HSA ID# 25

1974.1.3

RADIOLOGICAL INCIDENT REPORT

87-1
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 2/25/87 @ 2215

LOCATION: RWST SIPHON HEATER AREA

HOW RADIATION CONTROLS WAS NOTIFIED: TELEPHONE CALL @ 2245

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation):

Notified by Bill Schoppmeyer that RWST water was leaking on the ground and running into the storm drain. Affected area was roped off and posted with applicable clothing requirements for entry.

PE Sellers
PREPARER SIGNATURE

DATE 2/26/87 TIME 1500

SECTION II RADIOLOGICAL CONTROLS SECTION HEAD REVIEW

[ ] This incident requires no further reports, documentation or followup

[X] This incident requires the following corrective action and/or notification or reports:

1. WBC urine bioassay for the RC Tech & A.O. involved.
2. Cleanup/decon of outside area.
3. Chem analysis of release (8.74E-2 μCi; H-3 major isotope).
4. Notifications made via NSE as necessary. (WOR 17-87)
6. The area of the spill was decon'ed and sealed to prevent further release of radioactive materials.

Rad Controls Section Head

DATE 2/27/87

Not necessary as the review was conducted on WOR 17-87.

Route to: ~~1. Dept. Head _____ Dept.~~
~~2. Plant Mgr.~~
3. File (Return to Radiological Controls)

0032f

5174:1:5

MY-HP-161-83

MAINE YANKEE ATOMIC POWER COMPANY

GENERAL SURVEY FORM

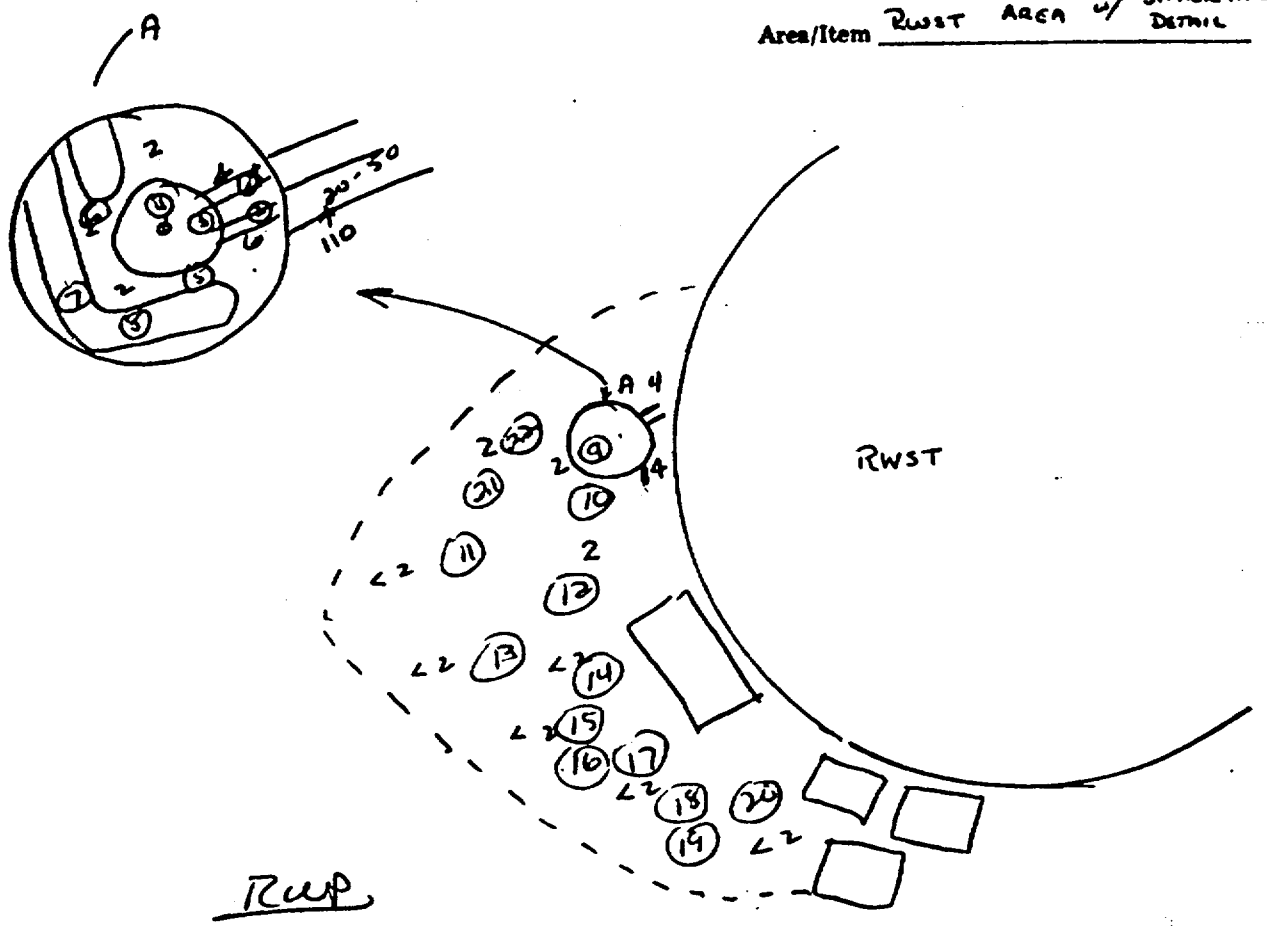
Counter Tennelec Inst. Type & No. RO2A 1990 Date 2-26-87

Eff. 40.4 % Time 0515

Bkg. 13cpm Tech. LANGDON OMR

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm^2.

Area/Item RWST AREA W/ SIPHON NTR DETAIL



RWP
87-2-141

1974.1.6

THU FEB 26, 1987
GROUP B SMEARS-SIMULTANEOUS MODE

SAMPLE NUMBER	COUNT TIME	GROSS ALPHA	GROSS BETA	ACTIVITY(DPM) ALPHA	ACTIVITY(DPM) BETA	TIME OF DAY COUNTED	
99	1.00	0	13	0	0	05:22:03	
1	1.00	13	482	56.76	1160.89	05:23:15	
2	1.00	18	950	78.60	2319.30	05:24:27	
3	1.00	1	60	4.36	116.33	05:25:38	
4	1.00	2	137	8.73	306.93	05:26:49	
5	1.00	32	1206	139.73	2952.97	05:28:01	ALPHA
6	1.00	2	86	8.73	180.69	05:29:12	
7	1.00	4	149	17.46	336.63	05:30:24	
8	1.00	2	55	8.73	103.96	05:31:35	
9	1.00	9	640	39.30	1551.98	05:32:47	
10	1.00	14	1454	61.13	3566.83	05:33:58	
11	1.00	4	313	17.46	742.57	05:35:10	
12	1.00	56	4443	244.54	10965.34	05:36:22	ALPHA
13	1.00	28	1768	122.27	4344.05	05:37:33	ALPHA
14	1.00	7	402	30.56	962.87	05:38:45	
15	1.00	3	459	13.10	1103.96	05:39:57	
16	1.00	2	185	8.73	425.74	05:41:08	
17	1.00	10	852	43.66	2076.73	05:42:20	
18	1.00	17	1454	74.23	3566.83	05:43:32	
19	1.00	5	389	21.83	930.69	05:44:44	
20	1.00	12	826	52.40	2012.37	05:45:55	
21	1.00	3	145	13.10	326.73	05:47:07	
22	1.00	10	590	43.66	1428.21	05:48:19	

OPERATION COMPLETE

OPERATION COMPLETE

SMEARS 5, 12 & 13. counted on NMC PCSS BKRD 0 EFF. 22

ALL SMEARS <20 dpm/100cm² α.

1974.1.7

MAINE YANKEE ATOMIC POWER COMPANY

GENERAL SURVEY FORM

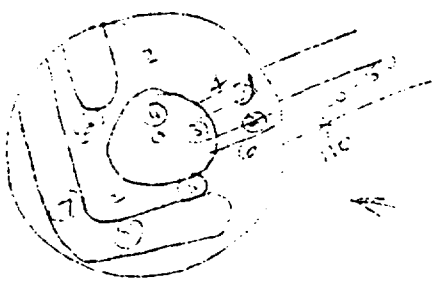
Counter [illegible] Inst. Type & No. [illegible] Date [illegible]

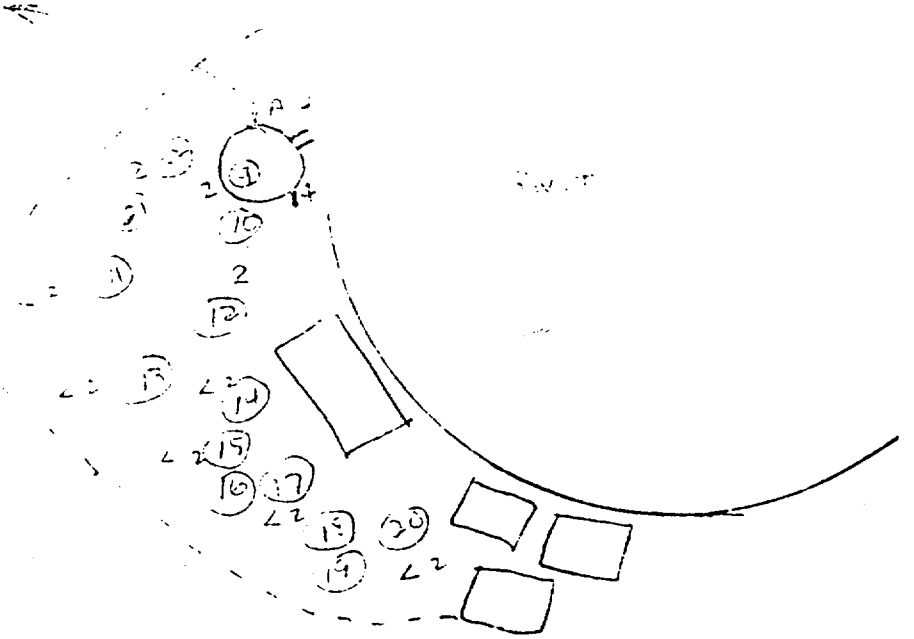
Eff. 6.4 % Time 0515

Bkg. 18 cpm Tech. Langton

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm^2.

Area/Item [illegible]





1 - 1100
2 - 2300
5 - 2950
9 - 1550
10 - 3560
12 - 10900
13 - 4300
15 - 1100
17 - 2000
18 - 3500
20 - 2000
22 - 1400

MAINE YANKEE ATOMIC POWER COMPANY

GENERAL SURVEY FORM

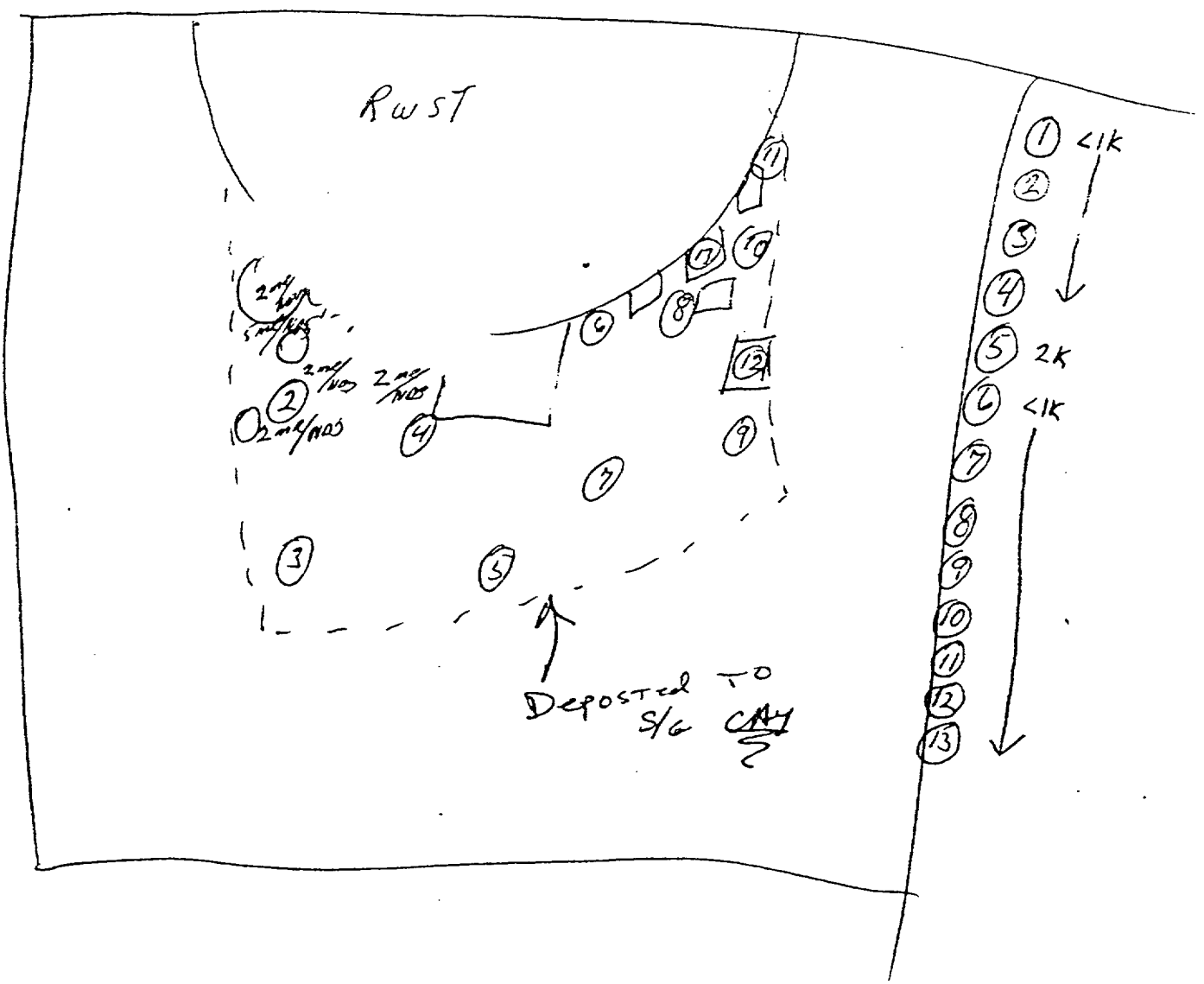
Counter BC-4 Inst. Type & No. RO2A 1990 Date 3-27-87

Eff. 23.4 Time 1415

Bkg. 66 RWP 87-3-218 87-3-137 Tech. K Jarvis

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm^2.

Area/Item Siphon Heater AREA



HSA ID# 26

IDENTIFIED RADIOLOGICAL ISSUES FOR FURTHER CHARACTERIZATION

Issue Description	Date	Status
Leak in RWST siphon return line to ground	1988	~600 ft3 of soil removed and disposed as LLW ~NRC approves residual under 10 CFR § 20.302(a) on 8/31/89
Residual slightly contaminated soil under LLW storage area in vicinity of yard crane	1992	~Area evaluated and characterized by YNSD 10/92 (MYP #92-1173) and 1/93 (MYP # 93-0054) ~IAW 10 CFR § 50.75(g) placed in decommissioning plan file 4/12/93 (JHA-93-27)
Spreading of slightly contaminated silt from base of intake racks in unused area under transmission lines	1992-97	~MDEP issued Dredge Spoil Utilization Permit S-20814-SS-A-N ~MDHE accepted practice 5/24/95 (R.J. Schell Ltr to MDEP)

1974.2.30
1974.2.30

MY-HP-16-84
Page 1 of 2

RADIOLOGICAL INCIDENT REPORT

88-4
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 0900 on 4/26/88 notified by B. Jamieson/Ops

LOCATION: RWST Siphon Heater

HOW RADIATION CONTROLS WAS NOTIFIED: Bud Jamieson the dayshift PSS.

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation):
The 8 inch yellow plastic sleaving, running from the upper flange to the 55 gallon drum was leaking dye to a hole in the plastic. The sleaving was replaced by new sleaving, then by a piece of approx. 1 inch tygon tubing. Late afternoon the leak was repaired by maintenance.

See Attached Material.

Dennis Hurley
PREPARER SIGNATURE

DATE 4/26/88 TIME 1800

SECTION II RADIOLOGICAL CONTROLS SECTION HEAD REVIEW

[X] This incident requires no further reports, documentation or followup. Corrective action was developed for Rad Incident Report 88-2.

[ ] This incident requires the following corrective action and/or notification or reports:

Action listed for 88-2 needs to be completed. A Plant Services request has been issued to remove contaminated sand. The area will be sealed after cleanup.

Rad Controls Section Head

DATE 5/2/88

Route to: (1.) Dept. Head Tech Sup. Dept. Please review and return in 14 days.
2. ~~Plant Mgr.~~ Not required
3. File (Return to Radiological Controls)

4-26-88

0900 Notified by Bud Jameson that the RWST Siphon Heater drain tubing was leaking.

0905 Looked @ leak myself.

0910 Talk to Cheryl Benar, and sent her to put new sleaving from tygon drain to 55 gallon drum and Iso the water. She completed this task.

