (MIN.)	2	
GROSS CPM	6037	
BACKGROUND CPM	62	
(1) NET CPM	5975	
(2) COUNTER EFF.	.536	
(3) VOLUME (FT^3)	110	
(4) ACTIVITY ($\mu Ci/cm^3$)	1.6N9	

$$\frac{(1)\ \text{NET CPM}}{\text{COUNTER EFF. (2)} \times \text{VOL. } (FT^3)\ (3) \times 6.1 \times 10^{6}} = (4)\ \mu Ci/cm^3$$

FOIA-87-228

E/13

01-MAR-85 13:05:06 1850160840

03 116 MEAK ROLL UP DOOR DUC

LE DATE: 01-MAK-85 12:22:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE. HIGH VOLUME
SAMPLE QUANTITY. 110.0000 UNITS. CU.FT.
SAMPLE GEOMETRY: MILLIMUKE
EFFICIENCY FILE NAME. EFF.MLF;;

COUNT DATE:	01-MAK-85 12:58:37	FWHM(1332)	2.302
PRESET TIME(LIVE):	300. SEC	SENSITIVITY:	5.000
ELAPSED REAL TIME.	300. SEC	SHAPE PARAMETER :	30.0 %
ELAPSED LIVE TIME:	300. SEC	PEAK ITERATIONS:	8.

DETECTOR. GE() 1		LIBRARY:NUCL.MLL	
CALIB DATE:	01-MAK-85 12:41:59	ENERGY TOLERANCE:	2.200KV
KEV/CHAN:	0.9965855	HALF LIFE RATIO.	8.00
OFFSET.	1.3130399 KEV	ABUNDANCE LIMIT:	75.00%

> RUN MB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
CS-136	462.59	1.34E 01	8.00E-01	12.9	3.866E-05	4.275E-03
	547.62	3.62E 00	1.95E 00	33.9	3.628E-05	3.941E-03
	1008.92	3.60E 00	2.40E 00	36.0	2.569E-05	2.843E-03
	1436.26	7.90E 00	1.63E 00	19.0	3.151E-05	3.486E-03

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR

NO UNIDENTIFIED PEAKS IN SPECTRUM

TOTAL SPECTRUM COUNTS = 2312.

> RUN MB.MAC

SUMMARY REPORT:

TOTAL UC/CI = 1.372E-09
TOTAL MPC FRACTIONS (LESS IODINES) = 1.372E-22
TOTAL IODINE MPC FRACTIONS = 0.000E-01

1850160P10

STAY TIME, 2 MPC HRS., IN MASK = XXXXXXX HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., IN AIR = XXXXXXX HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., MU MASK = XXXXXXX HRS.
MPC FACTOR (MU MASK) MPC HRS./HR. = 0.000

> SCHED 0+0,0,AUTO.PRINT
> ENDJOB,,T

JOB STREAM COMPLETED

(1)

M-71 (R2) 1/80
DOC TYPE 009

AIR ANALYSIS DATA SHEET
PEACH BOTTOM
STATION

UNIT 2 ☐ 3 ☐
WORK NO. 967

WORK LOCATION TB3 102' Control Point
REP NUMBER N/A
WORK CONDITIONS A/S 10 s.f.
COUNTING DATE

TYPE (HI VOL) LOW VOL (LABEL CIRCLE ONE)
SERIAL NO 2-81
MEDIUM - PARTICULATE CHARCOAL
(CIRCLE MEDIUM USED)

SAMPLE COLLECTION

	DATE	TIME	FLOW RATE (CFM)
OFF	3/1	1339	20
ON	3/1	1334	20

TECHNICIAN M. Fuchs

SAMPLE DURATION 5 MIN. × AVG. FLOW RATE .20 CFM = SAMPLE VOLUME 100 FT³

		BETA	ALPHA	(CIRCLE ONE)
	TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING			
	COUNTING EQUIPMENT AND IDENTIFICATION NUMBER			
	GROSS COUNTS			
	LENGTH OF COUNT (MIN.)			
	GROSS CPM			
	BACKGROUND CPM			
(1)	NET CPM			
(2)	COUNTER EFF.			
(3)	VOLUME (FT^3)	100		
(4)	ACTIVITY ($\mu C_i/cm^3$)			

$$\frac{(1)\ \text{NET CPM}}{(2)\ \text{COUNTER EFF.} \times (3)\ \text{VOL.}\ (FT^3) \times 6.0 \times 10^{10}} = (4)\ \mu C_i/cm^3$$

FOIA-87-228

E/14

01-MAR-85 14:26:15

TB3 102 C/P

1050160843

SAMPLE DATE: 01-MAR-85 13:34:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 100.0000 UNITS: CU.FT.
SAMPLE QUANTITY: MILLIMOLE
EFFICIENCY FILE NAME: EFF.MLE;1

ACQUIRE DATE: 01-MAR-85 14:18:40
PRESET TIME(LIVE): 300. SEC
ELAPSED REAL TIME: 305. SEC
ELAPSED LIVE TIME: 300. SEC

FWHM(133) 2.352
SENSITIVITY: 5.000
SHAPE PARAMETER: 30.0 4
MAX ITERATIONS: 8.

DETECTOR: GELI 1
CALIB DATE: 01-MAR-85 12:41:59
KEV/CHNL. 0.9963855
OFFSET. 1.3130399 KEV

LIBRARY.NUCL;1
ENERGY TOLERANCE: 2.200KV
HALF LIFE RATIO. 6.00
ACCUMULATE LIMIT: 75.00%

> RUN FB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTION UC/UNIT	CORRECTED UC/SMPL
TC-99M	138.23	5.54E 01	4.68E 02	25.4	1.05[illegible]	1.05[illegible]-01
RB-86	847.98	1.19E 03	1.68E 02	1.5	4.117E-02	4.117E-00
	1837.25	9.48E 02	5.10E 01	4.0	3.771E-00	3.771E 00
SR-92	1383.17	4.30E 01	6.52E 01	13.7	7.993E-03	7.993E-03
CS-138	138.23	5.54E 01	4.68E 02	25.4	7.403E-04	7.403E-02
	228.16	8.70E 01	4.60E 02	16.3	1.980E-03	1.980E-01
	408.89	6.43E 01	1.93E 02	13.0	1.398E-03	1.398E-01
	462.68	9.13E 02	1.02E 02	2.7	1.41[illegible]E-03	1.4[illegible]E-01
	546.86	1.26E 02	1.[illegible]8E 02	7.4	1.484E-03	1.484E-01
	1009.76	2.00E 02	1.37E 02	4.9	1.671E-03	1.671E-01
	1436.35	3.96E 02	1.10E 02	3.1	1.625E-03	1.625E-01
TE-132	228.16	8.70E 01	4.60E 02	16.3	2.31[illegible]E-[illegible]	2.316E-03

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
457.75	1.18E 01	4.07E 01	30.[illegible]
510.79	3.68E 01	1.92E 02	25.0
814.19	5.10E 01	1.22E 02	15.[illegible]
871.43	4.70E 01	[illegible]	[illegible]

SUMMARY REPORT:

NUCLIDE	UL/CL	MPC	% MPC
[illegible]	5.722E-10	1.00E-05	0.01
[illegible]	1.435E-06	1.00E-03	0.01
[illegible]	2.822E-09	3.00E-07	0.
[illegible]	4.588E-08	1.00E-03	0.01
[illegible]	8.280E-10	1.00E-07	0.01

TOTAL UL/CL = 1.511E-06
TOTAL MPC FRACTIONS (LESS IODINES) = 1.763E-02
TOTAL IODINE MPC FRACTIONS = 0.000E-01

STAY TIME= 2 MPC HRS.= IN MASK = 5673.74 HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

STAY TIME= 2 MPC HRS.= IN AIR = ******** HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

****
* *
* STAY TIME= 2 MPC HRS.= IN MASK = 113.47 HRS. *
* MPC FACTOR (IN MASK) MPC HRS./HR. = 0.018 *
* *
****

> SCHED 0+0:0 JOB [illegible]
> END/JOB;;

JOB STREAM COMPLETED

File / Allegation

On [illegible] 1985, with Unit 1 at 70%, the reactor operator noticed at 12:07 p.m. [illegible] of the scram was low main condenser vacuum resulting from the trip of the 1B mechanical recombiner compressor combined with a high main condenser inleakage from a missing leak-off plug on the A1 feedwater heater relief valve. (Reference: IR 277/85-08 and 278/85-08; and [illegible] dated August 1, 1985.)

The transient in the main condenser air ejector and off-gas system caused a release of radioactive gas into the Unit 1 off-gas holdup pipe tunnel, 100 foot elevation of the turbine building. The cause of this leak was from an increase in air ejector discharge pressure from the normal operating pressure of 1 psig to about 5 psig. This air ejector discharge pipe runs from the 116 foot level in the turbine building to the recombiner building. The air ejector discharge pipe run penetrates the off-gas holdup pipe tunnel (100 foot elevation). Within this air ejector discharge pipe run, located physically in the holdup pipe tunnel, is a moisture entrainment separator with a loop seal. The increase in air ejector discharge pressure (to about 5 psig) caused a loss of the loop seal and resulted in unprocessed air ejector off-gas to leak directly out into the holdup pipe tunnel.

The source of the leak was verified by the inspector by discussions with the licensee; in-plant walkdowns of equipment and pipe runs; and by reviewing the following documents:

(1) P&ID M-1, General Arrangement Plant 91'6"

(2) P&ID M-2, General Arrangement Plant 116' 0"

(3) P&ID M-310, Air Ejection & Off-Gas

(4) P&ID M-331, Off-Gas Recombiner System

(5) P&ID M-119, Piping and Mechanical Turbine Building Unit 1 Plan at El. 100' 0", Area 11

FOIA-87-228

E/15

(1)

March 1st I was told 2 T/E's would be down to go into Unit 3 off gas pipe tunnel for inspection.

I got the RWP & as I recall also signed out the Hi-Rad key also. I then called OTTO from Catalytic safty and asked him to go with us to safty check the air

At approx. 1115 myself, OTTO & 2 T/E's dressed out. We all check our meters & flash-lights, these where needed because all Elec. was turned off in the tunnel.

I set up an air sampler and unlocked the door. The dose rates at the door where no higher than I had expected and no Beta was present. I walk inside with OTTO The air was safe and dose rates didn't change much. The water in the tunnel was 5 or 6 inches deep, moving was slow.

We moved as Quickly as possible between safty walls because this is a Hi-Rad area.

Gen. area dose rates at the drain where 80-100 mr/hr Gama & No beta. The T/E's where talking. I was shining my light on my meter and it started to move up, I switched scales to the 5 R/hr scale and the T/E's they had to leave the tunnel right now due to an increase in dose rates. OTTO then looked at my meter and ask what the dose rate was. I told him it was now almost 5 R/hr and we had t

leave the area

I switched my meter to the 50 R/hr scale, the meter started down to between 5 & 10 R/hr I then opened the Beta window. My meter needle moved at a quick but steady rate till it went off scale. By this time the 2 T/E's where past the shield walls and OTTO was moving past the shield walls, I moved as quickly as possible, by the time I got out of the tunnel the 2 T/E's where out of the area on the clean side. I didn't see if OTTO had gone into U/2 tunnel or left so I went into U/2 tunnel after telling the T/E's to go to the 116' Elev.

I couldn't find OTTO so I went to 116' Elev. when I got near the frisker it began to alarm. I told the T/E's to go to the H.P. office because at that time I didn't know what they had gotten on them, I went to the control point to see if OTTO had signed out. I went to a frisker near the H.P. office it to alarmed as I got near it. I asked a passer by to get the Sr. H.P. at the desk to come out. Hoffmaster came out, I told him I was in the tunnel and explained. (I can't recall if I pulled the Hi-Vol before or after I went to the H.P. office.)

I went to the cage for postings & this time friskers where going off on 116' Elev.

I went to the north door and posted it airborn, no entry after doing so I went back to the H.P. and told Hoffmaster that I had posted the door and I felt I should post the front door until we knew what the extent of the air Cont. was. He told me that no one told me to post that door and to take the posting down until I was told to post it. It was at this time I asked if we should be body counted, his responce was that it was not needed.

I went to the North door and removed the posting. I went to post the stair way to the 102' I noticed that Bob Casler had returned from Lunch and was standing at the control point desk, I yelled to him to come up. After explaining to [Bob] he left to go frisk.

I pulled a Hi-Vol on the 116' Elev. near the North door and took it to the count room, I noticed that the workers where coming in from lunch. In the count room where several H.P. tech's, one was [Bob Casler], I asked what the frisker reading was on him, he told me he was 30,000 cpm at that time. I was asked what I had, I then turned on the frisker and it quickly went off scale.

Art Beward enterd the count room, I told him I was in the U/3 off gas tunnel and my meter went from 80-100 mr/hr Gama to almost 5 R/hr & went off scale on the 50 R/hr scale with the window open. I asked Art if someone should survey me. there where other questions being asked of Art at the same time. He told me he wanted me to try to explain to the worker what had happend & why they couldn't leave the power block. I went to the 116' Torus dressout area and tryed to calm down the crowd of workers that had formed. I told the workers that they should notify there supervision of what was happening.

I frisked and was still >50,000 cpm.

I called the office and asked what to do about my Harshaw badge and was told to just put it in the bucket it would get read. I am not shure who told me that but it was from the H.P. office

People could now leave the powerblock but couldn't leave the plant. The avarage worker was 5,000-10,000 cpm/direct frist.

I am not shure what time I left the power block but there apperd to be almost every body standing in the yard.

I sat down with some other Bartlett Tech's and told them what had happend, they said I should tell Dan Ipoleta and if he didn't do any thing to call the NRC. I had time to think and wrote some paperwork on the matter at this time I can't remember if it was an A-86 or a RCA form. Then I talked to Dan in the hallway and told him what had happend. Dan told me he would check into it and let me know.

After the weekend I was working with Bob Casler at the 102' off gas Control point when a man came down, He told us he was an operator. He asked what happend on the 1st of march, so I told him what had happend. He told Bob Casler and myself that the recombiner was bypassed and that all presure & Gas was dumped on the off gas holed up pipe until they realised that it could not hold the pressure. He told us that this happend on March 1st while we where in the tunnel, I dont Know who this man was!

I called Dan Ipoleta to the side and told him that I had calculated my exposure at almost 8 rem. and that it should be brought to the attencion of the N.R.C.. Dan told me he would get back with me on this matter

That morning Dan Ipoleta called me to the vendor Bldg. Hallway and told me that Peco did not want me to talk to any other tech's or anybody about this matter. I was also told at that time by Dan that Peco was going to have someone from Limerick come over and calculate my dose. I asked when this was going to takeplace, he told me he would let me know.

I asked Dan what was on my Harshaw, he didn't know. I wrote the names of the 2 T/E's, OTTO & myself on a piece of paper and went to dosimetry and asked what our Beta dose was for the 1st of March. I was told that we had ~~0~~ Beta dose. I was told that if a Hi-Beta reading came up it would probably be disregarded

After being told this, I went to the H.P. T/A office & asked Art Beward if anything was being done, he told me that they where going to pull our Eberline's and send them to be read.

Three weeks went by and still no word from Peco or Dan The Bartlett tech's I told about this matter said, I sould call the NRC. I told [Dan] that if I dont hear from Peco soon I was going to call the NRC. Dan told me he had also calculated my dose at 7.8 Rem whole body. (200 Rad for 2-3 min)

Aprox 2 months of I'll get with you from Peco & Bartlett went by.

I talked to a friend that came to Peach Bottom to work the Drywell, he told me I sould be conserned because u/3 had bad fuel.

The next day I talked to Dan again, he said he would go over and talk to Norb Gasda about the matter again

I received a call from Norb Gasda to come over after my shift. We talked about the whole matter from start to finish, as I told him what happend he wrote it all down. Then he asked me a lot of Questions and wrote them down also. After he was done asking me Questions he told me I had received a whole body emerstion dose. We both signed the paper he wrote

I went to Norb Gasda's off Approx one week ago (7/21/85) and asked about the paper we signed and he told me Mr Hilsmier had all of the paper work on this matter. He told me he was no longer involved to talk to Stew Nelson

NRMS

85-1-10

1050170820

Data Sheet HPO/CO-23
PHILADELPHIA ELECTRIC COMPANY
OFF-GAS SAMPLE FORM

UNIT 3 POWER LEVEL 2957 MWt DATE 3-4-85

%PWR. 89.8 978 MWe CAVEX 8311

	1	2	3
Vial Identification	OFFGAS		
Evacuated Vial ("Hg)	29.9		
Sample Vacuum ("Hg or PSI)	1.5		
Correction Factor (1)	1.053		
Sample Time	0921		
Well Count Time	0926		
Well Count	1.73E6		
Corrected Well Count	1.82E6		

Downstream Pressure ("Hg) 15" (Throttle Pressure)

Upstream Pressure ("Hg or PSI) 1.0 (SJAE Pressure)

Sample Flow (SCFH) 7.5

Hold-Up Pipe Flow (CFM) 23.6

Off-Gas Flow (CFM) 131.4 (120 x %Pwr. + H.U.P. Flow) 107.8

Main Stack Flow (CFM) 2.5E4

Off-Gas Monitor Reading (mr/hr) A) 120 B) 105

Main Stack Monitor Reading (CPS) A) 15 B) 16

Correction Factors (Off-Gas Mon.) A) 1.98 B) 2.26

Hold-Up Time in Days N/A

SUM of Pur Offgas 31,190 uCi/sec.