1000/1044 Iso for water printout showed:

Gross = 5.87 E-4 uci/cc

Cs-134 = 8.90 E-5 uci/cc

Cs-137 = 4.09 E-4 uci/cc

1130 Cheryl Benar surveyed area for RWP to repair leak.

MY-HP-161-83

1974.00.00

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter RC-4 #24 / NMC RC-5S Inst. Type & No. 100-2A #3073 Date 4/26/78

Eff. 22.5% , 28.1% Time 1430

Bkg. 56cpm / 2cpm Tech. CBenn

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item Stephan Reheater area by RWST

posted HR/C/PC/new P

general area: 2-12 mR/hr
overhead by leaking valve. 10 mR/hr
hot spot by feet 100 mR/hr contact / 60 mR/hr @ 1 ft
on ground where liquid leaked onto: 80 mrad/hr β

Smears:

(ground) (1)* 135K DPM/100cm²
(2) 87K
(3) 116 K
(4) 27K
(5) 2K
(6) 2.7K
(7) 2.5K
(8) 1.2K
(ground) (9) * 58K
" (10) * 45K.

ground where leak was, band, piping.

*Counted on NMC for ⊙
(1) 2.8 dpm/100cm² ⊙
(2) 10 "

1934:2:38

MAINE-YANKEE 26-APR-88 10:44:00

MPLE:

MAXIMUM PERMISSIBLE CONCENTRATION

NUCLIDE	ACTIVITY (UC/ML)	MPC (UC/CC)	MPC-HR/HR
CS-134	8.90E-05	1.00E-08	8901.91
CS-137	4.09E-04	1.00E-08	40890.73
		TOTAL	49792.64

MPC VALUES FOR AIR 40HR/WK
MPC UNITS CONVERSION FACTOR = 1.00E+00

NO DOSE EQUIVALENT I-131 VALUES LISTED FOR IDENTIFIED NUCLIDES.

Gross = 5.87E-4 µCi/cc

GAMMA SPECTRUM ANALYSIS

ERRA SPECTRAN-F V2.00 SOFTWARE

ne Yankee Atomic Power (user Chem) 26-APR-88 15:41:44

ANALYSIS PARAMETERS

MCA UNIT NUMBER: 2 / DETECTOR NUMBER: 2 / GEOMETRY NUMBER: 6
ADC UNIT NUMBER: 2.0
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 95.0%
IDENTIFICATION ENERGY WINDOW: +- 1.00 KEV
ERROR QUOTATION: 1.00 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
LLD CALCULATION PERFORMED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
SAMPLE DESCRIPTION: RWST DIRT
ALYZED BY: CB
SAMPLE SIZE: 2.0000E+01 ML / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ALYSIS LIBRARY FILE: ANL000

LECT STARTED ON 26-APR-88 AT 15:24:51

COLLECT LIVE TIME: 1000. SECONDS
REAL TIME: 1005. SECONDS
DEAD TIME: 0.50 %

DECAYED TO 0. DAYS, 0.9144 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 26-APR-88
EFFICIENCY CALIBRATION PERFORMED 25-NOV-87

20 ml vial of gravel on tar under the leak.

Note: One liter of gravel was collected but it was too high a dose rate (15 mr/hr) to Iso on GeLi.

SAMPLE:

MAXIMUM PERMISSIBLE CONCENTRATION

NUCLIDE	ACTIVITY (UC/ML)	MPC (UC/CC)	MPC-HR/HR
CS-134	3.63E-03	1.00E-08	362615.53
CS-137	1.71E-01	1.00E-08	17088200.00
		TOTAL	17450816.00

MPC VALUES FOR AIR 40HR/WK
MPC UNITS CONVERSION FACTOR = 1.00E+00

NO DOSE EQUIVALENT I-131 VALUES LISTED FOR IDENTIFIED NUCLIDES.

TO: J. Brinkler _____ Company/Location _____ June 1, 1988

FROM: G. D. Pillsbury _____ Company/Location _____ FILE GDP-88-022

SUBJECT: Outside Control Area Contamination Closeout Plan

Responsibility	Action
Facilities/Rad Con	1. RWST Area - remove as much of the contaminated sand as necessary such that the remaining sand average contamination is less than 10% of the Table II MPCw values for isotopes of concern. In progress. Work to completion.
Facilities	2. Fill hole with clean sand leaving approximately 3" space at the top. As soon as the hole is surveyed "clean".
Facilities	3. Fill 3" space with concrete. Same as #2.
Facilities	4. Vacuum all loose sand from the outside control areas especially around fuel, RCA and LSA buildings. By 6/30/88.
Rad Con	5. Conduct special, detailed survey of all asphalt surfaces from the DWST to the RWST to identify "hot spots". By 7/7/88
Facilities	6. Remove and patch "hot spots" and dispose of as radwaste. By 7/31/88.
Facilities/Rad Con	7. Investigate a better sealer for asphalt.
Rad Con	8. Institute controls to keep contamination out of the outside control areas (e.g. personnel frisking prior to leaving buildings, no contaminated work uncontained, no transport of unwrapped, contaminated material). By 9/30/88.
Rad Con	9. Schedule removal/disposal of "sand pile".

G. D. Pillsbury
Radiological Controls Section Head

GDP:lb

cc: WJP
S. Brown

0374F

HSA ID# 27

RADIOLOGICAL INCIDENT REPORT

88-23
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 10/24/88 — 1600 - 2400 Shift

LOCATION: Inside the Wiscasset Wall

HOW RADIATION CONTROLS WAS NOTIFIED: Observation of RC Supervisor

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation):
Temporary building inside the wall appeared to b less than weather-tight. This came to my attention when they needed a wet-vac. to clean up th floor. A sample of the water inside the wal but outside the building was taken. The water was found to be contaminated.

PREPARER SIGNATURE

DATE 10/26/88 TIME 2245

SECTION II RADIOLOGICAL CONTROLS SECTION HEAD REVIEW

Immediate Corrective Actions Taken (Including Notifications and Reports per 9.1.25 and 10CFR50.72):

1-P.E.D. engineer in charge of the work was instructed To reopen the building to stop water leakage into the buildings
2-Contamination control of the area will be maintained by wet vacuuming decontamination to prevent contamination from spreading from the area is inside the Radiologically controlled area and clean no Rcont a contamination problem outside the area.

[X] This incident requires no further reports, documentation or followup

[X] Long Term Corrective Actions Recommended:
the wiscasset wall Temporary storage area is scheduled to be removed when it is removed, the ground will be checked for contamination and any contaminated soil will be removed

Rad Controls Section Head

DATE 11-16-88

Route to: 1. Dept. Mgr. _____ Dept. Please respond within 14 days.
2. Plant Mgr.
3. File (Return to Radiological Controls)

0032f

Wal

GAMMA SPECTRUM ANALYSIS

Outside "Condo"

CANBERRA SPECTRAN-F V2.00 SOFTWARE

MAINE YANKEE 24-OCT-88 18:58:34

ANALYSIS PARAMETERS

MCA UNIT NUMBER: 2 / DETECTOR NUMBER: 3 / GEOMETRY NUMBER: 3
ADC UNIT NUMBER: 3.0
SPECTRUM SIZE: 4096 CHANNELS
ORDER OF SMOOTHING FUNCTION: 5
NUMBER OF BACKGROUND CHANNELS: 4 ON EACH SIDE OF PEAK
PEAK CONFIDENCE FACTOR: 75.0%
IDENTIFICATION ENERGY WINDOW: +- 1.00 KEV
ERROR QUOTATION: 1.00 SIGMA UNCERTAINTY

ENVIRONMENTAL BACKGROUND SUBTRACTED
MEASURED ENERGY DIFFERENCES LISTED
MULTIPLET ANALYSIS PERFORMED

SPECTRAL DATA READ DIRECTLY FROM MULTICHANNEL ANALYZER AN1:
SAMPLE DESCRIPTION: H20
ANALYZED BY: LS
SAMPLE SIZE: 2.0000E+01 ML / CONVERSION FACTOR: 1.0000E+00
STANDARD SIZE: 1.0000E+00 EA
ANALYSIS LIBRARY FILE: ANL000

COLLECT STARTED ON 24-OCT-88 AT 18:41:44

COLLECT LIVE TIME: 1000. SECONDS
REAL TIME: 1000. SECONDS
DEAD TIME: 00.00 %

DECAYED TO 0. DAYS, 0.6956 HOURS BEFORE THE START OF COLLECT

ENERGY CALIBRATION PERFORMED 23-OCT-88
EFFICIENCY CALIBRATION PERFORMED 2-SEP-88

SAMPLE: H20
DATA COLLECTED ON 24-OCT-88 AT 18:41:44
DECAYED TO 0. DAYS, 0.6956 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

NUCLIDE	ACTIVITY CONCENTRATION IN UC/ML MEASURED	ERROR	DECAY CORRECTED	ERROR	ENERGY COMPARISON (KEV) EXPECT	DIFF
CO-60	7.57E-05	+-5.97E-06	7.57E-05	+-5.97E-06	1332.46	-0.06
					1173.21	-0.22
CS-137	4.43E-05	+-4.08E-06	4.43E-05	+-4.08E-06	661.64	-0.10
TOTAL	1.20E-04	+-7.23E-06	1.20E-04	+-7.23E-06		

STANDARD DEVIATION = 0.08

EBAR = 1.95 MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 0.00E-01 UC/ML
...ANL -- ERROR 73
FLOATING ZERO DIVIDE
AT PC = 153532
IN *ISOPRN* AT 234
FROM *QUAN10* AT 185
FROM *QUANT * AT 15
FROM *.MAIN.* AT 71

TOTAL MEASURED ACTIVITY = 1.20E-04 (+-7.23E-06) UC/ML
...ANL -- ERROR 73
FLOATING ZERO DIVIDE
AT PC = 153532
IN *ISOPRN* AT 234
FROM *QUAN10* AT 185
FROM *QUANT * AT 15
FROM *.MAIN.* AT 71

...ANL -- ERROR 63
OUTPUT CONVERSION ERROR
IN *ISOPRN* AT 234
FROM *QUAN10* AT 185
FROM *QUANT * AT 15
FROM *.MAIN.* AT 71

% TECH. SPEC. = 00.00 (+-****)

ERROR QUOTATION AT 1.00 SIGMA

PEAKS NOT USED IN ANALYSIS

CENTROID CHANNEL	ENERGY KEV	NET AREA COUNTS	ERROR %	GAMMAS/SEC
1219.30	609.25	19.	85.2	1.94E+00

HSA ID# 28

November 17, 1989

Two hot particles were found while checking the Masslinn cloth from the PAB 11' daily routine survey for Nov. 17. Additional Masslinn surveys were taken which indicated that the Let Down area was the source of these hot particles. A thorough recheck of this area turned up 15 hot particles. A request to Plant Services was initiated and the area was promptly mopped. A post decon survey was then taken which turned up one more "chip". A Masslinn survey around the periphery of the clean area was taken. One swipe turned up 13 discrete hot particles with what appeared to be numerous smaller ones which could not be removed.

In light of our present concern over the number of personnel contamination events relating to hot particle exposure it would seem to be prudent to focus attention to areas in the Plant such as this as sources of contamination.

The fact that such a large number of hot particles were found on such a few Masslinn swipes suggests that a significant hot particle contamination problem exists. It also indicates however that the removal of these particles from an area is feasible through standard decontamination methods.

Lower P.A.B.
17-Nov-89

	Time Masslinned	Area	CCPM
1.	21:30	Fuel Bldg. Laydown Area	800
2.	21:30	P.A.B. 11'	> 50,000
3.	21:30	P.A.B. 11'	4,500
4.	23:00	P.A.B. 11' Letdown Area	5,000
5.	23:00	P.A.B. 11' Letdown Area	1,000
6.	00:00	P.A.B. 11' L/D Area #4	11,000
7.	00:00		3,600
8.	00:00		26,000
9.	00:00		3,800
10.	00:00		3,000
11.	00:00		1,400
12.	00:00		1,400
13.	00:00	P.A.B. 11' L/D Area #3	5,000
14.	00:00	P.A.B. 11' L/D Area #2	10,000
15.	00:00		16,000
16.	00:00		5,500
17.	00:00		2,000
18.	00:00		1,000
19.	00:00		1,800
20.	00:00		1,400
21.	02:30	P.A.B. 11' L/D Area	1,400
22.	03:00	P.A.B. 11' Pipe Tunnel	2,000
23.	03:00	P.A.B. 11' L/D Posted Area	6,000
24.	03:00		6,000
25.	03:00		14,000
26.	03:00		9,000
27.	03:00		6,000
28.	03:00		44,000
29.	03:00		20,000
30.	03:00		3,800
31.	03:00		3,600
32.	03:00		6,000
33.	03:00		10,000
34.	03:00		5,000
35.	03:00		5,500

HSA ID# 29

1974.4.47

RADIOLOGICAL INCIDENT REPORT

90-3
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 2/6/90 Afternoon

LOCATION: Tanker Barn & Outside Coldshop

HOW RADIATION CONTROLS WAS NOTIFIED: Worker Concern.

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation):
Yellow painted wood was surveyed and inadvertently released to an area behind the cold shop. Some wood went to Burger Pace Valley. Once notified Rad Controls directed that the wood be brought back to the Tanker Barn. During processing of the wood, a worker expressed concern to RPM about the lack of frisking and whether the wood was being properly surveyed. The RPM emphasized to the techs surveying
(continued)

T. D. Hickey
PREPARER SIGNATURE

DATE 2/7/90 TIME 1200

SECTION II RADIOLOGICAL CONTROLS SECTION HEAD REVIEW

Immediate Corrective Actions Taken (Including Notifications and Reports per 9.1.25 and 10CFR50.72):

1. Yellow wood was returned to the Tanker Barn and B&R trailer was surveyed.
2. Proper survey techniques were emphasized.
3. The policy of not releasing yellow material from the RCA was re-emphasized.
4. All planed wood was resurveyed and all yellow wood was packaged to be shipped as radwaste.

[ ] This incident requires no further reports, documentation or followup

[X] Long Term Corrective Actions Recommended:
1. Develop a procedure that specifically states the radiological requirements for unconditional release of material. This should state contamination limits and background restrictions. (Resp. RadCon) - as part of Program Upgrade
2. Issue directive that precludes the release of yellow painted material with rad stickers to the clean area. (Resp. HWC RPM Complete)
3. Continue to be responsive to worker concerns. (Resp. All)

~~Rad Controls Section Head~~ RPM

DATE 3/5/90

Route to: 1. Dept. Mgr. Tech Sup Dept. Please respond within 14 days.
2. Plant Mgr.
3. File (Return to Radiological Controls)

0032f

the wood that it was to be properly surveyed in accordance with the procedure. An RC Supervisor was later dispatched to watch the surveys being performed and reported they were performed proper A random sample of 10-12 pieces of wood was removed and resurveyed by a "Maine Yankee tech and found free of contamination.

Some of the yellow wood did show evidence of radio active contamination. A thorough survey of the Burns and Roe trailer showed no spread of activi and all yellow wood was returned to the RCA to be disposed of as radwaste.

A contract worker notified the NRC on 2/20/90 th he felt there was still a problem with the surve At that time, R Nelson, E. Wilsbury, J Connell and the Bartlett Site Coordinator (M. Vyenello) met to discuss the matter. It was again stated that all wood would be properly frisked and that we would take whatever measures were necessary to allay the worker's concerns. A decisio was made to refrisk 100% of all the wood previously surveyed.

A special jig was made to contain several probes and monitor a larger area simultaneously. All wood was refrisked and no contamination was found on previously-declared "clean" wood. The clean wood was released and contaminated and yellow-painted wood was shipped as radwaste. There were no further worker concerns.

1974 H 50
Yellow H Wood on "Coldside"

2/7/90

1. George approved frisking in trailor @ that particular spot at < 0.1 mr/hr per miskimen and Paine.
2. Miskimen approved removal to "Coldside" based on no smearable, and direct frisk. She thought yellow was a color designation for a particular outage.
3. Hickey approved placement of wood by coldsloop because pile of white wood already started.

Burns & Roe Trailer departed @ 0900 by direct frisk + smear

COMPARISON OF 'FRISKER' PROBES
HP-210 vs. APTEC FT-126

	HP-210	FT-126
TYPE	GM TUBE	GM TUBE
ACTIVE AREA	~17 cm^2	~100 cm^2
EFF. (Co^{60})	~10%	~10%

THE ONLY REAL DIFFERENCE BETWEEN THE TWO PROBES IS THE AREA THE PROBE SEES AT ANY ONE TIME

EXAMPLE:
HP-210

$$\frac{100 \text{ CCPM}}{.10 \text{ (EFF)}} \times \frac{100 \text{ cm}^2}{17 \text{ cm}^2} = 5882 \text{ DPM}/100\text{cm}^2$$

$$\frac{5882 \text{ DPM}}{100 \text{ cm}^2} \times .10 \text{(EFF)} = 588 \text{ CCPM}/100\text{cm}^2$$

$\therefore$ ~5000 DPM/100cm^2 = ~100 CCPM (HP-21
= ~500 CCPM (FT-126

CCPM = NET COUNTS (GROSS COUNTS − BACKROUND)

RELEASING MATERIAL AT 100 CPM + BKG. WITH HP-210 PROBE IS A RELEASE OF 5000 DPM/100cm^2

14/4.4.52

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter Rm 14 5525 LoD 3 6000 Inst. Type & No. Rm 14 HP 210 LUD 3 gPTec Date 2-7-96

Eff. 10% 10% Time 1430

Bkg. 100 500 Tech. Fiona

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item 210 vs gPTe

Rm 14 HP210

1. 1000 cpm
2. 10,000 cpm
3. 1,000 cpm
4. 1200 cpm
5. 600 cpm
6. 2,000 cpm
7. [illegible]00 cpm
8. 500 cpm

LoDlum gPTec

1. 2300 cpm
2. 12,000 cpm
3. 1,700 cpm
4. 2,100 cpm
5. 1,100 cpm
6. 3,700 cpm
7. 1,000 cpm
8. 1,800 cpm

1974.4.53
1974.4.53

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter RM 14 450 / TENNELEC S100 Inst. Type & No. NA Date 2-7-90

Eff. 0.10 / @ 23%, @ 28% Time 0930

Bkg. 20 / Tech. K.G. LAWS

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item OFFICE TRAILER

SURVEY OF BURNS AND ROWE OFFICE TRAILER

1. CEILING SURFACE, 100% GROSS MASSLIN SMEARS : < 100 nCPM/FT².
WALL SURFACE, 100% GROSS MASSLIN SMEARS : < 100 nCPM/FT²
FLOOR SURFACE, 100% GROSS MASSLIN SMEARS: < 100 nCPM/FT².