(1) (VAC) - Evacuated Vial ("Hg) = or (PRESS) - $\frac{14.7}{14.7}$ = $\frac{\text{Evacuated - Sample Vacuum ("Hg)}}{\text{Evacuated Vial ("Hg)}}$ + Vacuum (PSI)

FOIA-87-228
E/17

PEACH BOTTOM NUCLEAR POWER PLANT
RD#1, DELTA, PA., 17314

UNITS 2&3 OFFGAS CALCULATIONS

4 MAR 1985 11:06:53 AM

UNIT 3 OFFGAS SAMPLE

OFF-GAS FLOW (CFM) : 131.4
DECAY TIME (MIN): 0
PRESSURE CORRECTION FACTOR: 1.053

UC/ML KR-85M = 2.150E-02
UC/SEC = 1.334E 03
A/YL = 2.294E 09

UC/ML KR-87 = 5.657E-02
UC/SEC = 3.508E 03
A/YL = 9.753E 08

UC/ML KR-88 = 5.698E-02
UC/SEC = 3.534E 03
A/YL = 1.406E 09

UC/ML XE-133 = 1.112E-02
UC/SEC = 6.897E 02
A/YL = 6.697E 09

UC/ML XE-135 = 9.267E-02
UC/SEC = 5.748E 03
A/YL = 4.069E 09

UC/ML XE-138 = 2.640E-01
UC/SEC = 1.637E 04
A/YL = 3.225E 08

SUM OF SIX = 3.119E 04

NRMS

04-MAR-85 10:43:57

UNIT 3 OFFGAS SAMPLE

RWS 1850170820

SAMPLE DATE: 04-MAR-85 09:21:00
SAMPLE IDENTIFICATION: RX OFFGAS
TYPE OF SAMPLE: GASEOUS
SAMPLE QUANTITY: 14.40000 UNITS: CC'S
SAMPLE GEOMETRY: 14.4 ML VIAL
EFFICIENCY FILE NAME: EFF.SOG3,,

ACQUIRE DATE: 04-MAR-85 10:34:58
PRESET TIME(LIVE): 600. SEC
ELAPSED REAL TIME: 646. SEC
ELAPSED LIVE TIME: 600. SEC

FWHM(1332) 2.206
SENSITIVITY: 5.000
SHAPE PARAMETER : 30.0 %
NBR ITERATIONS: 8.

DETECTOR: GELI-3
CALIB DATE: 08-FEB-85 13:14:51
KEV/CHNL: 1.0027138
OFFSET: -1.1695758 KEV
Q. COEFF. : -1.342E-06 KEV/C**2

LIBRARY:NUCL.GAS
ENERGY TOLERANCE: 2.200KV
HALF LIFE RATIO: 8.00
ABUNDANCE LIMIT: 65.00%

> R PEAK

ENERGY WINDOW 48.96 TO 2046.76

PK	IT	ENERGY	AREA	BKGND	FWHM	CHANNEL	LEFT	FW	CTS/SEC	%ERR	FIT
1	0	81.31	27799.	45380.	1.78	82.26	77	9	4.63E 01	1.2	
2	0	129.79	570.	27898.	2.09	130.62	29	5	9.51E-01	41.6	
3	0	138.40	3085.	36257.	1.57	139.21	136	7	5.14E 00	8.9	
4	0	151.48	76102.	58377.	2.08	152.27	147	12	1.27E 02	0.6	
5	0	158.84	993.	23997.	1.77	159.61	158	6	1.65E 00	22.3	
6	0	166.24	9054.	30366.	1.38	167.00	163	8	1.51E 01	2.9	
7	4	192.72	2146.	7938.	1.96	193.41	192	11	3.58E 00	6.3	5.65E 02
8	4	196.80	53209.	17956.	1.70	197.49	192	11	8.87E 01	0.6	
9	0	228.13	1909.	22635.	1.30	228.74	226	7	3.18E 00	11.4	
10	0	250.00	293653.	50070.	1.38	250.57	245	13	4.89E 02	0.7	
11	0	258.83	6256.	11463.	2.07	259.39	257	7	1.04E 01	2.7	
12	0	305.28	7117.	12173.	1.38	305.75	301	10	1.19E 01	2.5	
13	0	335.07	303.	6134.	2.18	335.48	334	6	5.04E-01	37.0	
14	3	359.00	681.	3764.	2.12	359.37	357	13	1.14E 00	13.3	5.18E 00
15	3	362.79	2541.	4633.	1.61	363.15	357	13	4.24E 00	4.3	
16	5	391.02	874.	5110.	2.12	391.34	386	27	1.46E 00	12.1	1.24E 02
17	5	397.50	2646.	8079.	3.45	397.80	386	27	4.41E 00	5.2	
18	5	403.14	33320.	3867.	1.77	403.43	386	27	5.55E 01	0.6	
19	5	409.39	3940.	4397.	1.88	409.67	386	27	6.57E 00	2.9	
20	0	422.01	196.	4323.	1.37	422.27	420	6	3.27E-01	48.0	
21	0	434.83	2466.	6156.	2.06	435.08	431	9	4.11E 00	4.9	
22	0	463.07	20382.	9436.	2.02	463.27	457	14	3.40E 01	1.0	
23	0	472.17	556.	3438.	2.04	472.35	470	6	9.27E-01	15.5	
24	0	511.49	1331.	5680.	2.80	511.63	507	10	2.22E 00	8.5	
25	0	526.98	6466.	6163.	2.03	527.09	521	11	1.08E 01	2.1	
26	0	547.39	5777.	6372.	1.89	547.48	541	12	9.63E 00	2.4	
27	0	608.67	3224.	5360.	1.60	608.68	604	10	5.37E 00	3.7	
28	0	675.05	914.	4401.	2.20	675.00	671	9	1.52E 00	10.8	

NRMS

29	0	789.27	294.	2314.	2.41	788.43	782	8	9.23E-01	20.0	
30	0	815.08	479.	3321.	2.38	814.93	811	9	7.98E-01	17.6	
31	0	835.59	6080.	4117.	2.19	835.43	830	11	1.01E 01	2.0	
32	0	846.03	2531.	3573.	2.02	845.07	843	10	4.22E 00	3.9	
33	0	862.53	265.	2690.	1.30	862.36	859	8	4.41E-01	28.4	
34	0	872.46	1888.	3945.	2.22	872.28	867	12	3.15E 00	5.2	
35	0	898.63	6719.	3575.	1.98	898.45	894	11	1.12E 01	1.8	
36	0	986.15	528.	2781.	2.55	985.95	981	9	8.79E-01	14.8	
37	0	1010.46	9606.	4446.	2.36	1010.26	1004	13	1.60E 01	1.4	
38	0	1033.03	402.	2718.	2.19	1032.83	1028	9	6.70E-01	19.0	
39	0	1040.65	190.	2292.	2.19	1040.45	1037	8	3.17E-01	36.4	
40	6	1142.60	533.	2283.	2.46	1142.42	1139	13	8.89E-01	13.4	1.14E 00
41	6	1148.22	274.	2062.	2.09	1148.04	1139	13	4.56E-01	24.3	
42	0	1177.09	720.	4683.	6.89	1176.92	1171	13	1.20E 00	13.9	
43	0	1196.99	304.	2609.	2.30	1196.84	1194	7	5.06E-01	24.5	
44	0	1250.41	456.	2698.	4.16	1250.29	1246	9	7.60E-01	16.8	
45	0	1339.52	144.	998.	2.07	1339.46	1337	5	2.40E-01	32.1	
46	0	1344.74	228.	1313.	2.45	1344.68	1342	7	3.80E-01	23.4	
47	0	1370.91	1371.	1773.	2.52	1370.88	1365	10	2.28E 00	5.1	
48	0	1383.85	259.	1334.	2.34	1383.83	1380	7	4.31E-01	20.9	
49	0	1436.70	17211.	3133.	2.41	1436.74	1430	14	2.87E 01	0.9	
50	0	1446.00	263.	1615.	3.74	1446.05	1443	10	4.38E-01	22.5	
51	0	1519.65	478.	1514.	2.77	1519.79	1516	8	7.97E-01	12.4	
52	0	1531.28	3153.	3308.	2.53	1531.44	1524	18	5.25E 00	3.1	
53	0	1619.06	121.	1386.	1.81	1619.35	1616	8	2.01E-01	44.6	
54	0	1686.31	220.	1525.	3.71	1686.72	1682	10	3.67E-01	26.0	
55	0	1741.87	281.	1423.	3.17	1742.38	1738	10	4.68E-01	19.9	
56	0	1769.66	620.	1593.	2.97	1770.23	1765	12	1.03E 00	10.0	
57	0	1837.00	5140.	1966.	2.63	1837.72	1831	13	8.57E 00	1.9	
58	0	1882.33	709.	1539.	3.17	1883.15	1877	12	1.18E 00	8.7	
59	0	2014.76	580.	1449.	6.10	2015.91	2011	12	9.66E-01	10.2	
60	5	2031.07	837.	1088.	3.05	2032.26	2026	17	1.39E 00	6.6	4.64E 00
61	5	2036.68	795.	1067.	3.09	2037.90	2026	17	1.32E 00	6.8	

PEAK SEARCH COMPLETED (REV 13)

> R SPLIN
> R NID
> RUN PB.REPORT

1850170820

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
N-13	511.49	1.33E 02	5.68E 02	8.5	8.694E-02	1.243E 00
KR-85M	151.48	7.61E 03	5.84E 03	0.6	2.062E-02	2.941E-01
KR-87	403.14	3.33E 03	3.87E 03	0.6	5.372E-02	7.735E-01
	846.03	2.53E 02	3.57E 02	3.9	6.324E-02	9.106E-01
KR-88	196.80	5.32E 03	1.80E 03	0.6	5.411E-02	7.791E-01
XE-133	81.31	2.78E 03	4.54E 03	1.2	1.056E-02	1.520E-01
XE-135	250.00	2.94E 04	5.01E 03	0.2	8.801E-02	1.267E 00
	608.67	3.22E 02	5.36E 02	3.7	7.827E-02	1.127E 00
XE-135M	526.98	6.47E 02	6.16E 02	2.1	1.467E-01	2.113E 00
XE-138	258.83	6.26E 02	1.15E 03	2.7	2.398E-01	3.450E 00
	434.83	2.47E 02	6.16E 02	4.9	2.507E-01	3.611E 00

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
129.79	5.70E 01	2.79E 03	41.6
138.40	3.09E 02	3.63E 03	8.9
210.68	9.93E 01	2.40E 03	22.3

[illegible]	[illegible]	[illegible]	[illegible]
172.72	2.15E 02	7.94E 02	6.3
228.13	1.91E 02	2.26E 03	11.4
305.28	7.12E 02	[illegible]	2.5
335.07	3.03E 01	6.13E 02	37.0
359.00	6.81E 01	3.76E 02	13.3
362.79	2.54E 02	4.63E 02	4.3
391.02	8.74E 01	5.11E 02	12.1
397.50	2.65E 02	8.08E 02	5.2
409.39	3.94E 02	4.40E 02	2.9
422.01	1.96E 01	4.32E 02	48.0
463.07	2.04E 03	9.44E 02	1.0
472.17	5.56E 01	3.44E 02	15.5
547.39	5.78E 02	6.37E 02	2.4
675.05	9.14E 01	4.40E 02	10.8
789.27	2.54E 01	2.51E 02	28.6
815.08	4.79E 01	3.32E 02	17.6
835.59	6.08E 02	4.12E 02	2.0
862.53	2.65E 01	2.69E 02	28.4
872.46	1.89E 02	3.95E 02	5.2
898.63	6.72E 02	3.58E 02	1.8
986.15	5.28E 01	2.78E 02	14.8
1010.46	9.61E 02	4.45E 02	1.4
1033.03	4.02E 01	2.72E 02	19.0
1040.65	1.90E 01	2.29E 02	36.4
1142.60	5.33E 01	2.29E 02	13.4
1148.22	2.74E 01	2.08E 02	24.3
1177.09	7.20E 01	4.68E 02	13.9
1196.99	3.04E 01	2.61E 02	24.5
1250.41	4.56E 01	2.70E 02	16.8
1339.52	1.44E 01	9.98E 01	32.1
1344.74	2.28E 01	1.31E 02	23.4
1370.91	1.37E 02	1.77E 02	5.1
1383.85	2.59E 01	1.33E 02	20.9
1436.70	1.72E 03	3.13E 02	0.9
1446.00	2.63E 01	1.62E 02	22.5
1519.65	4.78E 01	1.51E 02	12.4
1531.26	3.15E 02	3.31E 02	3.1
1619.06	1.21E 01	1.39E 02	44.6
1686.31	2.20E 01	1.53E 02	26.0
1741.87	2.81E 01	1.42E 02	19.9
1769.66	6.20E 01	1.59E 02	10.0
1837.00	5.14E 02	1.97E 02	1.9
1882.33	7.09E 01	1.54E 02	8.7
2014.76	5.80E 01	1.45E 02	10.4
2031.07	8.37E 01	1.09E 02	6.6
2036.68	7.93E 01	1.07E 02	6.8

TOTAL SPECTRUM COUNTS = 2249606.

> R PRINT

ENTER DATA SOURCE AND LOCATIONS: * DATA.GEL13.50.200

50:	5523.	5310.	5463.	5426.	5397.	5521.
56:	5240.	5336.	5226.	5308.	5210.	5072.
62:	5043.	5009.	5222.	5084.	4987.	4943.
68:	4956.	5014.	4958.	5034.	4958.	4947.
74:	4991.	5243.	5339.	5388.	5672.	5849.
80:	6108.	6918.	14159.	19362.	5026.	4717.
86:	4725.	4840.	4798.	4730.	4743.	4799.
92:	4751.	4962.	4892.	4932.	5036.	5302.
98:	5127.	5161.	5243.	5350.	5254.	5334.
104:	5433.	5351.	5317.	5379.	5398.	5678.
110:	5588.	5537.	5774.	5676.	6073.	5839.
				[illegible]	6887.	5823.

172:	5743.	5847.	5988.	5438.	5477.	5529.
178:	5657.	5730.	5840.	5935.	5678.	5505.
184:	5426.	5354.	5332.	5373.	5492.	7071.
140:	6061.	5046.	5121.	4911.	5102.	5136.
146:	5357.	5641.	5936.	6382.	7233.	9699.
152:	37756.	38495.	4958.	5212.	4308.	4044.
158:	4054.	4407.	4618.	4050.	4089.	3796.
164:	4104.	4121.	4694.	9407.	5798.	3528.
170:	3563.	3735.	3665.	3561.	3500.	3545.
176:	3684.	3536.	3597.	3570.	3540.	3631.
182:	3570.	3504.	3426.	3400.	3579.	3622.
188:	3567.	3588.	3613.	3938.	4168.	4785.
194:	4955.	5761.	7214.	27073.	26569.	3768.

1850170820

> RUN@AUTO.@@86@S

?ERR 1 INTEGER OVERFLOW

IN ROUTINE ".MAIN." LINE 63

> SCHED 0+0,0,AUTO.PRINT3
> R SKIP

AIR ANALYSIS DATA SHEET
PEACH BOTTOM STATION

Mar 21 1982 1.80
DOC TYPE 004

UNIT 2 ☐ 3 ☒
MOD. NO.