DISC SMEARS TAKEN ON INTERIOR SURFACES : < 100 dPM/100 CM².

2. ALL WOOD, DEBRIS AND SAWDUST INSIDE OF TRAILER THAT WAS NOT ORIGINAL EQUIPMENT, DIRECT FRISK : < 100 CPM.

3. EXTERIOR STEPS, DIRECT FRISK: < 100 CPM

4. ALL HAND TOOLS AND EQUIPMENT, DIRECT FRISK : < 100 CPM

5. AREA DEEMED FREE OF RADIOACTIVE MATERIAL AND RELEASED UNCONDITIONALLY.

1974:4:54

WED FEB 07. 1990
GROUP B SMEARS-SIMULTANEOUS MODE

SAMPLE NUMBER	COUNT TIME	GROSS ALPHA	GROSS BETA	ACTIVITY(DPM) ALPHA	ACTIVITY(DPM) BETA	TIME OF DAY COUNTED
1	1.00	0	10	0	0	09:34:39
2	0.50	0	3	0	-14.04	09:35:20
3	0.50	0	5	0	0	09:36:01
4	0.50	0	6	0	7.02	09:36:42
5	1.00	0	15	0	17.55	09:37:52
6	0.50	0	2	0	-21.06	09:38:33
7	1.00	0	10	0	0	09:39:44
8	0.50	0	4	0	-7.02	09:40:24
9	0.50	0	7	0	14.04	09:41:05
10	0.50	0	3	0	-14.04	09:41:46
11	1.00	0	21	0	38.61	09:42:56
12	1.00	2	11	8.44	3.51	09:44:07
13	0.50	0	5	0	0	09:44:48
14	0.50	0	3	0	-14.04	09:45:28
15	0.50	0	5	0	0	09:46:09
16	1.00	0	17	0	24.57	09:47:20
17	0.50	0	2	0	-21.06	09:48:00
18	1.00	0	12	0	7.02	09:49:11
19	0.50	0	5	0	0	09:49:52
20	1.00	0	11	0	3.51	09:51:02
21	1.00	0	14	0	14.04	09:52:13
22	1.00	1	16	4.22	21.06	09:53:24
23	1.00	0	15	0	17.55	09:54:34
24	0.50	0	2	0	-21.06	09:55:15
25	0.50	0	7	0	14.04	09:55:56
26	0.50	0	5	0	0	09:56:37
27	1.00	1	14	4.22	14.04	09:57:47
28	1.00	0	14	0	14.04	09:58:58
29	0.50	0	5	0	0	09:59:39
30	0.50	0	2	0	-21.06	10:00:19

OPERATION COMPLETE

To Bldg #55
Dennis

1) Removed picknic Tables - Found Contamination
2) Put on Hot side outside of TKR Barn.
3) Swept up Sawdust + ISO'd - Found Cs + Co
4) Posted Trailer. Rad Mat / Contact H.P.
5) Posted 1 ton Same Just for thoroughness.
It is still Canvased.
6) Pile of wood Not Moved As Yet - P/S says that B+R will have to Move it tomorrow.
W. Simmons talked to R. Nelson + got the OK to leave things ~~—~~ till tomorrow (2/7)

Cliff

Sample: LB/RU SAWDUST
Data collected on 6-FEB-90 at 17:49:43
Received to 0. days, 0.0167 hours BEFORE the start of COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

Nuclide	Activity Concentration in uCi/EA				Energy Comparison (keV)	
	Measured	Error	Decay corrected	Error	Expect	Diff
CO-60	2.98E-03	+- 2.23E-04	2.98E-03	+- 2.23E-04	1332.46	-0.09
					1173.21	-0.10
CS-134	8.22E-04	+- 1.55E-04	8.22E-04	+- 1.55E-04	795.81	0.36
					604.74	0.02
CS-137	4.73E-03	+- 2.65E-04	4.73E-03	+- 2.65E-04	661.64	0.05
SB-122	2.29E-04	+- 1.01E-04	2.29E-04	+- 1.01E-04	564.10	-0.68
Total	8.76E-03	+- 3.93E-04	8.76E-03	+- 3.93E-04		

Standard Deviation = 0.34

EBAR = 1.51 MeV/Disintegration
Max Permissable Activity = 0.00E-01 uCi/EA
Total Measured Activity = 8.76E-03 (+-3.93E-04) uCi/EA

Error Quotation at 1.00 Sigma

Tech File 11.20.11.3

1974:4:65

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter BC 4 #611 Inst. Type & No. Ro-2 #4393 Date 1-5-90

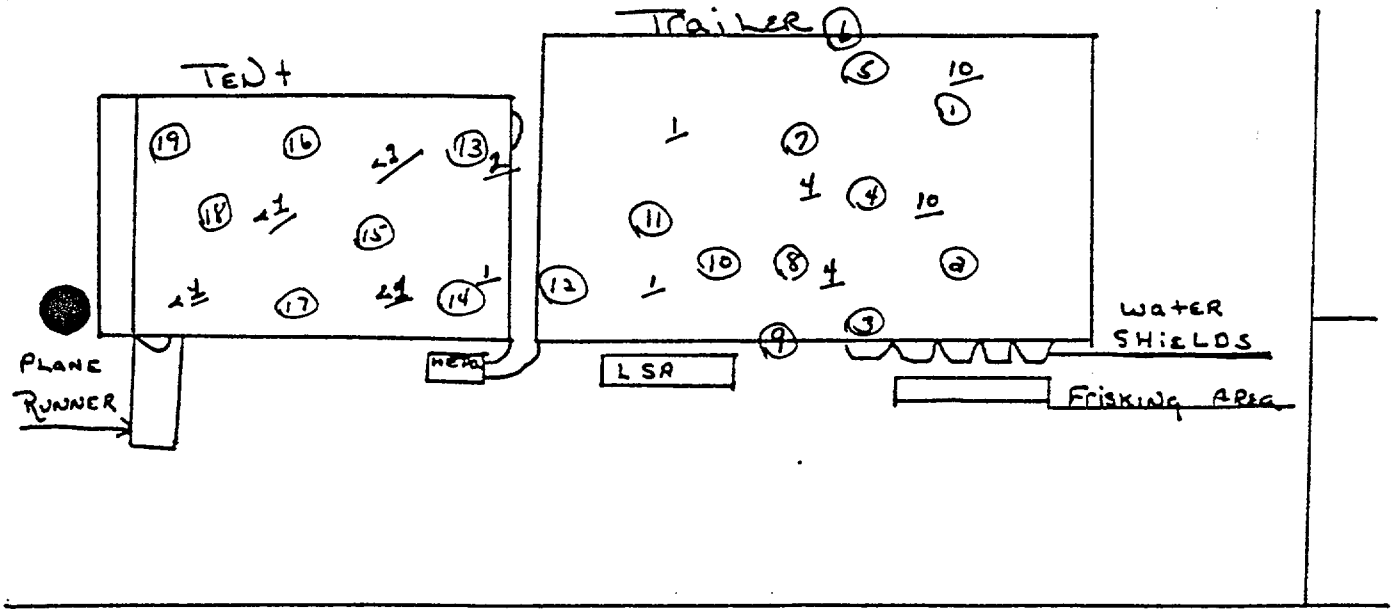
Eff. 21.3% Time 0630

Bkg. 47 Tech. Miskinen

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

All Smears <1K

Area/Item TANKER BARN
RWP-90-13



MT-HF-101-83

Tech. File 15.22.18.3

1974:4:82

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter Bc.-4 #204 Inst. Type & No. Ludlum #4616 Date 1-2-90

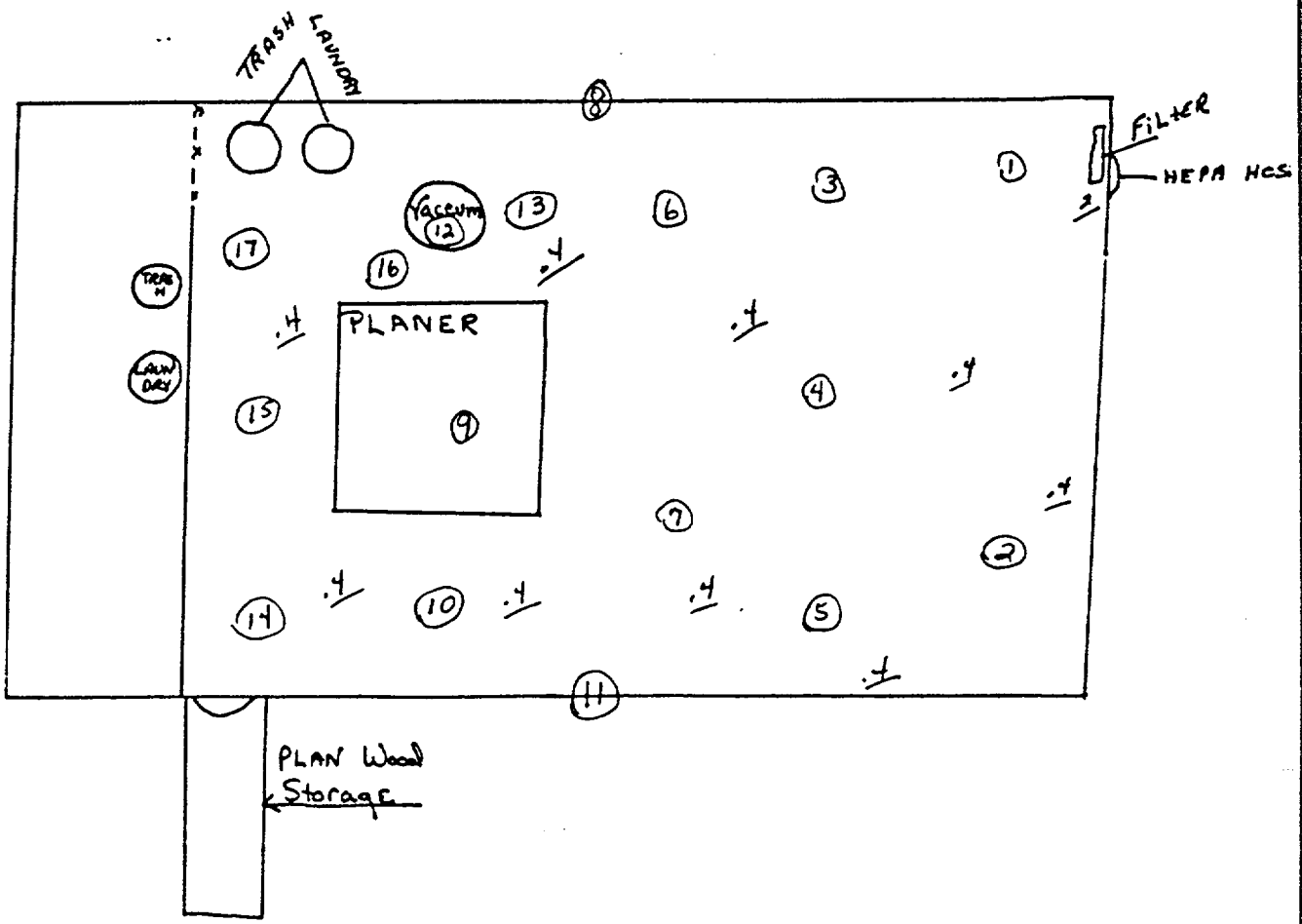
Eff. 19.5% Time 0634

Bkg. 59 Tech. Mistiner

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

All smears <1K

Area/Item Boring Test
RWP 89-10-770



1974:4:73

MY-HP-161-83

2/13/90

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter Mk1J 65869 Inst. Type & No. Ludlum 65454 Date 2-7-90

Eff. 10% Time 1431

Bkg. 50 cpm Tech. Miskimens JBeaini

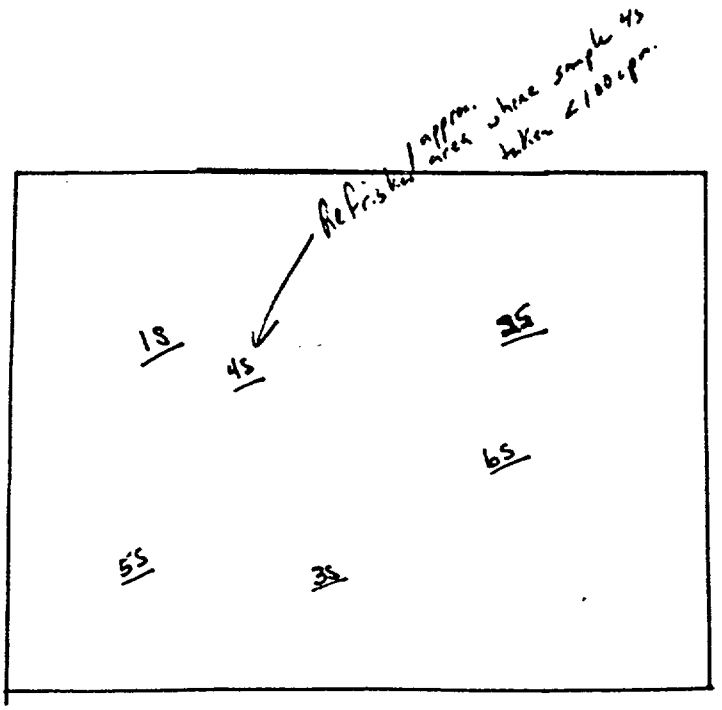
NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Tech File 19.20.18.3

Area/Item Area Where Wood was Store on clean side.

Soil Samples

1 see attach
2 see attach
3 <7.57E-7
<1.29E-4 uci Eu, Cs-137 see attached
5 < LLD
6 see attach



Sample 3 was water <7.57E-7

1S was snow reading 800 cpm when removed area was Reading <100 cpm

Area Frisked to less than <100 cpm

AREA Deposted

1354:4:82

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

19.20.1

Counter Ludlum Model 3 65869 " 65347 Inst. Type & No. Ludlum #5 — 64616 Date 2/20/90

Eff. 10% Time 1400 ~~0800~~ 44

Bkg. 100 Tech. Guion/Peters

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item Tanker Barn.

312 pieces of Lumber direct frisked, all ≤ BKg by direct frisk.

18 pieces of ~~lb~~ Lumber direct frisked all ranged from 500cpm to 10mR/hr. These pieces were disposed of as radwaste.

HSA ID# 30

RADIOLOGICAL INCIDENT REPORT

90-4
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 2/6/90 @ 1300

LOCATION: BWST Cubicle

HOW RADIATION CONTROLS WAS NOTIFIED: Portal monitor alarm.

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation):
Multiple personnel contaminations occurred when the BWST-A siphon heater leaked and overflowed the heater well. The apparent cause of the event was releasing the area (depositing) as free of contamination based on an inadequate survey. The survey for such contamination was taken on a snow/ice surface.

Penn Hughy
PREPARER SIGNATURE

DATE 2/7/90 TIME 1200

SECTION II RADIOLOGICAL CONTROLS SECTION HEAD REVIEW

Immediate Corrective Actions Taken (Including Notifications and Reports per 9.1.25 and 10CFR50.72):

1. All personnel were surveyed decontaminated as evaluated and re
2. The siphon heater area was posted as "Contaminated" and contamination controls were put in place for remaining work.
3. An HPES evaluation was initiated to determine the root ca

[ ] This incident requires no further reports, documentation or followup

[X] Long Term Corrective Actions Recommended:
1. Review what constitutes adequate surveys for area release with Techs. (Resp. RC Sups)
2. Decon the contaminated area. (Resp. Decon)
3. Address recommendations/findings of the HPES evaluation (Resp. Indi by A

~~Rad Controls Section Head~~ RPM

DATE 3/14/90

Route to: 1. Dept. Mgr. TechSup Dept. Please respond within 14 days.
2. Plant Mgr.
3. File (Return to Radiological Controls)

0032f

1974:4:188

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter BC4 & 204 Inst. Type & No. _____ Date 1/8/90

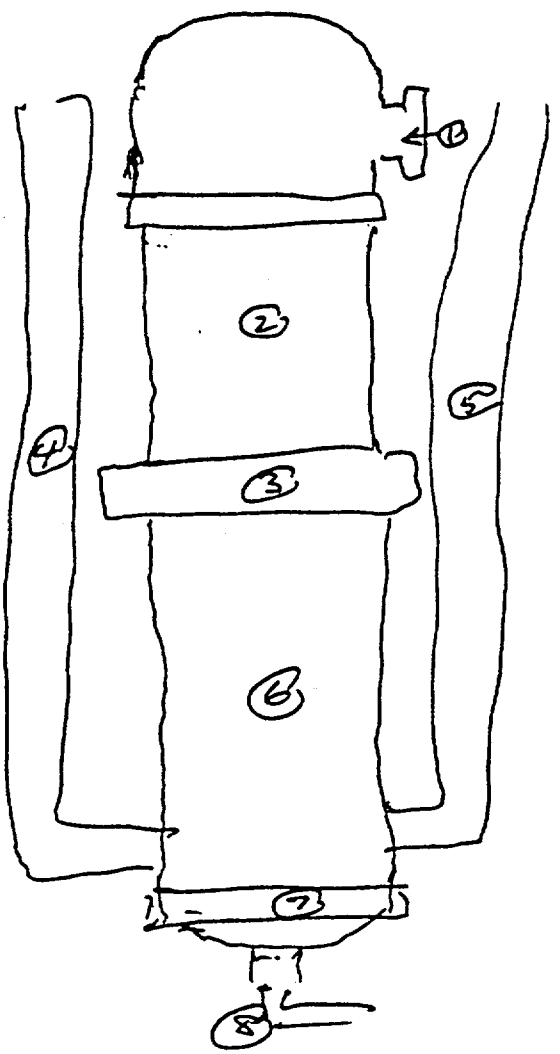
Eff. 19.5 % Time 1015

Bkg. 61 cpm Tech. BWE

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item "A" Burst - Syphon Heater

Represents internals of heater



Smears

1 - 55.6K

2 - 1800 dpm

3 - 4197 -

4 - 1015 -

5 - 1535 -

6 - 2412 -

7 - 8298 -

8 - 20.6K

1974:4:189

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter BC4 # 204 Inst. Type & No. _____ Date 1/11/90

Eff. 19.52 Time 0845

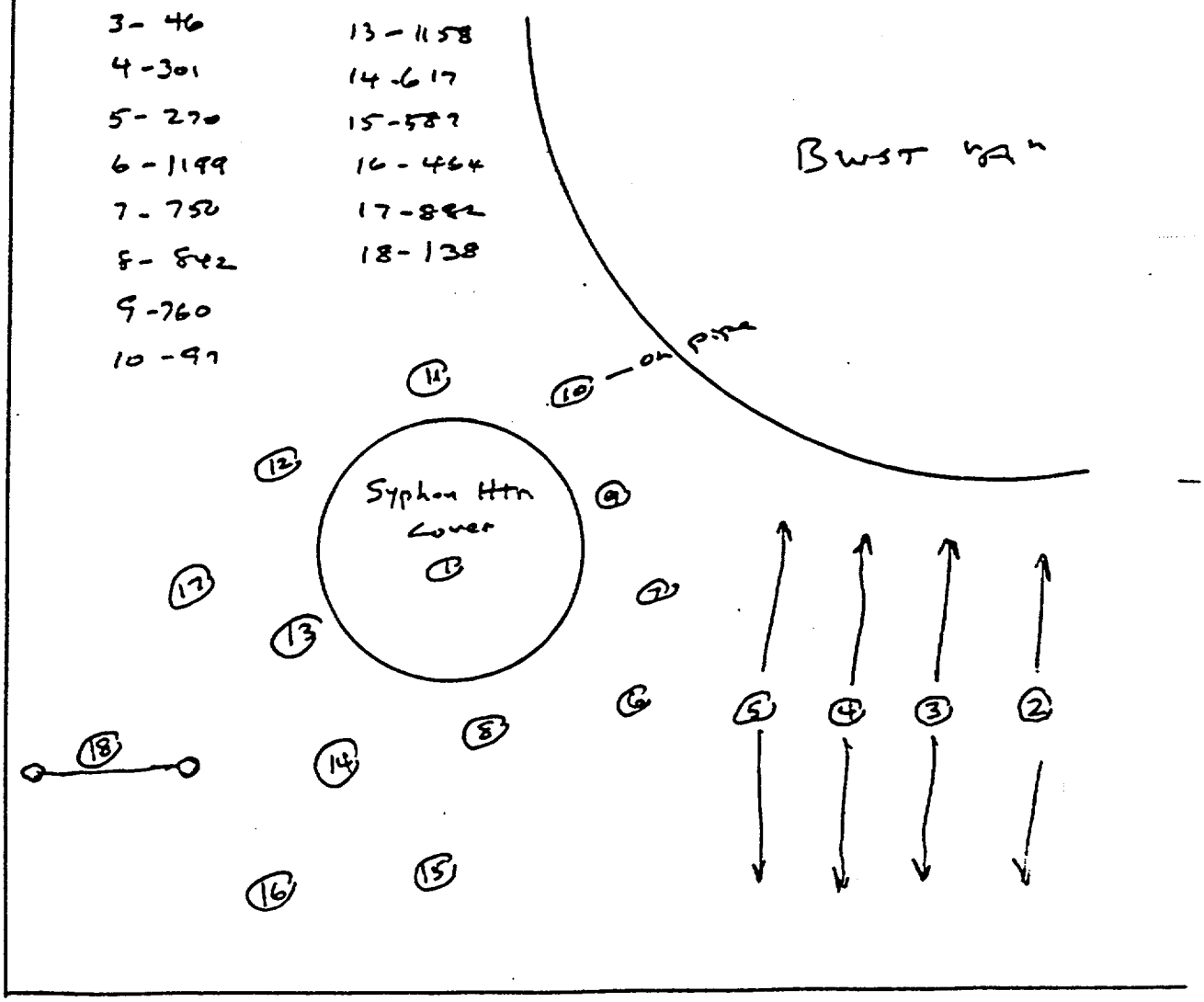
Bkg. 67 cpm Tech. BRE

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item BWST "A"
Around Syphon Heat

Smears were:

1 - 158	11 - 536
2 - 15	12 - 515
3 - 46	13 - 1158
4 - 301	14 - 617
5 - 270	15 - 587
6 - 1199	16 - 464
7 - 752	17 - 842
8 - 842	18 - 138
9 - 760	
10 - 97	



BW21 INCIDENT

1994:4:111

WHEN BWST CONTAMINATIONS STARTED SHOWING UP, SOMEONE SAID THAT THERE WAS A SPILL (OR OVERFLOW OF THE HEATER) [redacted] DURING THE DRAIN

I WENT TO CONTROL ROOM TO INQUIRE WHO DID THE DRAIN AND [redacted] WHETHER OR NOT THERE WAS A SPILL AND IF SO IF IT WAS REPORTED

STOVE KNOBEL WAS IN CONTROL, SAID THAT WHEN HE WENT TO DRAIN THE HEATER IT WAS OVERFLOWING INTO THE BERMED AREA. HE WORE RUBBERS AND GLOVES TO DRAIN THE HEATER. HE REPORTED THE SPILL TO DEB HANN AT THE CHECK PT.

SHE HAD THE WATER SAMPLED BUT NO FOLLOW UP ACTIONS WERE PURSUED. (I DON'T KNOW THIS FOR SURE)
Was posted "contaminated" OK

ALSO - KEN LAWS HAD SURVEYED THE AREA ON 2/1/90 FOR RELEASE. HE WAS UNCOMFORTABLE IN RELEASING THE AREA BECAUSE OF THE SNOW AND WATER. THE AREA WAS LATER (~10 M. DEPOSTED [redacted] (BY PHIC I THINK)

JMC

19.20.11

MY-HP-161-83

1974:4:115

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter NA Inst. Type & No. NA Date 2/6/90

Eff. ↓ Time 1745

Bkg. ↓ Tech. SLC

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item BWST Dike Water Samp.

20 ml sample of water from the BWST Dike area showed a gross count of 1.63E-3 uCi/ml.

HSA ID# 31

1974.5.483

ATTACHMENT A

RADIOLOGICAL INCIDENT REPORT

92-13
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 11/19/92 1045

LOCATION: TURBINE HALL ("COLD SIDE") TOOL CRIB

HOW RADIATION PROTECTION WAS NOTIFIED: BY JOE BOURASSA (YNSD AUDIT)

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation. See Section 5.1.4 of Procedure):

WHILE CONDUCTING A CURSORY DIRECT FRISK OF THE "COLD SIDE" TOOL CRIB, A YNS[D] AUDITOR IDENTIFIED A RADIOACTIVE TOOL (MAGNET MOUNTED DRILL) SEE ATTACHED SUR[VEY]. AT 1115 THE SAME YNSD AUDITOR IDENTIFIED A LARGE WIRE ROPE IN THE RIGH[T] LOCKER ABOVE WATER TREATMENT WITH FIXED CONTAMINATION - SEE ATTACHED SURVEY. AUDITOR ALSO IDENTIFIED SEVERAL TOOLS PAINTED YELLOW, THESE YELLOW TOOLS DID NOT HAVE ANY DETECTABLE RADIATION.

[signature]
PREPARER SIGNATURE

DATE 11/19/92 TIME 1145

SECTION II RADIOLOGICAL CONTROLS/RP PROGRAMS SECTION HEAD REVIEW

Immediate Corrective Actions Taken (Including Notifications and Reports per 10CFR2[0] and/or 10CFR50.72):

RC SECTION HEAD AND RPM NOTIFIED, STARTED FOLLOW-UP SURVEYS OF THE "COLD SIDE" TOOL CRIB AND RIGGING LOCKER. 11/20/92 COMPLETED APPROX. 10 HOURS OF DIRECT FRISKING OF TOOL CRIB, RIGGING CAGE, STAGING STORAGE, NO OT[HER] ITEMS FOUND WITH DETECTABLE COUNTS.

Interviewed Tool Crib attendant for possible knowledge of how the items got [to] storage areas. No one knew when or how the items arrived.

☐ This incident requires no further reports, documentation or follow-up

☒ Long Term Corrective Actions Recommended:

Don[e]

- REVISE PROC. 9-303-4, "SURVEY FREQUENCIES" ATT. B TO MAKE TOOL C[RIB] RIGGING LOCKER ON COLD SIDE A SEPARATE SURVEY USING DIRECT FRISK - O[NCE]
- WRITE MEMO TO PLANT PERSONNEL TO PUBLICIZE EVENT AND / REMIND PERSONNEL OF RCA TOOL COLOR CODING and control policy. Done EMH 92-046 12/30/92
- ADD TO GET, GPh ADDITIONAL EMPHASIS ON TOOL FRISKING AND COLOR CODE

I approve this Incident Report including the recommendations with the exceptions noted below:

Responsible Section Head [signature] Date 11/30/9[2]

1. A RadCon supervisor should conduct a special RAP or evaluation of the actual process of surveying and releasing tools at the checkpoint.

RAP Complete 1/27/93

[signature] 12/1/92
RPM Date

Route to:
1. Radiological Controls or Radiation Protection Programs Section He[ad]
2. Radiation Protection Manager
3. Tech. Support Department Manager
4. Plant Manager
5. ALARA Committee/RPM and Training Department
6. File 19.11.4
7. Tech File #19.1.1.1

1994-6-495

RIR 92-13 TWO CONTAMINATED ITEMS DISCOVERED IN THE TURBINE HALL DURING AN RP AUDIT

****

REPORTABILITY: There are no reportability requirements for the event. There were no significant doses to personnel, no release of radioactive material off-site and no uncontrolled radioactive material greater than 10CFR20 App. C concentrations.

EVENT SUMMARY:

On November 19, 1992 during a routine check of the Turbine Hall tool crib by an auditor, a contaminated magnetic base was discovered. A contaminated sling was also discovered by the auditor while surveying the Turbine Hall rigging locker. Some yellow-painted items (non-contaminated) were found in the rigging locker.

Rad Controls confiscated the contaminated objects and conducted further, detailed surveys of the Turbine Hall tool storage areas. No additional contaminated items were found. No loose surface contamination was detected at any of the survey locations.

The tool crib attendant was interviewed but had no knowledge of how or when the contaminated objects were placed in the Turbine Hall. The tool crib attendant knew he should not accept yellow painte items.

FACTS:

1. The requirements for control of potentially radioactive tools are contained in procedure 9-5-100, Contamination Control/Decontamination Program, Section 7.7 and follow commonly accepted industry practices.

2. The tool control measures, as described in 9-5-100, were implemented in February 1992 as part of the RP Program up-grade.

3. There was no plant-wide survey for contaminated or yellow painted tools conducted upon implementation of procedure 9-5-100.

4. The controls established in 9-5-100 are covered in GET/GPK training so all personnel entering the RCA should be aware of the requirements.

5. There is no periodically-required survey of the Turbine Hall tool crib or rigging lockers in the Rad Protection routine survey schedule.

6. The last time the tool crib was surveyed for sure was 7/1/92 and possibly 10/1/92.

7. No indication of radioactive material was shown on the survey of the tool crib area either on 7/1/92 or 10/1/92, but neither survey was specifically checking for potentially contaminated tools.

8. Only two items out of dozens surveyed were found to be contaminated.

CONCLUSIONS:

A. The contaminated items found were an isolated event. Facts 7,8.

B. The contaminated items may have been present since before the implementation of 9-5-100. Facts 2,3.

C. The contaminated items could have been mistakenly moved to the Turbine Hall by an untrained person. Fact 4.

D. The control measures required by 9-5-100 should be adequate if followed. Fact 1.

E. The lack of a pre-implementation survey and the lack of post-implementation checks of the tool crib and other equipment storage areas precluded Maine Yankee from finding the contaminated items prior to the audit. Facts 3,5,6.

RECOMMENDATIONS:

I. Revise the routine survey schedule to require periodic checks of tool/equipment storage areas in the Turbine Hall and other clean areas. (E)

II. Issue a plant wide memo to remind personnel of the tool control requirements. (C,D)

III. Route this RIR to Training for inclusion in Current Events training. (C,D)

1374:8:487

AUDIT DISCREPANCY STATUS REPORT

SSCA NO.: 0001
REPORT NO.: MY-92-03B
AUDIT DATE: 11/16-25/92
AUDITOR(S): J.F. BOURASSA
W.A. WENTWORTH
J. LAUGHNEY
TECHNICAL SPECIALIST(S): M. DESILETS
M. MORGAN

LOCATION: MAINE YANKEE

AUDIT AREA: RADIATION PROTECTION

DEFICIENCY: Level I ____ or II X

The implementation of the Tool Control Program has not ensured that all contaminated and/or potentially contaminated tools remain in the Radiologically Controlled Area (RCA). The following concerns were identified:

1. A contaminated tool (120,000 dpm fixed and 2,000-8,000 dpm/100 cm^2 loose) was identified in the Turbine Building Maintenance Tool Crib. The tool was not in the RCA, color coded for RCA use, or labeled as radioactive material.

2. A contaminated sling (apparent hot particle reading 300,000 dpm fixed) was identified in the Sling Storage Area located on the Turbine Building Mezzanine level. The sling was not in the RCA or labeled as radioactive material.

3. Approximately fifteen (15) RCA color coded tools were identified in areas outside the RCA, (Maintenance Tool Crib and the Sling Storage Area).

The contaminated tools were immediately returned to the RCA and a Radiological Incident Report (RIR) was initiated. A survey of the areas was performed and no additional items were identified.

PERFORMANCE IMPLICATION(S):

Personnel are unknowingly exposed to contaminated material (radioactive).

REQUIREMENT:

1. Procedure No. 9-5-100, Revision 2, "Contamination Control/Decontamination Program", Section 7.7.12(a) states: "If tools cannot be decontaminated to less than 1000 dpm/100 cm^2 beta-gamma then the tools shall be either:

   a) Stored within a contaminated area;
   b) Stored in a contaminated tool box; or
   c) Sealed within a yellow plastic bag.
   d) Disposed of as low level radioactive waste.

2. Procedure No. 9-5-100, Section 7.7.13 states that items with fixed contamination greater than 1000 counts per minute (cpm) at contact shall be bagged and labeled while in storage.

MAINE YANKEE GENERAL SURVEY RECORD FORM

R (Name & Signature): SHAW [signature]

LOCATION: R.P. Control Point

DATE & TIME: 11/19/92 10:50

INSTRUMENTS USED

MODEL	SERIAL #	CAL DUE	BKGD
2M-14	8269	3-28-93	50cpm
	NA		

RWP #(s): NA

Rx Power: 100%

REASON FOR SURVEY

☐ ROUTINE ☐ PRE-JOB[1] ☐ JOB-COVERAGE[1]

☐ TEMP SHLDING[2] ☐ VERIFICATION[1] ☐ BREACH[1]

☐ UNCOND RELEASE ☒ OTHER (specify): Tool Audit

[1]REQUIRE R.C. SUPERVISOR REVIEW: [signature] DATE: 11/20/92

[2]REQUIRE ALARA COORDINATOR REVIEW: DATE:

DOSE RECEIVED FROM SURVEY PERFORMANCE: Ø

Magnet mounted Post

2-3K dpm/100cm² Loose

100K dpm/probe area ≈ 22cm²

CONTAMINATION

Sample Pt #	RESULTS

LEGEND

- exposure rates are gamma and are in mR/hr, unless otherwise noted.
- exposure rates shall be expressed in mRad/hr or Rad/hr.
- exposure rates shall be expressed in mRem/hr. or Rem/hr.
- contamination results are in terms of dpm (beta-gamma) unless otherwise noted.

- Denotes contact exposure rates.
- Circles numbers indicate smear locations.
- Dotted lines (---) denote boundaries or barriers.