WORK LOCATION U/3 TURB. 195' (EXHAUST FAN)
STEP NUMBER NA
WORK CONDITIONS INSPECTION
COUNTING DATE 3-4-85

SAMPLE COLLECTION

	DATE	TIME	FLOW RATE (CFM)
OFF	3/4/85	1424	23.5
ON	3/4/85	1420	23.5

TYPE (HI VOL) LOW VOL LABEL (CIRCLE ONE)
SERIAL NO. 1-80
MEDIUM (PARTICULATE) CHARCOAL
(CIRCLE MEDIUM USED)
TECHNICIAN [signature]

SAMPLE DURATION 6 MIN. × AVG. FLOW RATE 23.5 CFM = SAMPLE VOLUME 141 FT³

(BETA) ALPHA (CIRCLE ONE)

		BETA	ALPHA
	TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING		
	COUNTING EQUIPMENT AND IDENTIFICATION NUMBER	4	
	GROSS COUNTS	48132	
	LENGTH OF COUNT (MIN.)	100	
	GROSS CPM	48132	
	BACKGROUND CPM	58	
(1)	NET CPM	48074	
(2)	COUNTER EFF.	.552	
(3)	VOLUME (FT^3)	141	
(4)	ACTIVITY ($\mu C_i/cm^3$)	1.0×10^{-8}	

$$\frac{(1)\ \text{NET CPM}}{(2)\ \text{COUNTER EFF.} \times (3)\ \text{VOL.}\ (FT^3) \times 60 \times 10^{10}} = (4)\ \mu C_i/cm^3$$

FOIA-87-228

E/18

[redacted]

TOTAL SPECTRUM COUNTS = [illegible]

> RUN [illegible].MPM

185016 840

MPC SUMMARY REPORT

NUCLIDE	[illegible]	MPC	% MPC
[illegible]	[illegible]	1.00E-05	0.0
[illegible]-88	6.[illegible]E-0[illegible]	1.00E 13	0.0
[illegible]	[illegible]E-08	1.00E 13	0.0
[illegible]-138	[illegible]98E-09	1.00E 13	0.0
TE-132	6.[illegible]89E-[illegible]	1.00E-07	0.1

TOTAL UC/CC = 1.440E-08
TOTAL MPC FRACTIONS (LESS IODINES) = [illegible]E-04
TOTAL IODINE MPC FRACTION = 0.[illegible]

STAY TIME, [illegible] MASK = ******* HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., IN AIR = ******* HRS.
MPC FACTOR (AIR) MPC HRS./HR. = [illegible]

```
****************************************************
*                                                  *
* STAY TIME, [illegible] NO MASK = [illegible] HRS.          *
* MPC FACTOR (NO MASK) MPC HRS./HR. = [illegible]        *
*                                                  *
****************************************************
```

> SCHED [illegible]AUTO[illegible]

> ENDJOB...

JOB STREAM COMPLETED

AIR ANALYSIS DATA SHEET
PEACH BOTTOM STATION

DOC. TYPE 009

UNIT 2 ☐ 3 ☒

MOD. NO. _____

WORK LOCATION TB3 165@ HPT

RWP NUMBER NA

WORK CONDITIONS none

COUNTING DATE 3-7-85

TYPE ~~HI VOL~~ LOW VOL (LABEL CIRCLE ONE)

SERIAL NO. 12-84

MEDIUM ~~PARTICULATE~~ CHARCOAL
(CIRCLE MEDIUM USED)

TECHNICIAN [signature]

SAMPLE COLLECTION

	DATE	TIME	FLOW RATE (CFM)
OFF	3/	1408	28
ON	1/7	1403	28

SAMPLE DURATION 5 MIN. × AVG. FLOW RATE 28 CFM × SAMPLE VOLUME 140 FT³

	BETA	ALPHA (CIRCLE ONE)
TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING		
COUNTING EQUIPMENT AND IDENTIFICATION NUMBER		
GROSS COUNTS		
LENGTH OF COUNT (MIN.)		
GROSS CPM		
BACKGROUND CPM		
(1) NET CPM		
(2) COUNTER EFF.		
(3) VOLUME (FT^3)	140	
(4) ACTIVITY ($\mu Ci/cm^3$)		

$$\frac{(1)\ \text{NET CPM}}{(2)\ \text{COUNTER EFF.} \times (3)\ \text{VOL.}\ (FT^3) \times 6.0 \times 10^{10}} = \underline{\quad (4) \quad}\ \mu Ci/cm^3$$

Scan Only

FOIA-87-228

E/19

07-MAR-85 14:30:52

TB3 165 AT HIGH PRES. TUKE

SAMPLE DATE: 07-MAR-85 14:08:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 140.0000 UNITS: CU.M.
SAMPLE GEOMETRY: MILLIPORE
EFFICIENCY FILE NAME: EFF.MLF3..

ACQUIRE DATE: 07-MAR-85 14:19:00
PRESET TIME(LIVE): 600. SEC
ELAPSED REAL TIME: 601. SEC
ELAPSED LIVE TIME: 600. SEC

DETECTOR: GELI-3
CALIB DATE: 08-FEB-85 13:14:51
KEV/CHNL. 1.002713
OFFSET. -1.1695758 KEV
Q. COEFF. : -1.392E-06 KEV/CHN2

> RUN MB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	UNKNOWN UC/UNIT	CORRECTED UC/SMPL
XE-131M	166.06	3.04E 01	5.18E 01	12.0	1.07[illegible]E-04	2.394E-02
TC-99M	138.23	3.73E 01	6.44E 01	10.7	4.128E-05	5.77[illegible]E-04
RH-81	848.41	2.94E 01	1.79E 01	7.9	2.380E-04	3.332E-02
	1836.30	2.30E 01	3.30E 00	7.5	2.169E-04	3.037E-02
RB-84	657.80	5.35E 00	1.51E 01	35.3	4.836E-05	6.770E-03
	1032.31	2.29E 01	1.35E 01	10.2	5.733E-05	8.027E-03
	1248.14	2.03E 01	1.36E 01	10.7	8.182E-05	1.145E-02
CS-138	138.23	3.73E 01	6.49E 01	10.9	1.732E-04	2.425E-02
	227.95	2.46E 01	5.06E 01	14.4	2.005E-04	2.807E-02
	408.96	3.97E 01	3.03E 01	8.0	3.119E-04	4.366E-02
	462.41	2.03E 02	3.71E 01	2.6	2.516E-04	3.522E-02
	547.04	5.44E 01	2.34E 01	5.8	2.[illegible]27E-04	3.2[illegible]8E-02
	1010.10	8.47E 01	1.93E 01	4.1	2.654E-04	3.[illegible]16E-02
	1436.09	1.56E 02	1.03E 01	2.7	2.722E-04	3.811E-02
TE-132	227.95	2.46E 01	5.06E 01	14.4	4.116E-05	5.762E-04

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
192.86	1.26E 01	[illegible]	

> RUN MB.MPC

1850161240

MPC SUMMARY REPORT:

NUCLIDE	UC/CC	MPC	% MPC
TC-99M	1.938E-10	1.00E-05	0.0
RU-103	7.660E-04	1.00E 13	0.0
KR-89	2.023E-04	1.00E 13	0.0
CS-138	8.689E-04	1.00E 13	0.0
TE-132	1.953E-10	1.00E-07	0.1

TOTAL UC/CC = 1.886E-08
TOTAL MPC FRACTIONS (LESS IODINES) - 1.468E-03
TOTAL IODINE MPC FRACTIONS - 0.000E-01

STAY TIME, 2 MPC HRS., IN MASK = ******** HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., IN AIR = ******** HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

****

STAY TIME, 2 MPC HRS., NO MASK = 1362.55 HRS.
MPC FACTOR (NO MASK) MPC HRS./HR. = 0.001

****

> SCHED 0+0.0,AUTO.PRINT
> ENDJOB,,T

JOB STREAM COMPLETED

M-21902 1/82
DOC TYPE 604

AIR ANALYSIS DATA SHEET
PEACH BOTTOM
STATION

UNIT 2 ☐ 3 ☒
MOD. NO.

WORK LOCATION TB 3 165' 9/5 3A FWH

RWP NUMBER NA

WORK CONDITIONS

COUNTING DATE 3-7-85

TYPE (HI VOL) LOW VOL LAPEL (CIRCLE ONE)

SERIAL NO. 7-83

MEDIUM (PARTICULATE) CHARCOAL
(CIRCLE MEDIUM USED)

TECHNICIAN Deneen

SAMPLE COLLECTION

	DATE	TIME	FLOW RATE (CFM)
OFF	3/	1453	21.5
ON	1/7	1448	

SAMPLE DURATION 5 MIN. × AVG. FLOW RATE 21.5 CFM = SAMPLE VOLUME 107.5 FT³

		BETA	ALPHA (CIRCLE ONE)
	TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING		
	COUNTING EQUIPMENT AND IDENTIFICATION NUMBER		
	GROSS COUNTS		
	LENGTH OF COUNT (MIN.)		
	GROSS CPM		
	BACKGROUND CPM		
(1)	NET CPM		
(2)	COUNTER EFF.		
(3)	VOLUME (FT^3)	107.5	
(4)	ACTIVITY ($\mu C_i/cm^3$)		

$$\frac{(1)\ \text{NET CPM}}{(2)\ \text{COUNTER EFF.} \times (3)\ \text{VOL.}\ (FT^3) \times 6.0 \times 10^{10}} = (4)\ \mu C_i/cm^3$$

Scan Only

FOIA-87-228

E/20

07-MAR-85 15:12:18

TB3 165 O/S 3A FWH

1830160010

SAMPLE DATE: 07-MAR-85 14:53:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 107.5000 UNITS: CU.FT.
SAMPLE GEOMETRY: MILLIMORE
EFFICIENCY FILE NAME: EFF.MLF3;1

ACQUIRE DATE: 07-MAR-85 15:00:34
PRESET TIME(LIVE): 600. SEC
ELAPSED REAL TIME: 600. SEC
ELAPSED LIVE TIME: 600. SEC

FWHM(1332) 2.206
SENSITIVITY: 5.000
SHAPE PARAMETER : 30.0 %
MAX ITERATIONS: 8.