Form Routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

1994-6-490

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
KELSER	HP Club Pt.	11-19-93

INSTRUMENTS USED			
MODEL	SERIAL #	CAL DUE	SKCD
RM-61	85750	2-1-93	80

RWP #(s): 93-1 Rx Power: 100%

REASON FOR SURVEY

- ☐ ROUTINE
- ☐ PRE-JOB[1]
- ☐ JOB-COVERAGE[1]
- ☐ TEMP SHLDING[2]
- ☐ VERIFICATION[1]
- ☐ BREACH[1]
- ☐ UNCOND RELEASE
- ☒ OTHER (specify):

[1]REQUIRE R.C. SUPERVISOR REVIEW: [signature] DATE:

[2]REQUIRE ALARA COORDINATOR REVIEW: DATE:

DOSE RECEIVED FROM SURVEY PERFORMANCE: 0

Survey of sling found on cold side.
direct frisk 30,000 c/m
contamination <1K

CONTA

Sample Pt #

LEGEND

Exposure rates are gamma and are in mR/hr, unless otherwise noted.
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
[illegible] exposure rates shall be expressed in mRem/hr. or Rem/hr.
[illegible] measurements are in terms of dpm (beta-gamma) unless otherwise noted.

*Denotes contact exposure rates.
Circled numbers indicate smear locations.
Dotted lines (---) denote boundaries or barriers.

Form Routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

1974.6.496

1974.6.496

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): J.P. Dearborn Jr

LOCATION: Cold Side Tool Crib

DATE & TIME: 11-19-92 1152

INSTRUMENTS USED			
MODEL	SERIAL #	CAL DUE	BKGD
M-3	25347	5-6-93	50

RWP #(s): N/A

Rx Power: 100%

REASON FOR SURVEY

☐ ROUTINE ☐ PRE-JOB[1] ☐ JOB-COVERAGE[1]

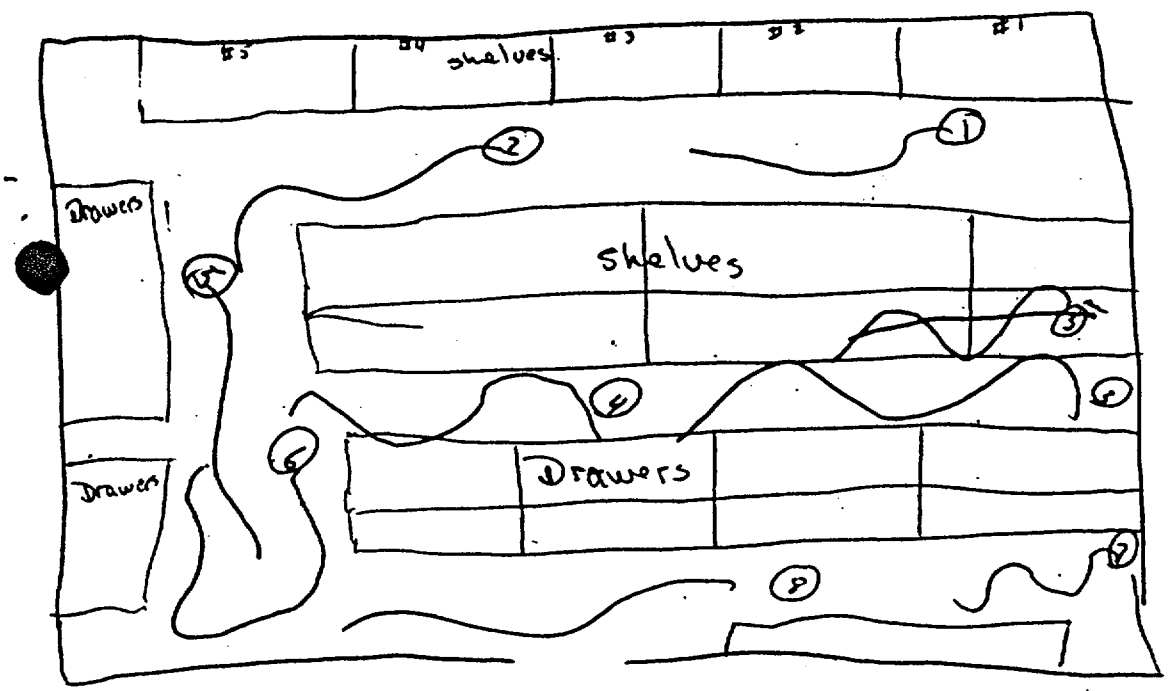
☐ TEMP SHLDING[2] ☐ VERIFICATION[1] ☐ BREACH[1]

☐ UNCOND RELEASE ☐ OTHER (specify):

[1]REQUIRE R.C. SUPERVISOR REVIEW: MP Kenedy DATE: 11/20/92

[2]REQUIRE ALARA COORDINATOR REVIEW: DATE:

DOSE RECEIVED FROM SURVEY PERFORMANCE: 50



CONTAMINATION	
Sample Pt #	RESULTS CCPM
1	30
2	10
3	50
4	20
5	20
6	60
7	40
8	30

direct frisk of Broom used to sweep floors 10-60 ccpm.

LEGEND

Exposure rates are gamma and are in mR/hr, unless otherwise noted.
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr. or Rem/hr.
Contamination results are in terms of dpm (beta-gamma) unless otherwise noted.

*Denotes constant exposure rates.
Circles numbers indicate sample locations.
Dotted lines (----) denote boundaries or barriers.

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

HSA ID# 32

32.

R

ATTACHMENT A

Unconditional Release of Unique Material from the

Radiation Control Area

1. Material or items to be released: Snow from RCA

2. Assumptions used and the basis for the release to insure that Maine Yankee's unconditional release limits are not exceeded.

1. Snow itself is assumed to be free of contamination
2. Operator will be instructed to pick up as little gravel as possible with the snow.
3. See next page.

Rad Controls Section Head

Snow Release

1/13/87.

Major source of contamination would be tracking from RCA.

Walkways are kept $< 1000 dpm/100 cm^2$

Assume 1000dpm deposited on snow surface of $100 cm^2$ for each shoe and all activity deposited at the first 2 foot steps:

$2000 dpm / 200 cm^2$

or $\sim 0.001 \mu ci / 200 cm^2$

Assume max snow depth = 1"

Thus $0.001 \mu ci / 500 cm^3$ of snow

$500 cm^3$ snow $\cong$ $42 cm^3$ water

2.3 E-5 $\mu ci/cc$ activity of melted snow from a single occurence with no further dilution from other melting snow.

This activity compares with the MPC values (Table II Col. 2) for Cs-137 of 2 E-5 $\mu ci/cc$ and Co-60 of 5 E-5 $\mu ci/cc$.

It is therefore unlikely that snow removal would cause a release via the storm drains (which are periodically surveyed) exceeding MPC values.

G. D. Pillsbury

Note: No dosimetry will be required for the operators of snow removal equipment, in accordance with 10CFR20.202.

Cancelled. Issue pocket dosimeter. per G. Pillsbury
J. H. J. H. 1/14/87

HSA ID# 33

IDENTIFIED RADIOLOGICAL ISSUES FOR FURTHER CHARACTERIZATION

Issue Description	Date	Status
Leak in RWST siphon return line to ground	1988	~600 ft3 of soil removed and disposed as LLW ~NRC approves residual under 10 CFR § 20.302(a) on 8/31/89
Residual slightly contaminated soil under LLW storage area in vicinity of yard crane	1992	~Area evaluated and characterized by YNSD 10/92 (MYP #92-1173) and 1/93 (MYP # 93-0054) ~IAW 10 CFR § 50.75(g) placed in decommissioning plan file 4/12/93 (JHA-93-27)
Spreading of slightly contaminated silt from base of intake racks in unused area under transmission lines	1992-97	~MDEP issued Dredge Spoil Utilization Permit S-20814-SS-A-N ~MDHE accepted practice 5/24/95 (R.J. Schell Ltr to MDEP)

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter BC-4 132 Inst. Type & No. N/A Date 7-24-89

Eff. 22% Time 1500

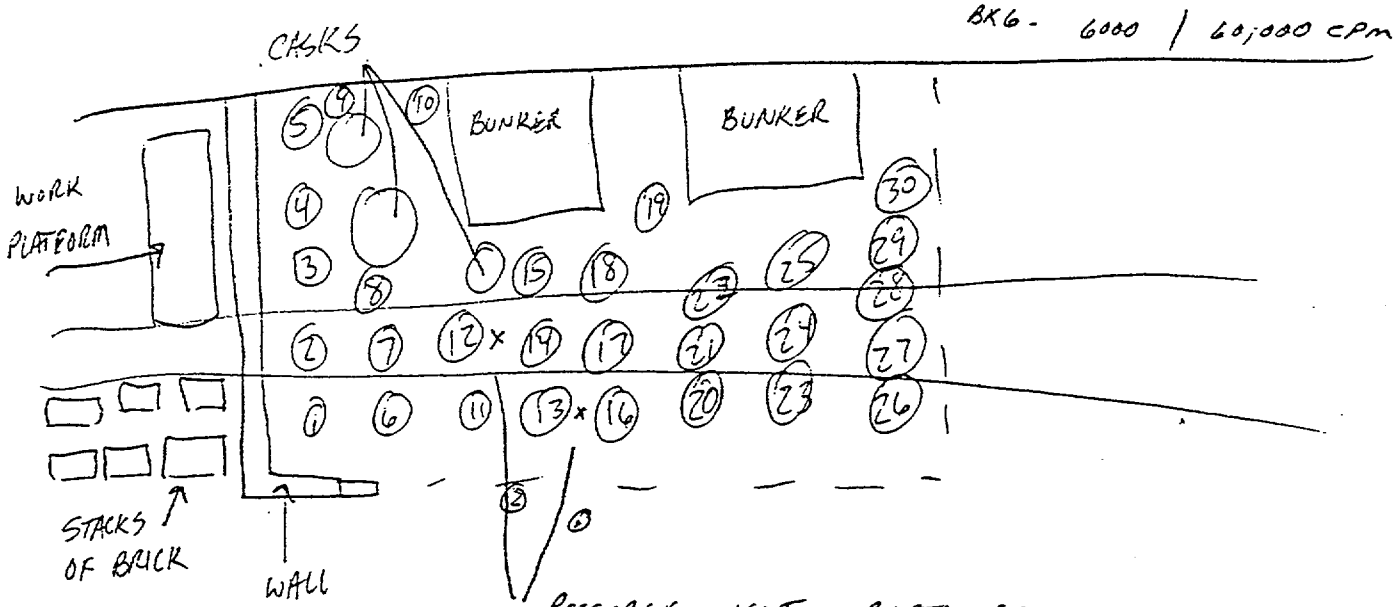
Bkg. 57 Tech. BOUDREAU/MAIN

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

AREA DIRECT FRISKED WITH LUDLUM MODEL 3 WITH BACKGROUND VARIATION FROM 6000 CPM TO 40000 CPM.

Area/Item WEC. WALL

LUDLUM MODEL 3
SN 60769 / 60781
EFF. 10% / 10%
BKG. 6000 / 60,000 CPM



POSSIBLE HOT PARTICLES

① 25,000 CPM BKG, 60,000 CPM ON X

② 20,000 CPM BKG, 45,000 ON X

SMEAR RESULTS All smears <1K DPM 100 cm/2

MY-HP-161-83

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter BC-4 #132 Inst. Type & No. RO2A #1989 Date 4-3-89

Eff. 22% Time 1030

Bkg. 56 cpm Tech. CAY

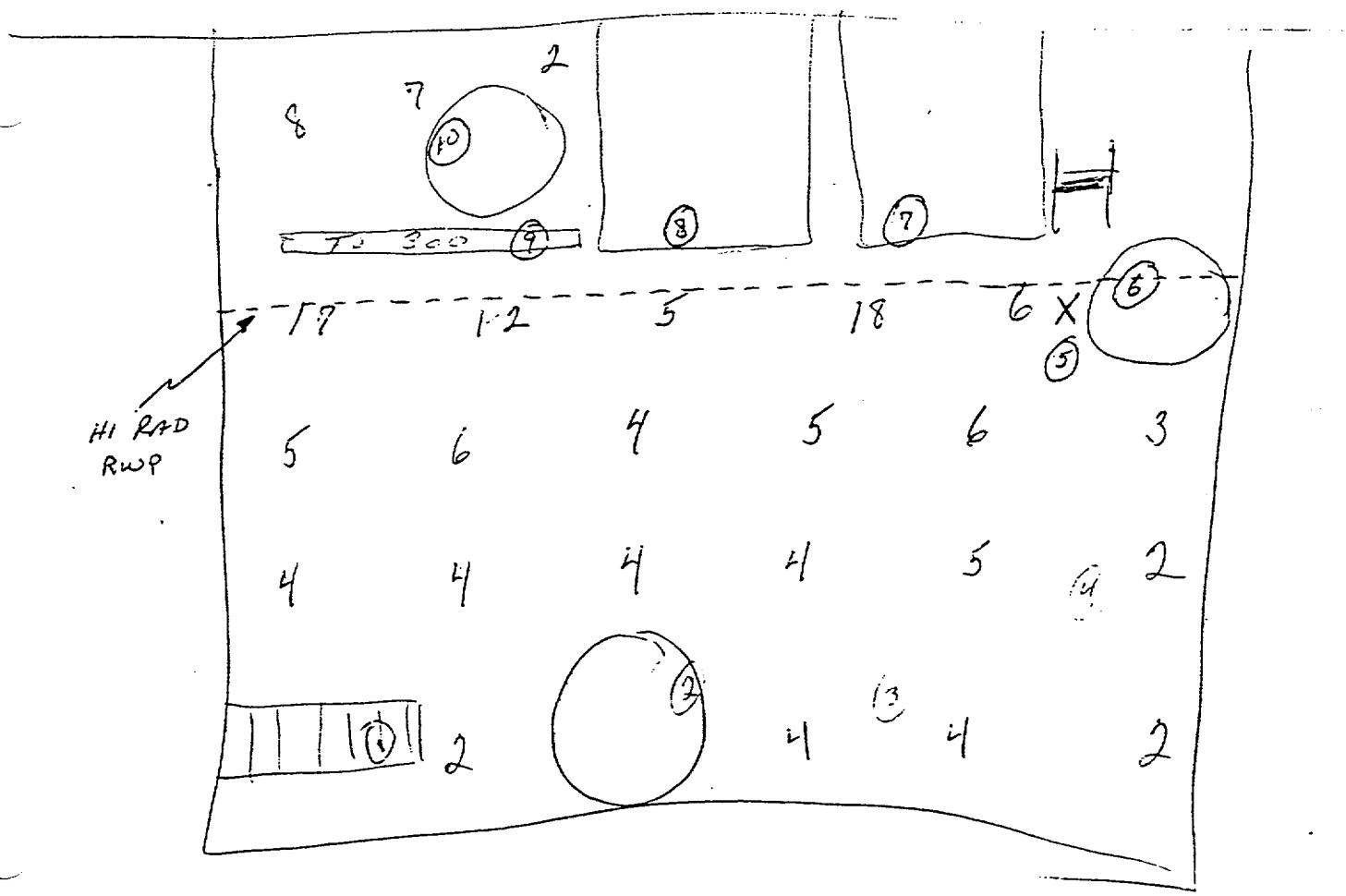
NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item Inside Wiscasset

All Smears <1000 dpm/100 cm²

X Dirt Sample Location

RW 4/6



79

ATTACHMENT B

ATLAS DOCUMENT INPUT FORM

1. TITLE	Contaminated Soil Left in Yard Area
2. DOCUMENT TYPE	Correspondence
3. DOCUMENT FORM	
4. DOCUMENT LOCATION	1736-0332
5. RETENTION PERIOD	
6. TECHNICAL FILE NUMBER	01.08.04.02
7. DOCUMENT NUMBER	
8. REVISION NUMBER	
9. DATE	04/12/1993
10. CLASSIFICATION TYPE	"D"
11. TOPICAL INDUSTRY ISSUE	
12. KEYWORDS	
13. SUBJECT	
14. REFERENCE DOCUMENT	
15. SYSTEM CODE	
16. COMPONENT CODE	
17. CYCLE NUMBER	
18. ORIGINATOR	Admin:
19. RECEIVER	
20. VENDOR CODE	
21. ACCESSION NUMBER	
ACTION: ADD/REPLACE/DELETE (CIRCLE ONE)	

MAINE YANKEE MEMORANDUM

Reliable Electricity for Maine Since 1972

To: M. M. Hovey, Document Control — **Date:** April 12, 1993
C. R. Shaw, Manager, PED
G. D. Pillsbury, Manager, Radiation Protection

From: J. H. Arnold — **File:** JHA-93-27

Subject: Slightly Contaminated Soil Left in Yard Crane Area Until Decommissioning

References: (1) JHA memo to R. H. Nelson of 07/21/92, Licensing Options for Soil Disposal (attached)
(2) J. W. Bisson memo to P. L. Anderson of 10/23/92, REG 268/92, MYP #92-1173 including "Evaluation of Contaminated Soil at Maine Yankee's former Low Level Radioactive Waste Storage Area" (attached)
(3) F. X. Bellini memo to P. L. Anderson, "Discussion of Comments by R. G. Gerber Regarding Ground Water Considerations for MY Former Rad Bunker Storage Area" of 01/12/93, ESG 02/93, MYP #93-0054 (attached)

Reference (1) analyzes options for dealing with remaining soil near the spent fuel pool building under a portion of the fuel cask handling yard crane where low level radioactive waste (Wiscasset wall) was stored in the 1980's. As a result of this analysis, we chose the option provided by NRC regulation 10CFR50.75G (current copy for July 1992 included in reference (1)) which allows leaving contaminated soil in place until decommissioning, provided that certain records of the area are maintained in the decommissioning file. The purposes of this memo are to: request that Document Control place the referenced records in the Decommissioning File, Tech File # 1.8.4.2 (Planned Activities), request that the Plant Engineering Department (PED) include reference to this area in the appropriate site drawing(s) and file a memo in file # 1.8.4.2 stating which drawing(s) indicate this area, and request that the Radiation Protection Manager maintain records of this area as appropriate for a part of plant area contaminated with radioactivity.

Yankee Nuclear Services Division (YNSD) performed analysis (please see reference (2)) of the impacts of leaving this soil in place until decommissioning. Robert G. Gerber Incorporated, a hydrogeologic consultant having extensive knowledge of the Maine Yankee site and Maine geology, commented on this analysis. Reference (3) contains YNSD responses to these comments.

This closes requirements for 10CFR50.75G as we currently understand them.

c: R. W. Blackmore w/o encl
L. R. Diehl
W. B. Drake
S. D. Evans
J. R. Hebert
M. A. Lynch
R. H. Nelson
S. E. Nichols
G. D. Whittier

L:\jha\memos\jha9327.mem

C: Tech File # 1.8.4.2 - M. M. Hovey
JRH. Bert
GDW Hier

JOHN - PER DISCUSSION W/ JRH - PED DOES NOT FEEL THIS TYPE OF INFO NEEDS TO BE OR SHOULD BE ON OUR DESIGN PRINTS. A COPY OF THIS INFO IN THE DECOMISSIONING TECH. FILE SHOULD SURFICE. CWS 4/20

MAINE YANKEE MEMORANDUM

Reliable Electricity for Maine Since 1972

To: M. M. Hovey, Document Control **Date:** April 12, 1993
C. R. Shaw, Manager, PED
G. D. Pillsbury, Manager, Radiation Protection

From: J. H. Arnold **File:** JHA-93-27

Subject: Slightly Contaminated Soil Left in Yard Crane Area Until Decommissioning

References: (1) JHA memo to R. H. Nelson of 07/21/92, Licensing Options for Soil Disposal (attached)
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This closes requirements for 10CFR50.75G as we currently understand them.

c: R. W. Blackmore w/o encl
L. R. Diehl
W. B. Drake
S. D. Evans
J. R. Hebert
M. A. Lynch
R. H. Nelson
S. E. Nichols
G. D. Whittier

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Reference 1

MAINE YANKEE MEMORANDUM

Reliable Electricity for Maine Since 1972

To: R. H. Nelson

From: J. H. Arnold

Date: July 21, 1992

File: JHA-92-53

Subject: Licensing Options for Soil Disposal

At a meeting on July 8, you asked me to review the feasibility of using spill record criteria of 10 CFR 50.75(g)(1) (attached) as means of analysis and documentation of our decision to leave some slightly contaminated soil in place until decommissioning in the Radiation Control Area (REA) at the Waste Storage Bunker.

We have looked into the acceptablilty of this path and how it relates to two other possible options and offer our recommendations.

Acceptability of 10 CFR 50.75(g)

Steve Evans and Mark Strum heard NRC staffers state that 10 CFR 50.75(g) path was an acceptable alternative for on site contaminated material which was destined for disposal at decommissioning (see SDE memo of 6/17/92 attached). Also Jim Weast has learned that Davis Besse submitted a 10 CFR 20.302 application to NRC which on the advice of the NRC was changed to a 10 CFR 50.75(g) and is currently awaiting NRC approval. Jim in addition found out that Fitzpatrick developed a 10 CFR 50.75(g) analysis (attached) for some soil left after a March 18, 1992 spill. This analysis was reviewed and accepted by an AIT called in on the spill.

NRC approval of the 10 CFR 50.75(g) is not required; the above instances are cited to indicate that NRC has looked with favor on use of this pathway in situations similar to ours.

Options

Based on the above understanding we have reviewed three options for dealing with this soil. The advantages and disadvantages of each have been listed below.

1. Remove and dispose contaminated soil as low level waste in 1992 - This would require removal of about 1500 ft^3 of contaminated soil, placing it in steel drums and shipping to a LLW disposal facility in 1992.

   Advantages

   - Assures that contamination in soil can not migrate.
   - According to YNSD, soil must be removed at decommissioning anyway. Disposal costs probably are lower now.
   - Eliminates risk of having to remove and store soil in LLW building should NRC requirements change.

- Can be disposed with assurance because LLW disposal facilities are available in 1992.
- Construction in area will cause disturbance of contaminated soil.

Disadvantages

- Cost incurred now $300 - 500,000.
- Technical Support Department can't support removal effort in 1992 time frame. Will need CED, YNSD, or outside assistance (included in cost range).
- Potential for recontamination of area.
- May set precedent for other contaminated sites at MY.
- Removal costs could be lower at decommissioning when this clean up is part of a larger effort.

2. Disposal via 20 CFR 302 - Submit application for disposal of soil by leaving in place.

Advantages

- Least cost.

Disadvantages

- Preliminary information indicates that soil could not be left in place after decommissioning because of potential public dose pathways.
- NRC agreement states are taking over 302 approval process. None submitted to these states have been approved.
- This process is for disposal and is probably not applicable to storage until decommissioning.

3. Removal and disposal of contaminated soil at decommissioning - The soil would be left in place until decommissioning and then removed and shipped to disposal. An analysis indicated in 10 CFR 50.75(g) would be performed and placed in file.

Advantages

- Cost impact delayed 20 years.
- Removal effort part of a much larger removal effort associated with decommissioning.
- This approach is acceptable to NRC.

Disadvantages

- Availability and cost of disposal facilities beyond 1992 unknown.
- Risk of migration of contamination to other soil causing greater cost or

to ground water perhaps requiring remediation.

- Contaminated soil would need to be analyzed for dose pathway and handled as radioactive material for construction in area.
- Potential for slightly greater employee dose from working in contaminated area.
- Requires dose pathway analysis. (See REG 147/92).
- The area of contaminated soil would have to remain an RCA.

Recommendations

From a licensing perspective, option two does not appear feasible. Option one is doable if funds are available. Option three is acceptable provided a dose pathway analysis indicates acceptable levels of additional occupational exposure until decommissioning and additional analysis is performed before any construction activity in the area. Expanding the groundwater monitoring program to include this area would also seem prudent to demonstrate no migration. Finally even though our information indicates general acceptance of this approach by NRC there may be some value in touching base with the NRC and State.

Ellen Heath has asked YNSD to have the 10 CFR 50.75(g) analysis done in two weeks. I intend to have ground water analysis done by the end of August or early September.

We understand that you plan to obtain MY Management's approval of Option Three at the Waste Policy Management Meeting on late August. By that time we should complete the 10 CFR 50.75(g) analysis and have the ground water sampled, however we may not have results.

I trust that this satisfactorily responds to your question. Please contact me should you have further questions or comments.

JHA/jag

Attachment

c: S. D. Evans
J. D. Firth
E. M. Heath
J. R. Hebert
R. N. Nelson
M. S. Strum - YNSD
J. V. Weast
G. D. Whittier

Also
E. C. Robinson
RGGI

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2

MAINE YANKEE PROJECT

JUL 2 3 1992

MEMORANDUM

YANKEE ATOMIC - BOLTON

To	P.L. Anderson	Date	June 25, 1992
From	J.W. Bisson	Group #	REG 147/92
		W.O.#	5737
Subject	PROGRESS REPORT: CORE SAMPLING OF THE CONTAMINATED SOIL AT THE WASTE STORAGE BUNKER SITE	I.M.S.#	
		File #	BUNKER

REFERENCES

1. Extension to Maine Yankee Service Request No. M-90-183, "10CFR20.302 Analysis for Slightly Contaminated Soil Remaining at the Waste Storage Bunker Site", 6/8/92.

2. Maine Yankee Service Request No. M-90-183, "10CFR20.302 Analysis for Slightly Contaminated Soil Remaining at the Waste Storage Bunker Site", 12/20/90.

3. Memorandum from S. Cook to Distribution, entitled "10CFR20.302 Meeting Minutes", SEC-92-014, May 13, 1992.

4. Memorandum from J. W. Bisson to P. L. Anderson, entitled "Progress Report: 10CFR20.302 Analysis for Contaminated Soil Remaining at the Waste Storage Bunker Site", REG 80/92, April 3, 1992.

6190

BACKGROUND

The second phase sampling of the contaminated soil at the Waste Storage Bunker site has been completed. Four borings down to bedrock were made within the largest contaminated area as defined by earlier soil sampling. A total of 37 core samples were collected from the four borings. The Environmental Laboratory performed gamma spectroscopy analysis on 28 of the 37 core samples. The sampling effort provided enough information to meet two goals: (i) identification of location(s) which should be excavated because the amount of Co60 and Cs137 contamination is too high for "in place" disposal, and (ii) determination of a soil profile from which the total volume of contaminated soil and radionuclide activities could be estimated for the "in place" disposal analysis.

DISCUSSION

Only 5 of the 28 core samples analyzed by the Environmental Laboratory were found to contain radioactive contamination. Cobalt-60 was detected at relatively low concentrations in 2 samples, both from the same boring. Likewise, Cs137 was detected in low concentrations in 4 samples from 3 different borings. No other plant-related radionuclides were detected in the core samples.

The highest Co60 and Cs137 concentrations were found in a core sample taken from a boring made approximately 6 ft from the locations of the highest Co60 and Cs137 surface contamination. (Due to underground interferences, it was impossible to make a boring at the location of highest surface contamination.) The Co60 and Cs137 concentrations in this particular core sample were 2.5 to 4 orders of magnitude lower than the highest Co60 and Cs137 concentrations in the surface samples. The measured Co60 and Cs137 levels in the other 4 positive core samples were significantly lower.

The results from the sampling effort indicate that very little Co60 and Cs137 contamination has migrated deeply into the soil over the years since the

contaminating event(s). Consequently, the volume of contaminated soil that must be addressed is much lower than what was assumed in the preliminary evaluation.

Since it appeared that most of the contamination is associated with the surface soil, the phase I (surface soil) sample data were revisited. The phase I effort identified five separate areas of contamination at the Waste Storage Bunker site. The largest area extends out about 40 ft from the RCA building. The Co60 and Cs137 surface soil contamination varies by 4-5 orders of magnitude within this large area. However, most of the contamination (approximately 98%) is bounded by a 20 ft radius from a center located near the points of highest soil contamination.

Within the area bounded by the 20 ft radius, there are 3 locations where the Co60 and Cs137 concentrations exceed the respective area averages by a wide margin. Maine Yankee's grid designations for the 3 surface soil sample locations are B-6, B-7, and C-6. It may be prudent for Maine Yankee to remove some of the soil at and around these 3 sample locations for several reasons. In doing so, there would be a significant reduction in the average contamination levels for all radionuclides found in the surface soil at the Waste Storage Bunker site, as well as a significant reduction in the estimated residual soil activities, associated dose rates and doses in the disposal analysis. In an earlier excavation at the Waste Storage Bunker site, Maine Yankee applied 1e-5 uCi/g as a "stop" value. The surface soil data identified three areas where the concentrations were significantly higher (i.e., 1e-4 uCi/g to 1e-3 uCi/g) than the previously applied criterion. If the earlier excavation effort had included the 3 locations, Maine Yankee would have removed the soil. Finally, since the results from both phase I and phase II sampling efforts indicate that most of the contamination is associated with the surface, it may not be necessary to excavate beyond a depth of 6 inches in order to remove most of the contamination at the 3 locations, making removing the soil at these 3 locations somewhat of an easy effort. Additional surface samples from the immediate area around the locations are required in order to determine how far the high contamination levels extend out from these locations, and the results from these samples will determine the total volume of soil that should be removed. However, due to the spotty nature of the contamination that has been found in the sampling efforts, it is expected that the high contamination levels would be limited to the immediate area around each location (e.g., within a few feet). If this is the case, the total volume of soil that will have to be removed would likely be limited to 6 ft^3 to 24 ft^3 (1 to 3 drums).

Currently, the suggested approach for the residual soil contamination at the Waste Storage Bunker site is to attempt to address it under 10CFR50.75(g), which applies to residual contamination remaining after cleanup procedures as it pertains to recordkeeping for decommissioning planning. This approach should be assessed in lieu of a 10CFR20.302 disposal application because: (i) cleanup of the Waste Storage Bunker site has been performed (including the removal of some additional soil), (ii) the asphalt provides an effective control against spreading due to the elements, (iii) the residual soil activities do not appear to be migrating into the soil or ground water, and (iv) a well has been installed specifically to allow monitoring of the ground water at the Waste Storage Bunker site. This approach will still require some dose pathway analyses, although not as extensive as a 10CFR20.302 analysis at this time. Additionally, all known information on the identification of involved nuclides, quantities, forms, and concentrations must be recorded and kept with other records important to effective decommissioning of the facility, at which time the suitability of permanent on-site disposal of the residual contamination can be addressed as part of the larger assessment of overall site characterization. The benefit of this approach is that further action or treatment of the residual soil contamination is deferred until

decommissioning. The drawback is that this approach may still require the submittal and approval of a 10CFR20.302 disposal application before any plant construction plans which might disturb the contaminated soil in the area of the Waste Storage Bunker can take place in the future.

HAVE CRANE HANDY

SUMMARY

In summary, results of the core sampling effort indicated that there has been little migration of the radioactive contamination into the soil at the Waste Storage Bunker site. Most of the contamination appears to be associated with top few inches of the soil surface. Consequently, the volume of contaminated soil that must be addressed is much lower than what was assumed in the preliminary evaluation.

5 ft

There are 3 locations (B-6, B-7 and C-6) where the levels of Co60 and Cs137 contamination are much greater than the average Co60 and Cs137 contamination levels for the affected area. It may be prudent for Maine Yankee to remove some of the soil at and around these 3 sample locations, which may involve only the soil within a few feet of each location down to a depth of about 6 inches. However, additional surface soil samples from the immediate area around the locations would be required in order to determine how far the high contamination levels actually extend out from these sample locations. The results from the additional samples would determine the volume of soil removed.

A suggested approach for dealing with the residual soil contamination at the Waste Storage Bunker site is to address it under 10CFR50.75(g). This approach still requires some dose pathway analyses at this time, although not as extensive as a 10CFR20.302 analysis. The benefit of this approach is that further action or treatment of the residual soil contamination is deferred until decommissioning. The drawback is that this approach may require the submittal and approval of a 10CFR20.302 disposal application before initiating any construction which might disturb the contaminated soil at the Waste Storage Bunker site.

The scheduled completion date for the analyses and final report addressing the residual soil activity is September 1, 1992, as established in Reference 1. The requirements for submitting a report, records or other documentation under 10CFR50.75(g) should be reviewed by Maine Yankee's licensing personnel.

If there are questions regarding this matter, please do not hesitate to contact me at ext. 2414.

ESTIM, RECOMMENDATIONS FOR EXCAVATION OF ENTIRE SITE? LEVELS TO WHICH CONFIRMATORY SAMPLES MUST BE - WHO WILL COUNT, MAN LOAD? JWB/emd BACK FILL + RE PAVE.

Joseph W. Bisson
Joseph W. Bisson
Radiological Engineering Group
Environmental Engineering Dept.