DETECTOR: GEL1-3
CALIB DATE: 08-FEB-85 13:19:51
KEV/CHNL: 1.0027138
OFFSET: -1.1695758 KEV
Q. COEFF. : -1.342E-06 KEV/CHN^2

LIBRARY:NUCL.ALL
ENERGY TOLERANCE: 2.2001KV
HALF LIFE RATIO. 8.00
ABUNDANCE LIMIT: 75.00%

> RUN FM.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
TC-99M	138.39	5.85E 00	7.60E 00	24.8	8.369E-07	8.99/E-05
RB-88	898.33	4.63E 00	1.13E 00	17.9	4.25UE-05	4.5A9E-03
	1836.36	4.89E 00	3.25E-01	15.2	5.23UE-05	5.628E-03
RB-89	1032.68	3.88E 00	2.48E 00	24.2	1.079E-05	1.160E-03
	1248.66	1.97E 00	1.35E 00	34.7	8.78UE-06	9.444E-04
I-133	529.42	1.8/E 00	3.23E 00	48.9	9.679E-07	1.040E-04
CS-138	138.39	5.85E 00	7.60E 00	24.8	3.276E-05	3.522E-03
	227.98	6.16E 00	8.00E 00	24.2	6.054E-05	6.508E-03
	409.13	5.36E 00	3.80E 00	21.2	5.085E-05	5.467E-03
	463.04	3.32E 01	3.90E 00	6.1	4.938E-05	5.329E-03
	547.30	1.08E 01	3.33E 00	12.2	5.571E-05	5.988E-03
	1010.10	1.33E 01	4.00E 00	11.0	5.032E-05	5.409E-03
	1436.27	2.88E 01	0.00E-01	5.9	6.063E-05	6.517E-03
TE-132	227.98	6.16E 00	8.00E 00	24.2	1.339E-06	1.440E-04

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
166.78	6.40E 00	1.10E 01	20.3
511.40	4.67E 00	7.13E 00	29..

> RUN PD.PR1.

MPC SUMMARY REPORT:

NUCLIDE	UC/CC	MPC	% MPC
TC-99M	2.953E-11	1.00E-05	0.0
RB-86	1.849E-09	1.00E 13	0.0
KR-89	3.811E-10	1.00E 13	0.0
I 133	3.918E-11	3.00E-08	0.1
CS-138	2.191E-09	1.00E 13	0.0
TE-132	4.730E-11	1.00E-07	0.0

TOTAL UC/CC - 4.482E-09
TOTAL MPC FRACTIONS (LESS IODINES) - 4.759E-04
TOTAL IODINE MPC FRACTIONS - 1.139E-03

STAY TIME, % MPC HRS., IN MASK - 1741.06 HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.001

STAY TIME, % MPC HRS., IN AIR = ******** HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

****
* STAY TIME, % MPC HRS., NO MASK - 1238.29 HRS. *
* MPC FACTOR (NO MASK) MPC HRS./HR. = 11.002 *
****

> SCHED 0+11:0:AUTO.PRINT3
> ENDJOB;;1

JOB STREAM COMPLETED
7

01-MAR-85 13:32:02

10501[illegible]

SAMPLE DATE: [illegible] 13:40:00

SAMPLE [illegible]

TYPE OF SAMPLE: [illegible]

SAMPLE [illegible] [illegible]

SAMPLE [illegible] MICROCURI[illegible]

EFFICIENCY [illegible]

ACQUIRE DATE: [illegible]-MAR-8[illegible] 13:2[illegible] * [illegible]

PRESET TIME: [illegible] 300. SEC * SENSITIVI[illegible]

ELAPSED REAL TIME: 300. SEC * SHAPE PARAMETER [illegible]

ELAPSED LIVE TIME: 300. SEC * NBR ITERATIONS: [illegible]

DETECTOR: [illegible] * LIBRARY: [illegible]

CALIB DATE: [illegible] 86.46:56 * ENERGY TOLERANCE: [illegible]

KEV/CHNL: 0.9992616 * HALF LIFE RATIO: [illegible]

OFFSET: 0.2562027 KEV * ABUNDANCE LIMIT: [illegible]

> RUN [illegible]

IDENTIFIED PEAK REPORT

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	[illegible]	CORRECTED UC/SMPL
TC-99M	138.08	1.44E 02	[illegible] 02	[illegible]	[illegible]	[illegible]E-0[illegible]
RB-88	898.1[illegible]	[illegible] 0[illegible]	[illegible]	[illegible]	[illegible]	[illegible]E 00
	1836.03	6.75E 0[illegible]	2.99E 01	1.8	[illegible]	[illegible]E 00
SR-92	1382.62	3.99E 01	4.37E 01	14.2	[illegible]	6.546E-0[illegible]
CS-138	138.08	1.44E 02	4.77E 02	10.3	[illegible]	1.357E-01
	227.81	1.00E 02	3.47E 02	13.4	1.310E-03	1.572E-01
	409.05	1.72E 02	1.65E 02	5.6	2.123E-03	2.548E-01
	462.99	9.12E 02	2.35E 02	1.8	[illegible]	[illegible]E-01
	[illegible]7.06	2.70E 02	1.89E 02	4.2	1.84[illegible]	[illegible]E-01
	1009.84	4.37E 02	1.27E 02	2.7	[illegible]	[illegible]E-01
	1435.89	7.66E 02	1.10E 02	1.8	[illegible]	[illegible]E-01
TE-1[illegible]	227.[illegible]	[illegible] 02	3.47E 02	13.4	[illegible]	[illegible]E-03

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
[illegible]	[illegible]	[illegible] 02	[illegible]
421.83	2.42E 01	1.10E 02	[illegible]
511.73	3.41E 01	1.14E 02	[illegible]
516.95	2.08E 01	1.13E 02	33.

TOTAL SPECTRUM COUNTS = 206978.

> RUN PA.MPC

18501608

MPC SUMMARY REPORT

NUCLIDE	UC/CC	MPC	% MPC
[illegible]-99	[illegible]94E-1[illegible]	1.00E-0[illegible]	0.0
[illegible]-85	4.169E-07	1.00E 13	0.0
SR-91	1.426E-09	3.00E-07	0.6
[illegible]-138	6.311E-08	1.00E 13	0.0
TE-132	6.004E-10	1.00E-07	0.9

TOTAL UC/CC = 4.832E-07
TOTAL MPC FRACTIONS (LESS IODINES) = [illegible]
TOTAL IODINE MPC FRACTIONS = 0.000E-0[illegible]

STAY TIME, 2 MPC HRS. IN MASK = 6391.27 HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.000

STAY TIME, 2 MPC HRS., IN AIR = ******* HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

****
*
* STAY TIME, 2 MPC HRS., NO MASK = [illegible].6[illegible] HRS. *
* MPC FACTOR (NO MASK) MPC HRS./HR. = [illegible] *
*
****

> SCHED [illegible].PRINT2
> ENDJOB[illegible]

JOB STREAM COMPLETED

1850206200

M-21942 1/82
DOCTYPE 009

AIR ANALYSIS DATA SHEET
PEACHBOTTOM STATION

UNIT 2 ☐ 3 ☐
MOD. NO.