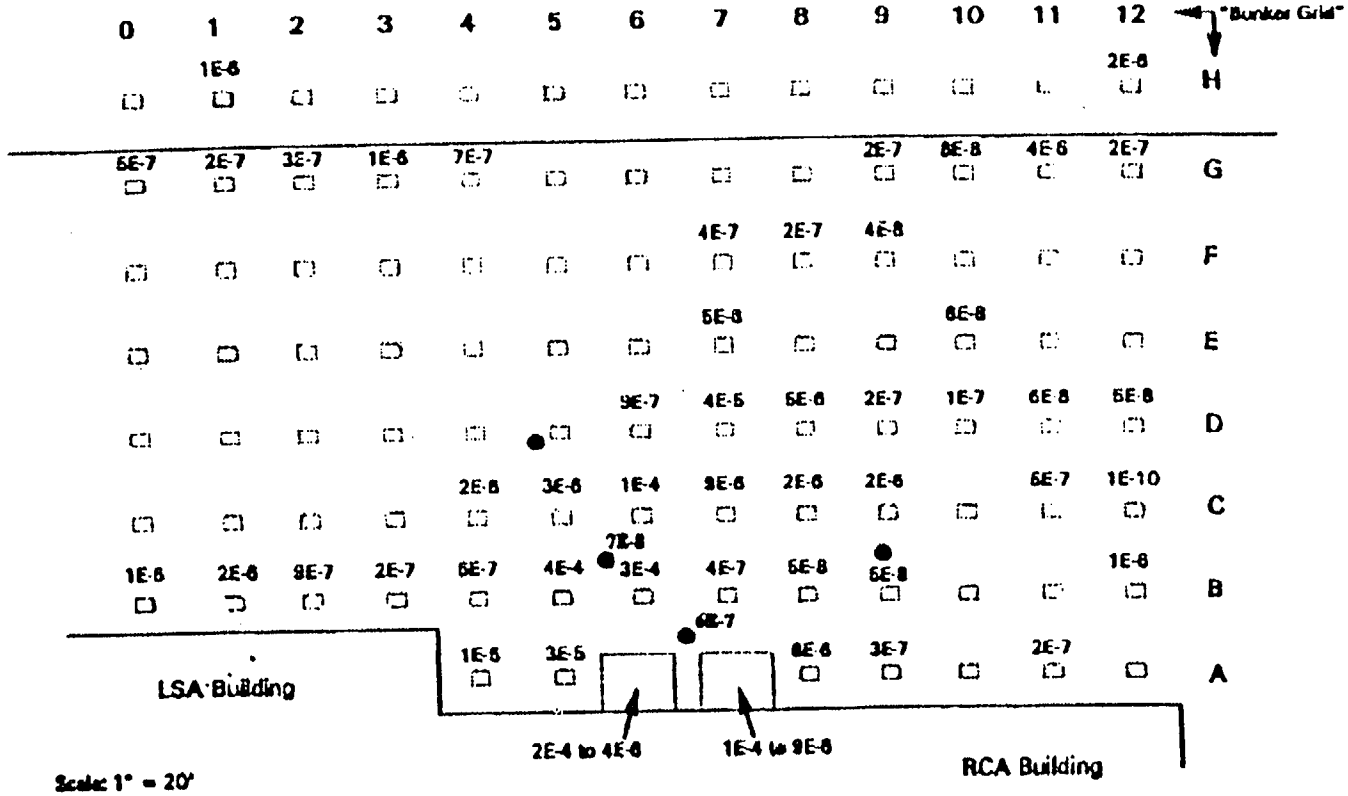
- IDENTIFY, VISUALLY BOUND AND EXCAVATE CONTAMINATED AREAS TO E-S
- PROVIDE VERIFICATION SAMPLE DATA TO NRC, TO RELEASE SURFACE DATA FOR EFFECTED AREAS.
- DO 50.75(g) EVALUATION
- DO 20.302 EVALUATION
- BACKFILL THE WELL

c: J. Robinson
P. Littlefield
M. Strum
J. McCann
F. Bellini
G. Pillsbury (MY)
E. Heath (MY)
A. Mancini (MY)
G. Collins (MY)

APPD. 1

RUN THESE AT PRE-EXCAVATION TO DETERMINE LEVELS

Cs 137 concentrations uCi/gm
MY Rad Bunker Area



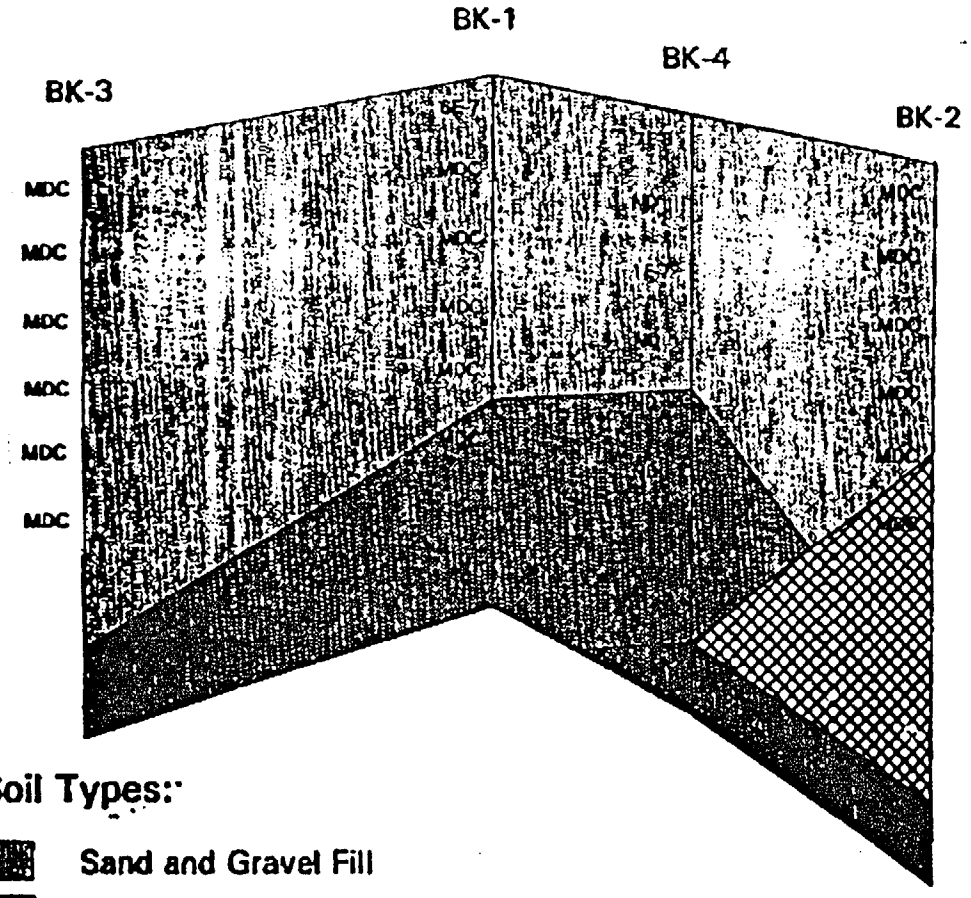
Scale: 1" = 20'

6E-7 BK-1 Soil Boring with activity in top 24"

3E-4 Surface Sample Location with activity in top 6"

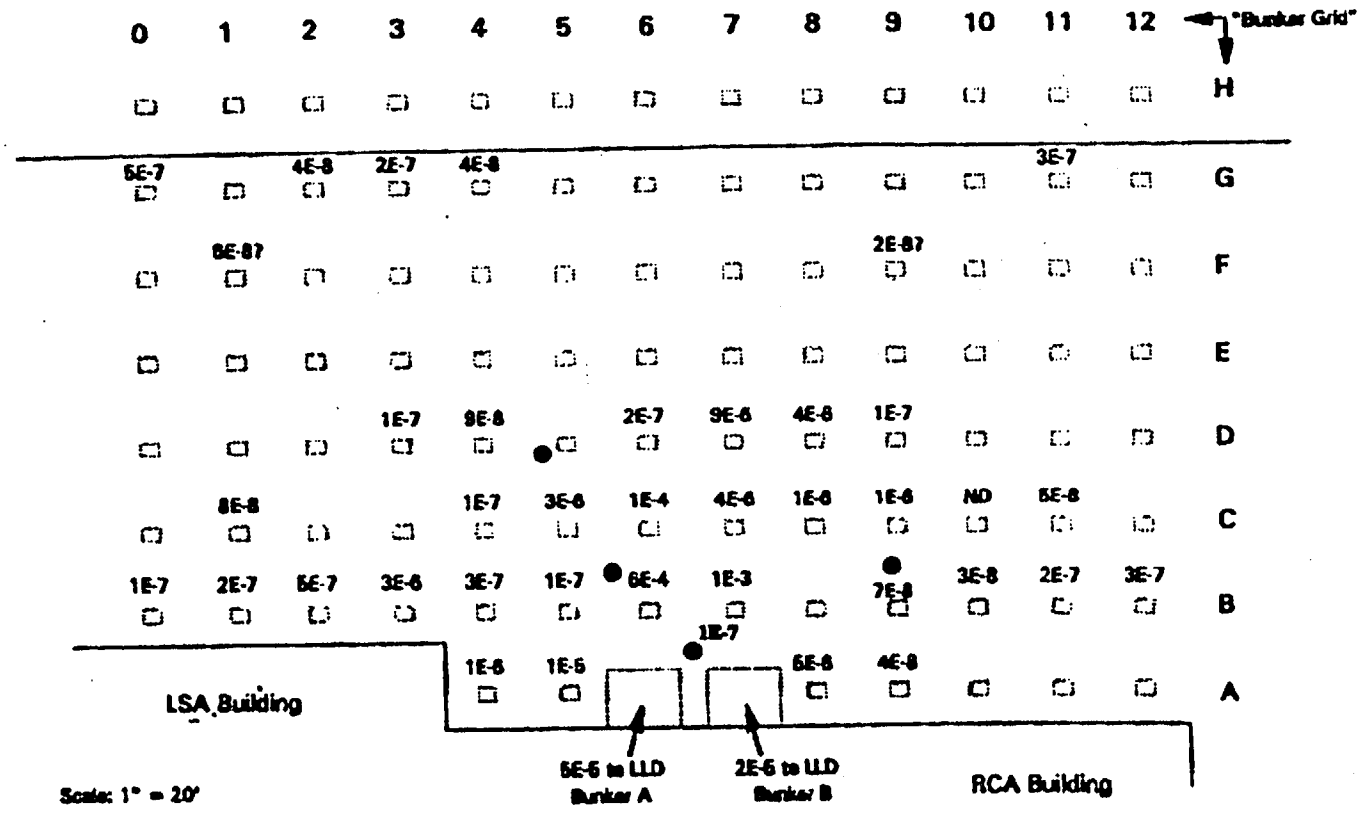
(grid nodes and borings without notations have activity below environmental levels)

Plan of Bunker Area
With Cs 137 Activities
Figure 3



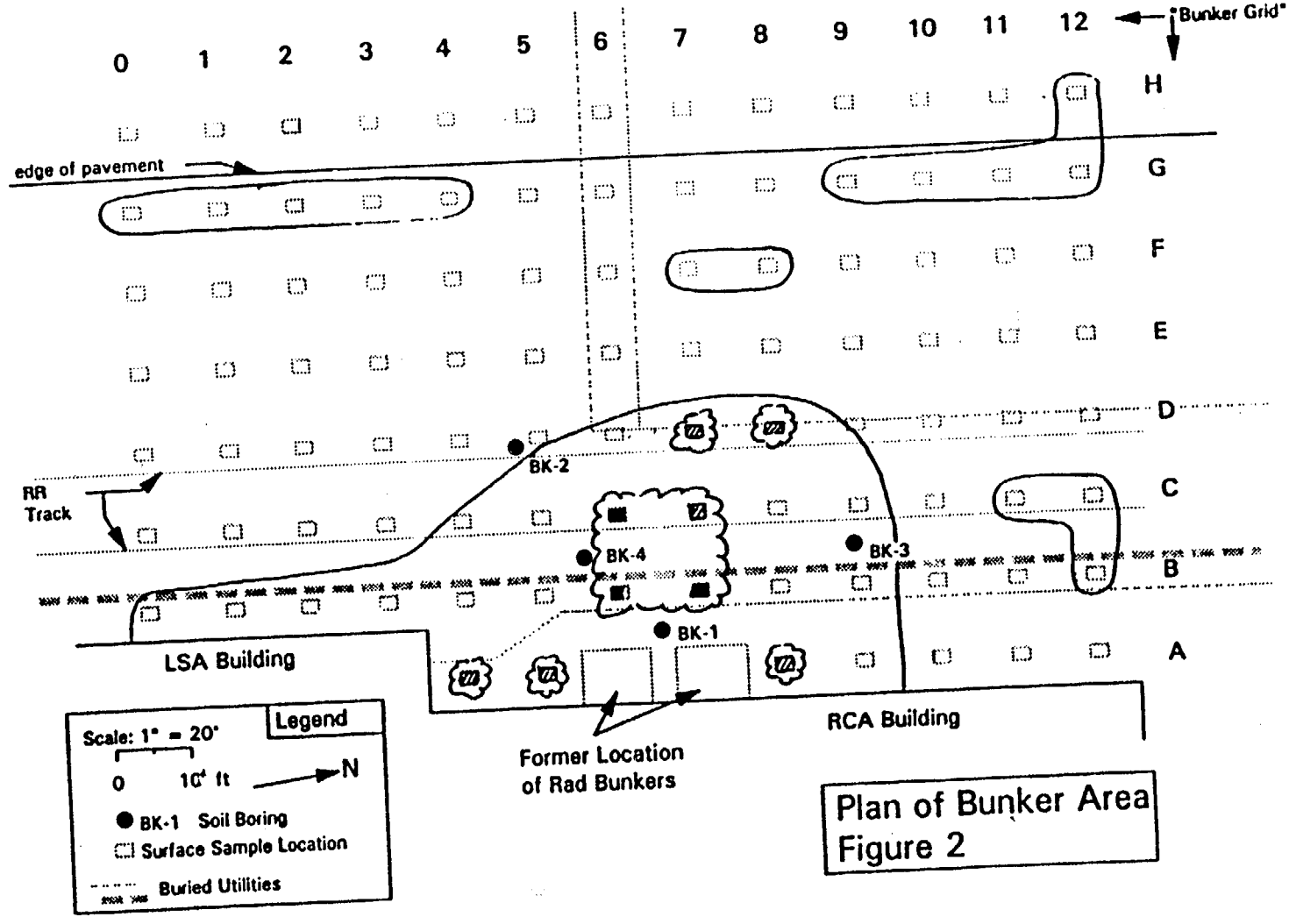
Fence Diagram of soils in Borings BK-1 thru BK-4 with Cs-137 activity in samples
Figure 4

Co 60 concentrations uCi/gm
MY Rad Bunker Area



Plan of Bunker Area
With Co 60 Activities
Figure 5

MY Rad Bunker Area



Plan of Bunker Area
Figure 2

ATTACHMENT TO CALC NO. 91-029

Isotopes	Sample Activity (uci/gm)	Total Activty (uci)	Activity (uci/sq m)	dose rate (mrem/yr)
Cr-51	0.00E+00	0.00E+00	0.00E+00	0.00
Cs-134	1.00E-06	6.00E-04	5.87E-02	6.17
Cs-137	2.00E-06	1.20E-03	1.17E-01	4.32
Co-58	3.00E-06	1.80E-03	1.76E-01	10.80
Mn-54	4.00E-06	2.40E-03	2.35E-01	11.93
Zn-65	5.00E-06	3.00E-03	2.94E-01	10.29
Co-60	6.00E-06	3.60E-03	3.52E-01	52.46
Total	2.10E-05	1.26E-02	1.23E+00	95.98

Soil activity concentration to dose rate conversion

Sample Area sq ft 0.11

Sample ID	Sample Location	Sample Density (g/cc)	Sample Mass (grams)	Sample Volume (cc)
test	test	1	600	600.00

Isotopes	Sample Activity (uci/gm)	Total Activty (uci)	Activity (uci/sq m)	dose rate (mrem/yr)
Cr-51	0.00E+00	0.00E+00	0.00E+00	0.00
Cs-134	1.00E-06	6.00E-04	5.87E-02	6.17
Cs-137	2.00E-06	1.20E-03	1.17E-01	4.32
Co-58	3.00E-06	1.80E-03	1.76E-01	10.80
Mn-54	4.00E-06	2.40E-03	2.35E-01	11.93
Zn-65	5.00E-06	3.00E-03	2.94E-01	10.29
Co-60	6.00E-06	3.60E-03	3.52E-01	52.46
Total	2.10E-05	1.26E-02	1.23E+00	95.98

YAEC 1859

EVALUATION OF CONTAMINATED SOIL AT MAINE YANKEE'S FORMER LOW LEVEL RADIOACTIVE WASTE STORAGE AREA

OCTOBER 15, 1992

Major Contributors: J. W. Bisson
F. X. Bellini

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1.0 INTRODUCTION

Yankee Atomic Electric Company has conducted an evaluation of the contaminated soil at Maine Yankee's former low level radioactive waste storage area. Pursuant to 10CFR50.75(g), this report identifies the quantities and concentrations of radionuclides which remain in the soil after decontamination and clean up of the area, and also summarizes the associated radiological consequences for Maine Yankee workers and for the general pubic.

The potential pathways by which workers at Maine Yankee may receive radiation exposures from the residual soil contamination are: (i) direct exposure resulting from standing on the contaminated soil, and (ii) exposure resulting from the inhalation of resuspended contamination due to excavation associated with construction activities at the former waste storage area. The only potential pathway by which member of the public may receive radiation exposure from the residual soil contamination is through migration of the contamination from its present on-site location to the near-by surface water.

The estimated dose rates and doses to workers are well below established NRC dose limits and Maine Yankee's administrative dose limits. Moreover, under very conservative assumptions, the off-site doses associated with the residual contamination are less than 0.004% of the unrestricted area limit (500 mrem/yr established by 10CFR20.105(a)) and, therefore, would not jeopardize the health and safety of the public. The residual soil contamination will be left in place until decommissioning, at which time permanent disposal will be addressed as part of the larger assessment of overall site characterization.

This report also considers, pursuant to 10CFR50.59(a)(2), whether an unreviewed safety question exists by leaving the residual contamination in place until decommissioning.

2.0 BACKGROUND

The former waste storage area is an asphalt-covered area of the plant yard inside the protected area fence of the Maine Yankee Nuclear Power Station (see Figure 1). Historically, it was used for temporary storage of radioactive waste containers, plant components and equipment. There is no single event which resulted in the soil contamination. Rather, contamination is believed to have accumulated in the soil as a result of the protective coverings for the temporarily stored contaminated items being breached under adverse weather conditions.

As of 1989, the site is no longer used for storing contaminated plant components and equipment. The former waste storage structures (including the contaminated soil directly beneath them) have been removed, and surrounding yard area has since undergone decontamination and clean up. However, in spite of these decontamination and clean up efforts, some residual contamination remains in the soil at this location.

Maine Yankee has conducted extensive sampling efforts in order to define and characterize the residual soil contamination. One effort resulted in the collection of 79 surface soil samples, which identified boundaries for the residual soil contamination. Another sampling effort, designed to determine a vertical profile for the contaminated soil, resulted in the collection of 40 core samples from 4 soil borings which extended down to bedrock.