WORK LOCATION 1B3/165 @ V/U. Cage Hoff
RWP NUMBER NA
WORK CONDITIONS
COUNTING DATE 3/13

TYPE (HI VOL) LOW VOL LABEL (CIRCLE ONE)
SERIAL NO.
MEDIUM – PARTICULATE CHARCOAL
(CIRCLE MEDIUM USED)
TECHNICIAN

SAMPLE COLLECTION

	DATE	TIME	FLOW RATE (CFM)
OFF	3/13	1032	
ON	3/13	1037	

SAMPLE DURATION ____ MIN. × AVG. FLOW RATE 24 CFM = SAMPLE VOLUME ____ FT³

		BETA	ALPHA (CIRCLE ONE)
	TIME FROM THE END OF SAMPLING TO THE BEGINNING OF COUNTING		
	COUNTING EQUIPMENT AND IDENTIFICATION NUMBER		
	GROSS COUNTS		
	LENGTH OF COUNT (MIN.)		
	GROSS CPM		
	BACKGROUND CPM		
(1)	NET CPM		
(2)	COUNTER EFF.		
(3)	VOLUME (FT^3)	120	
(4)	ACTIVITY (uCi/cm^3)		

$$\frac{(1)\ \text{NET CPM}}{(2)\ \text{COUNTER EFF.} \times (3)\ \text{VOL.}\ (FT^3) \times 6.0 \times 10^{10}} = \underline{\quad (4) \quad}\ uCi/cm^3$$

FOIA-87-228

E/21

1850206200

13-MAR-85 11:46:19

TB3 1650VLV.CAGE

SAMPLE DATE: 13-MAR-85 10:42:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 120.0000 UNITS: CU.FT.
SAMPLE GEOMETRY: MILLIPORE
EFFICIENCY FILE NAME: EFF.MLP1,,

ACQUIRE DATE: 13-MAR-85 11:34:46
PRESET TIME(LIVE): 600. SEC
ELAPSED REAL TIME: 600. SEC
ELAPSED LIVE TIME: 600. SEC

FWHM(1332) 2.302
SENSITIVITY: 5.000
SHAPE PARAMETER : 30.6 %
NBR ITERATIONS: 8.

DETECTOR: GELI 1
CALIB DATE: 01-MAR-85 12:41:59
KEV/CHNL: 0.9963853
OFFSET: 1.3130399 KEV

LIBRARY:NUCL.ALL
ENERGY TOLERANCE: 2.200KV
HALF LIFE RATIO: 8.00
ABUNDANCE LIMIT: 75.00%

> RUN PB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
CS-138	408.89	2.54E 00	1.00E 00	26.5	7.955E-05	9.546E-03
	462.82	9.27E 00	8.00E-01	11.2	4.537E-05	5.469E-03
	1010.11	4.00E 00	3.60E 00	26.5	4.875E-05	5.850E-03
	1436.51	6.95E 00	1.13E 00	13.8	4.705E-05	5.647E-03

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
871.13	1.89E 00	5.50E-01	28.9
1333.48	7.25E-01	3.25E 00	****

TOTAL SPECTRUM COUNTS = 40/2.

> RUN PB.MPC

MPC SUMMARY REPORT:

NUCLIDE	UC/CC	MPC	% MPC
CS-138	1.490E 00	1.30E-12	0.0

```
TOTAL UC/CC = 1.609E-09
TOTAL MPC FRACTIONS (LESS IODINES) = 1.609E-22
TOTAL IODINE MPC FRACTIONS = 0.000E-01

STAY TIME, 2 MPC HRS., IN MASK = ******* HRS.
MPC  ACTOR (MASK) MPC HRS./HR. =    0.000

STAY TIME, 2 MPC HRS., IN AIR = ******* HRS.
MPC FACTOR (AIR) MPC HRS./HR. =    0.000

**********************************************************
*                                                        *
* STAY TIME, 2 MPC HRS., NO MASK = ******* HRS.          *
* MPC FACTOR (NO MASK) MPC HRS./HR. =    0.000           *
*                                                        *
**********************************************************

> SCHED 0+0,0,AUTO.PRINT
> ENDJOB,,T

JOB STREAM COMPLETED
```

1850206200

13-MAR-85 11:19:08

U/3 M/S RMS

SAMPLE DATE: 13-MAR-85 09:12:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 120.0000 UNITS: CU.FT.
SAMPLE GEOMETRY: MILLIPORE
EFFICIENCY FILE NAME: EFF.MLP;,

ACQUIRE DATE: 13-MAR-85 11:07:03
PRESET TIME(LIVE): 600. SEC
ELAPSED REAL TIME: 601. SEC
ELAPSED LIVE TIME: 600. SEC

FWHM(1332) 2.502
SENSITIVITY: 5.000
SHAPE PARAMETER : 30.0 %
NBR ITERATIONS: 8.

DETECTOR: GELI 1
CALIB DATE: 01-MAR-85 12:41:59
KEV/CHNL: 0.9963853
OFFSET: 1.3130399 KEV

LIBRARY:NUCL.ALL
ENERGY TOLERANCE: 2.20CKV
HALF LIFE RATIO: 8.00
ABUNDANCE LIMIT: 75.00%

> RUN MB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
XE-131M	166.05	4.28E 01	3.71E 01	8.0	3.187E-04	3.824E-02
TC-99M	138.11	1.50E 01	3.42E 01	19.3	2.758E-06	3.310E-04
I-131	364.76	4.97E 00	1.98E 01	42.5	1.898E-06	2.277E-04
CS-138	138.11	1.50E 01	3.42E 01	19.3	8.889E-04	1.067E-01
	227.99	9.70E 00	3.84E 01	30.3	9.790E-04	1.175E-01
	409.04	1.45E 01	1.40E 01	14.2	1.399E-03	1.678E-01
	462.77	8.79E 01	1.16E 01	3.8	1.333E-03	1.599E-01
	546.90	2.92E 01	1.11E 01	7.8	1.528E-03	1.833E-01
	1010.10	4.27E 01	5.01E 00	5.4	1.604E-03	1.925E-01
	1436.78	7.17E 01	3.25E 00	3.9	1.497E-03	1.796E-01
TE-132	227.99	9.70E 00	3.84E 01	30.3	2.176E-06	2.611E-04

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
511.01	3.02E 01	1.60E 01	8.3
872.28	9.14E 00	6.75E 00	16.5
1005.94	2.42E 00	3.32E 00	39.3
1838.32	1.00E 00	1.10E 00	56.6

TOTAL SPECTRUM COUNTS = 24692.

> RUN MB.MFC

RMS

.002
.000
.0 %

.200KV
.00
.00%

ECTED UNIT	CORRECTED UC/SMPL
7E-04	3.824E-02
8E-06	3.310E-04
8E-06	2.277E-04
9E-04	1.067E-01
0E-04	1.170E-01
9E-03	1.678E-01
3E-03	1.599E-01
8E-03	1.833E-01
4E-03	1.920E-01
7E-03	1.796E-01
6E-06	2.611E-04

ERR

8.3
5.5
7.3
5.6

MPC SUMMARY REPORT:

1850206201

NUCLIDE	UC/CC	MPC	% MPC
TC-99M	9.740E-11	1.00E-05	0.0
I-131	6.700E-11	9.00E-09	0.7
CS-138	4.706E-08	1.00E 13	0.0
TL-132	7.664E-11	1.00E-07	0.1

TOTAL UC/CC = 4.730E-08
TOTAL MPC FRACTIONS (LESS IODINES) = 7.752E-04
TOTAL IODINE MPC FRACTIONS = 7.445E-03

STAY TIME, 2 MPC HRS., IN MASK = 268.08 HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.007

STAY TIME, 2 MPC HRS., IN AIR = ******** HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

```
**********************************************************
*                                                        *
* STAY TIME, 2 MPC HRS., NO MASK =  243.22 HRS.          *
* MPC FACTOR (NO MASK) MPC HRS./HR. =  0.008             *
*                                                        *
**********************************************************
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> SCHED 0+0,0,AUTO.PRINT
> F  \JOB,,T
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JOB STREAM COMPLETED

1850206200

13-MAR-85 12:46:32

U/3 M/S RMS

SAMPLE DATE: 13-MAR-85 09:12:00
SAMPLE IDENTIFICATION: AIR SAMPLE
TYPE OF SAMPLE: HIGH VOLUME
SAMPLE QUANTITY: 120.0000 UNITS: CU.FT.
SAMPLE GEOMETRY: MILLIPORE
EFFICIENCY FILE NAME: EFF.MLP1,,

ACQUIRE DATE: 13-MAR-85 12:34:48	FWHM(1332) 2.507
PRESET TIME(LIVE): 600. SEC	SENSITIVITY: 5.000
ELAPSED REAL TIME: 600. SEC	SHAPE PARAMETER : 30.0 %
ELAPSED LIVE TIME: 600. SEC	NBR ITERATIONS: 8.

DETECTOR: GELI 1 LIBRARY:NUCL.ALL
CALIB DATE: 01-MAR-85 12:41:59 ENERGY TOLERANCE: 2.200KV
KEV/CHNL: 0.9965855 HALF LIFE RATIO: 8.00
OFFSET: 1.3130399 KEV ABUNDANCE LIMIT: 75.00%

> RUN PB.REPORT

IDENTIFIED PEAK REPORT:

NUCLIDE	ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR	CORRECTED UC/UNIT	CORRECTED UC/SMPL
I-131	365.24	2.69E 00	3.90E 00	38.0	1.034E-06	1.241E-04
I-133	530.56	3.93E 00	1.50E 00	21.2	2.278E-06	2.733E-04
CS-138	462.77	1.59E 01	2.47E 00	9.1	1.593E-03	1.911E-01
	546.77	3.85E 00	1.65E 00	22.0	1.330E-03	1.596E-01
	1009.98	5.32E 00	1.27E 00	16.7	1.321E-03	1.585E-01
	1437.11	1.27E 01	0.00E-01	8.9	1.753E-03	2.103E-01

UNKNOWN LINE REPORT:

ENERGY KEV	NET AREA CPM	BKGD CPM	% ERR
166.22	1.64E 01	1.23E 01	32.3
310.97	1.40E 01	3.83E 00	10.5
873.07	2.00E 00	3.50E-01	26.0

TOTAL SPECTRUM COUNTS = 6349.

> RUN PB.MPC

MPC SUMMARY REPORT:

I-131	3.651E-11	9.00E-09	0.4
I-133	8.043E-11	3.00E-08	0.3
CS-138	6.189E-08	1.00E 13	0.0

1850206200

TOT UC/CC = 6.201E-08
TOTAL MPC FRACTIONS (LESS IODINES) = 6.189E-21
TOTAL IODINE MPC FRACTIONS = 6.738E-03

STAY TIME, 2 MPC HRS., IN MASK = 296.83 HRS.
MPC FACTOR (MASK) MPC HRS./HR. = 0.007

STAY TIME, 2 MPC HRS., IN AIR = ******* HRS.
MPC FACTOR (AIR) MPC HRS./HR. = 0.000

```
**************************************************
*                                                *
* STAY TIME, 2 MPC HRS., NO MASK = 296.83 HRS.   *
* MPC FACTOR (NO MASK) MPC HRS./HR. = 0.007      *
*                                                *
**************************************************
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> SCHED 0+0,0,AUTO.PRINT
> ENDJOB,,T

JOB STREAM COMPLETED

Tom Johnson / Herb Wilson

On 8/1/85, the NRC inspector who is investigating the allegation about radiation exposure to a worker during the U/1 scram on 3/1/85 told Dick that he was unable to find the U/3 vent stack recorder chart for that day.

I have enclosed a copy of that chart.

The inspector spoke to Deb Moore, our person who files the charts, but she did not know what chart to get him.

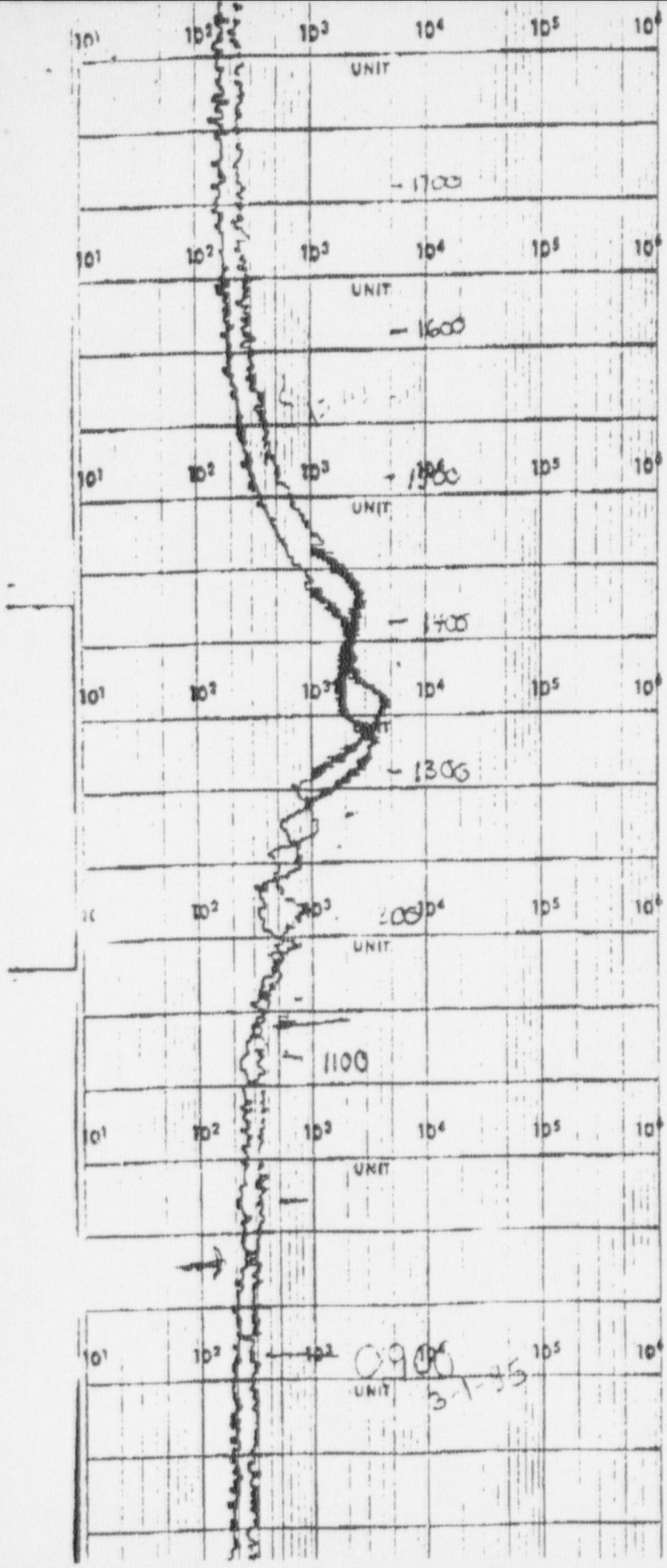
I tried to give this to the inspector today, but the office was closed when I got there.

S F Roberts
8/1/85

To: Jim Kottan

FOIA-87-228

E/22



KR 3970

To
Sim
Kittar

2 of 2

ALLEGATION RECEIPT REPORT

Date/Time Received: Oct 2, 7:00 AM

Allegation No. _____ (Leave blank)

Name: George Fields

Address: _____

Phone: _____

City/State/Zip: _____

Confidentiality Requested: Yes __ No X Implied __

Alleger's Employer: Bartlett Nuclear

Position/Title: H.P. Technician

Facility: PEACH BOTTOM UNITS 2/3

Docket No: 50-277
50-278

Allegation Summary (brief description of concern(s)): Concerned about being fired for talking the NRC and exposures received from 3/1/85 incident with Unit 3 offgas system

Number of Concerns: _____ (for Allegation Panel Only)

Employee Receiving Allegation: J. H. Williams
(first two initials and last name)

Type of Regulated Activity:
(a) X Reactor
(b) __ Vendor
(c) __ Materials
(d) __ Safeguards
(e) __ Other: _____ (Specify)

Materials License No. (if applicable): _____

Functional Area(s):
X (a) Operations
__ (b) Construction
__ (c) Safeguards
__ (d) Transportation
__ (e) Emergency Preparedness
X (f) Onsite Health and Safety
__ (g) Offsite Health and Safety
__ (h) Other: _____

FOIA-87-228

E/23

NRC Region I Form 207
(Revised June 1984)

Allegation No. _____ Page _____

Detailed Description of Allegation (Cont'd):

Mr Fields believes that he is being fired because the licensee (Peco) thinks he talked to NRC about an incident that occurred on March 1, 1985. He said the reason they gave for letting him go was because he had taken too much sick leave. He had taken 18 days sick leave since the first of the year. He said 5 days were due to an auto accident and time was taken for having wisdom teeth pulled, which was approved two weeks in advance. (I did not try to account for this time off) One other person is being fired at the same time for too much sick leave and four new H.P.'s are being hired. Mr Fields last scheduled work day at Peach Bottom is Friday 10/4. He said there were other HP's still working that have much worst attendance records than he has.

Mr Fields still has concerns over the exposures he received during the 3/1/85 event. His exposure concerns appear not to have been discussed adequately with him. I looked for the NRC inspection report 85-31 that covered the incident but could not find it at the time. I plan to give him a copy of the report on 10/3.

Mr Fields said that about 2 weeks ago Allen Hilsmeier and Jack Wiggenreid talked to him about going to the NRC. He said they told him he was not to go to the NRC with concerns. I told Mr Field I would talk to people in the Region office and maybe Allen Hilsmeier and would get back to him tomorrow at 7:00 AM. 10/3.

(He is on the midnight shift and gets off work at 7:00 AM)