The area of residual soil contamination is under Maine Yankee's control in that it is located inside the protected area fence. Only authorized personnel have access to the area.

The residual contamination will be left in place until decommissioning, at which time the suitability of permanent disposal can be addressed as part of the

larger assessment of overall site characterization. This action is appropriate under 10CFR50.75(g) bocause (i) the former waste storage area has undergone reasonable decontamination and clean up, (ii) the residual contamination is under the control of Maine Yankee by being located under an asphalt covering inside the protected area fence, (iii) the area is accessible only to authorized personnel, and (iv) appropriate permanent disposal of the contaminated soil is merely being deferred until decommissioning of the Maine Yankee Nuclear Power Station.

3.0 WASTE STREAM DESCRIPTION

3.1 Physical Properties of the Soil

Soil at the subject area consists of an upper unit of fine to medium-grained sand with some gravel and silt. This sand and gravel is of medium density and is about 8-15 ft thick. Beneath the sand and gravel is a unit of structural fill, which extends to bedrock. This structural fill is 10-12 ft thick and consists of medium-grained sand. The relative density of this soil is medium.

Soils at a distance of about 30 ft from the subject area and RCA building include up to 11 ft of clay, forming a substantial natural barrier to any migration of radionuclides. Depth to bedrock is about 16-22 ft below plant grade, which is established at +21 ft (msl). Ground water depths at this location vary seasonally from about 6-10 ft.

The area is covered by asphalt, which possesses very poor ion exchange properties. The percent of water infiltration through the asphalt is probably about 10%, with the balance subject to runoff or evaporation.

3.2 Soil Sampling and Analytical Procedures

The study area is located in the plant yard adjacent to the Rad Waste Building (Figure 1). It occupies a total area of approximately 2000 ft^2.

A 10 ft by 10 ft sampling grid was established for the yard area in order to determine the lateral extent of the contamination at the soil surface (Figure 2). Holes (approximately 6 in. by 6 in.) were made in the asphalt covering at the grid locations to allow the collection of 79 surface (i.e., to a depth of 5 inches) soil samples. Maine Yankee analyzed these surface soil samples for gamma-emitting radionuclides by gamma spectroscopy, using established plant procedures and a lower limit of detection (LLD) appropriate for the counting geometry for soil samples.

Based on the results from the surface samples, 4 borings were made to measure the vertical extent of contamination. These borings, also shown in Figure 2, were located near areas of high, moderate and low surface activity. The locations of the borings were restricted by a variety of underground utility lines. The soil borings were continuous split spoon, steel-cased wash borings. This technique included driving and washing (between samples) of the steel casing. The sampling tools were decontaminated between samples. Full recovery of samples is difficult for the types of soils present. However, recovery was generally high (averaging 65%) for the 4 borings, and satisfactory for analysis. All core samples were analyzed by Yankee's Environmental Laboratory, using established procedures and appropriate LLDs.

Upon completion of boring BK-1 (shown on Figure 2), a PVC well screen was installed to allow ground water sampling at this location.

3.3 Radiological Properties

Five separate areas of contamination (shown in Figure 2) were defined by the surface soil sample effort. The analysis results from the surface samples are shown in Table 1 (page 24). Grid nodes not listed in Table 1 represent samples with little or no detectable activity. Data from these locations were not used in order to conservatively estimate average concentrations for the 5 contaminated areas (Reference 2). The principal radionuclides of concern are Co60, Cs137, and to a lesser degree Cs134 and Sb125.

Average radionuclide concentrations for each area were conservatively based on only the positive samples results within each area of contamination (Reference 2). The averages are:

Area[a]	Co60 (uCi/g)	Cs137 (uCi/g)	Cs134 (uCi/g)	Sb125 (uCi/g)
1	7.83e-5	4.05e-6	7.03e-7	5.82e-6
2	1.05e-7	8.94e-7	ND[b]	ND[b]
3	ND[b]	3.13e-7	ND[b]	ND[b]
4	6.31e-8	5.24e-7	ND[b]	ND[b]
5	6.66e-8	1.22e-6	ND[b]	ND[b]

[a] See Figure 2.

[b] ND = not detected at any location within the defined area.

Since Area 1, the largest contaminated area, had average radionuclide concentrations which were significantly greater than the other areas, it was used as a basis for calculating the bounding doses for the entire study area.

Within Area 1, most of the higher surface Co60 and Cs137 concentrations fell within a 20 ft radius. The average surface concentrations for Co60, Cs137, Cs134 and Sb125 within this 20 ft radius were 1.1 to 1.7 times greater than the corresponding average concentrations based on all sampled locations in Area 1. The source term calculations were conservatively based on the average concentrations within the 20 ft radius.

The data from the boring samples are presented in Table 2. These soil sample analyses revealed that radionuclides of concern below the surface were Co60 and Cs137. No other plant-related nuclides were detected in these soil samples. Furthermore, the Co60 and Cs137 concentrations in the boring samples were much lower than the measured concentrations in the surface samples. The highest measured Co60 and Cs137 concentrations in the boring samples from BK-1 were 1.33e-7 uCi/g and 6.45e-7 uCi/g, respectively. This boring sample represented the soil column from 0.25 ft down to 2.25 ft. Analysis of soil

samples from the four borings done within the contaminated area indicate only very limited downward migration (Figures 3 and 4).

To emphasize the differences between the measured surface and sub-surface concentrations, the Co60 at two separate surface locations, both approximately 5-6 ft away from BK-1, were 4600 and 7600 times greater than the measured Co60 concentration associated with the top 2 ft of soil at BK-1. For Cs137, the surface concentrations at the same 2 surface locations were 690 and 510 times greater than the measured concentration associated with the top 2 ft of soil at BK-1.

4.0 RADIOLOGICAL CONSIDERATIONS

4.1 Estimate of Total Residual Activity

Average surface concentrations were conservatively calculated by using only the higher reported values from positive samples within a defined area. The assumption that the average surface concentrations extended uniformly to a depth of 6 inches provided additional conservatism because comparison of the surface sample data to the below-surface sample data suggested a sharp decrease in the concentrations with depth. Average surface Co60 and Cs137 concentrations used in the dose calculations were 2-3 orders of magnitude greater than the highest measured Co60 and Cs137 concentrations in the core samples.

The total volume of soil defined by a 20 ft radius and a depth of 0.5 ft is 628 ft^3. Estimated total activities based on an assumed soil density value of 1.6 g/cm^3 were: 3700 uCi of Co60, 1990 uCi of Cs137, 22 uCi of Cs134, and 232 uCi of Sb125. The sum of these radionuclide activities is 5,944 uCi.

4.2 Exposure Pathways for Workers

Given the present controls on the residual soil contamination, the only potential pathways by which a worker might receive a dose are (i) direct exposure due to work in the subject area and (ii) inhalation exposure due to resuspension of the residual soil contamination as a result of removing the asphalt covering.

4.3 Estimated Direct Dose Rate and Dose

The direct dose rates and doses to workers (provided in Table 3) were examined for two conditions: with and without the asphalt covering in place. Under both conditions, the total dose rate estimates are only a fraction of the 2 mrem/hr limit established in 10CFR20 for an unrestricted area, and are also indistinguishable from the background radiation levels normally associated with the building, structures and plant activities in that area. However, the asphalt

covering does provide significant shielding as well as containment for the residual soil contamination. The dose rate associated with the residual contamination can be expected to increase by 60% if the asphalt covering is removed.

The annual dose estimate (Table 3) is based on a occupancy time of 40 hrs. This time period is believed to be conservative because (i) it is an outdoor location, and (ii), although some tasks may be occasionally performed in the subject area, station personnel do not use the area on a day-to-day basis.

With the asphalt covering in place, the estimated annual dose (6.6 mrem) is not only well below the occupational dose limits established in 10CFR20 and Maine Yankee's administrative dose limits, but also well below the suggested annual dose rate limit of 10 mrem/yr from residual soil contamination to the maximally exposed individual (Reference 3). With removal of the asphalt covering, the annual dose is slightly higher (106%) than the suggested 10 mrem/yr limit, but still well below the NRC and Maine Yankee's administrative dose limits. The dose rate estimates show that the subject area would not require posting because of the residual soil contamination.

The direct dose rate and dose estimates for the subject area are based on data obtained at the time of sample analyses. These data have not been adjusted for radioactive decay over the time since the soil samples were analyzed. Therefore, these relatively low dose rate and dose estimates conservatively bound expected dose rates and doses. It is emphasized here that the dose rates and doses associated with the residual soil contamination will decrease in each subsequent year due to decay, as shown in Table 5.

4.4 Estimated Dose Rate and Dose Due to Resuspension

In the event that some future construction activity takes place in the

subject area, some resuspension of the soil contamination can be expected to occur. The disturbance of the soil during construction activities is assumed to be similar to that caused by plowing, a mechanical disturbance for which the resuspension factor is 5e-6 m^{-1} (Reference 4). The inhalation dose rate resulting from resuspended contamination was conservatively calculated by assuming that the total activity in the defined volume of soil was available for resuspension at the air-soil interface. The inhalation dose was based on an exposure time of 8 hrs, a time period believed to be reasonable for the removal of contaminated soil in the area under the yard crane with heavy equipment.

The inhalation dose rate per radionuclide was examined on two levels: (1) the committed effective dose equivalent (CEDE), and (2) the maximum committed dose equivalent (CDE) to any organ. Reference 5 was used as a source for dose rate conversion factors. As shown in Table 4, the CEDE per hour of inhalation exposure to the airborne contamination was 1.4e-2 mrem, resulting in a CEDE of 0.11 mrem over an 8 hr exposure period. The maximum CDE to any organ per hour of inhalation exposure to the airborne contamination was estimated to be 7.5e-2 mrem, and the maximum CDE to any organ was 0.6 mrem over an 8 hr exposure period.

4.5 Geology and Hydrology Considerations

A great deal of the natural soil at the site was removed at the time of plant construction so that all major plant structures could be founded on bedrock. The fill used to replace these soils is of two types: a general fill consisting of sand and gravel, and a sand fill. The underlying bedrock consists of hard and fresh metamorphic rock, schist and gneiss, which is typically massive (i.e., only widely spaced, short fractures). The bedrock is relatively impermeable. The depth to bedrock from the surface varies somewhat, but is typically 10 to 20 ft. At the former waste storage area, bedrock was about 16-20

ft below site grade. Plant grade is about +21 ft (msl).

The ground water depth was measured during the collection of the core samples. The ground water depths at the 4 boring locations ranged from 6.6 to 9.2 ft. The ground water depth fluctuates seasonally. Based on topography, the natural ground water flow in the area is assumed to be toward the river, located about 244 ft due west from the subject area. Ground water velocity is estimated at 10 m/yr. This velocity was obtained from estimates based on Darcy's Law which were made for a previous study (Reference 7).

The 100 year and 500 year still water floods for the site reach elevations of +10.5 and +11.5 ft (msl), respectively. These data are defined based on FEMA studies for the Maine coast (Reference 6). Design basis maximum probable flood elevation from the FSAR is +14.76 ft (msl). Any water run-up above this elevation to the +21 elevation of the subject area would be of short duration and provide insignificant contribution to the migration of the residual soil activity. Thus the impact of surface water due to flooding would have minimal impact on any movement of the residual soil activity.

Natural soils are still in place at the western periphery of the plant site, and thus between the contaminated fill and the river. These soils consist of non-stratified clay-silt with local lenses of sand or gravel. On average, these units consist of 40% clay, 37% silt and 23% sand. Boring BK-2 contained over 10 ft of such clay. Such soils have a very low permeability, and a far lower propensity for ground water transport of radionuclides than the fills.

The most likely flow direction for the ground water from the subject area was determined to be toward Bailey Cove. A potential alternate migration pathway due to the presence of a drainage system under the containment foundation (Plant Drawing 11550-FC-20A) was also considered. Although the distance to the

containment (about 75 ft from the subject area) is less than the distance to Bailey Cove (about 75 m from the subject area), this alternate path is considered a far less likely route for several reasons:

(1) the flow rate into this drainage system is very low (approximately 0.4 gpm),

(2) the system taps ground water from relatively impermeable bedrock, not directly from the soil,

(3) the collection zones for the system are not shallow; they are about 35 ft deep (approximately -14 ft msl) and 70 ft deep (approximately -52 ft msl), and

(4) the ground water gradient for the subject area is very high (i.e., 0.06 ft/ft) with the natural drainage direction toward Bailey Cove.

4.6 Potential Offsite Exposure Pathways

The only potential pathway for offsite exposure from the subject activity is by migration through the soil to a surface water body, Bailey Cove. Once the residual contamination reaches the adjacent body of water, members of the general public are subject to direct exposure and exposure through ingesting contaminated fish and shellfish. The direct exposure pathway examined was to a worm digger on the mudflats. The exposure time for the wormdigger was assumed to be 334 hours (the time value used in the ODCM).

Travel along this pathway consists of a two-part route through soils. First, activity must travel downward through unsaturated soil to the ground table. This movement is driven by infiltrating rain water. Secondly, upon reaching ground water, activity must be carried by ground water movement toward Bailey Cove, a distance of about 75 meters (Figure 1). Such movement of radionuclides through soil is generally subject to significant delay

(retardation) due to processes of physical and chemical adsorption by soils. Movement of Co60, Cs137 and Cs134 are heavily retarded by this mechanism.

Two different models are used to assess these two steps in migration along this pathway. The US DOE code RESRAD (Reference 8) provides a means of estimating time required for migration of radionuclides through soil down to the level of ground water. NUREG/CR 3332 (Reference 9) provides a mathematical model for assessment of travel of radionuclides that have reach the ground water. Both of these models are recognized by the NRC as suitable for making such estimates.

For the radionuclides Co60, Cs134 and Cs137, retardation factors of 100 were used in the RESRAD analyses. This represents a conservative estimate of these parameters (References 8 and 10). This retardation factor can be considered as a transport delay factor slowing radionuclide transport, compared with transport of water, through the soil by a factor of 100. RESRAD results indicate that travel times to the ground water for these three radionuclides are on the order of hundreds of years. Radioactive decay in that time period reduces their concentrations to negligible levels.

The radionuclide Sb125 is not retarded in its motion through soils (Reference 8), and thus moves through the soil at the same rates as rain water or ground water. Given the conditions of the contaminated location, RESRAD results indicate that it will take about 8 years for the Sb125 to begin to reach the ground water.

Calculation of ground water concentrations and leakage of radionuclide contaminants into an adjacent surface water body followed the methods provided in Reference 9. These calculations assumed immediate leakage into the ground water regime. Since this is not the case with the subject contaminants, these calculations provide a very conservative assessment for the three highly retarded

radionuclides Co60, Cs134 and Cs137. For Sb125, the source concentration was reduced by time-decay for the 8 years predicted by RESRAD (Reference 8) for travel time to the ground water table.

Only Sb125 has a sufficiently short migration time through the unsaturated portion of the soil to reach the ground water table in any significant concentration. Thus, the radionuclides Co60, Cs134 and Cs137 are considered using this model only to provide a very conservative bounding calculation for these elements.

Figures 3, 4, 5 and 6 are plots of results of this model for the four radionuclides Co60, Cs137, Cs134 and Sb125, respectively. A summary of these results is as follows:

Radio-nuclide	Half-life[a] (years)	Minimum Time to Reach Bailey Cove at Minimal Concentration (days)	Peak Concentration of Flux (uCi/day)	Time of peak Concentration at Bailey Cove (days)
Co60	5.26	89300	6.22E-19	92500
Cs134	2.05	89295	2.99E-43	90000
Cs137	30.0	89500	6.6E-7	100000
Sb125	2.71	3822[b]	6.57E-4	4722[b]

[a] Taken from Reference 11.

[b] Times for Sb125 include 8 years for movement through soil into ground water.

Even assuming that the Co60, Cs137 and Cs134 contamination is placed in direct contact with ground water, the travel time to Bailey Cove is on the order of 245 years. Under these conditions, and given a 5.26 year half-life, virtually all the Co60 will have decayed before it reaches surface waters. Cs134, with a half-life of 2.05 years, will similarly have no possible means of arriving at

surface waters in any significant concentration. However, due to a 30 yr half-life, a small quantity of Cs137 would still remain. The maximum annual effective dose equivalent resulting from the remaining small quantity of Cs137 was conservatively estimated to be 4e-4 mrem via the aquatic food pathway, and 1.0e-2 mrem to a wormdigger via direct exposure to contaminated sediment at the mudflats (Reference 2). Releases at these extremely limited concentrations would pose no potential hazard to the health and safety of the general public.

Sb125 travel time to Bailey Cove, based on this model and assuming immediate placement in contact with ground water, is about 900 days. This time period, added to the 8 years required for migration down to the ground water table, results in a total travel time of 10.5 years for Sb125 to reach Bailey Cove. The fraction of the total Sb125 activity remaining after the total travel time of 10.5 years would be 0.07, based on a 2.71 yr half-life. The maximum annual effective dose equivalent from the remaining Sb125 activity was conservatively estimated to be 7e-4 mrem via the aquatic food pathway, and 1.7e-2 mrem to a wormdigger via direct exposure to contaminated sediment at the mudflats (Reference 2). Based on these results, the residual Sb125 activity does not pose any hazard to the health and safety of the general public.

FIGURE 1

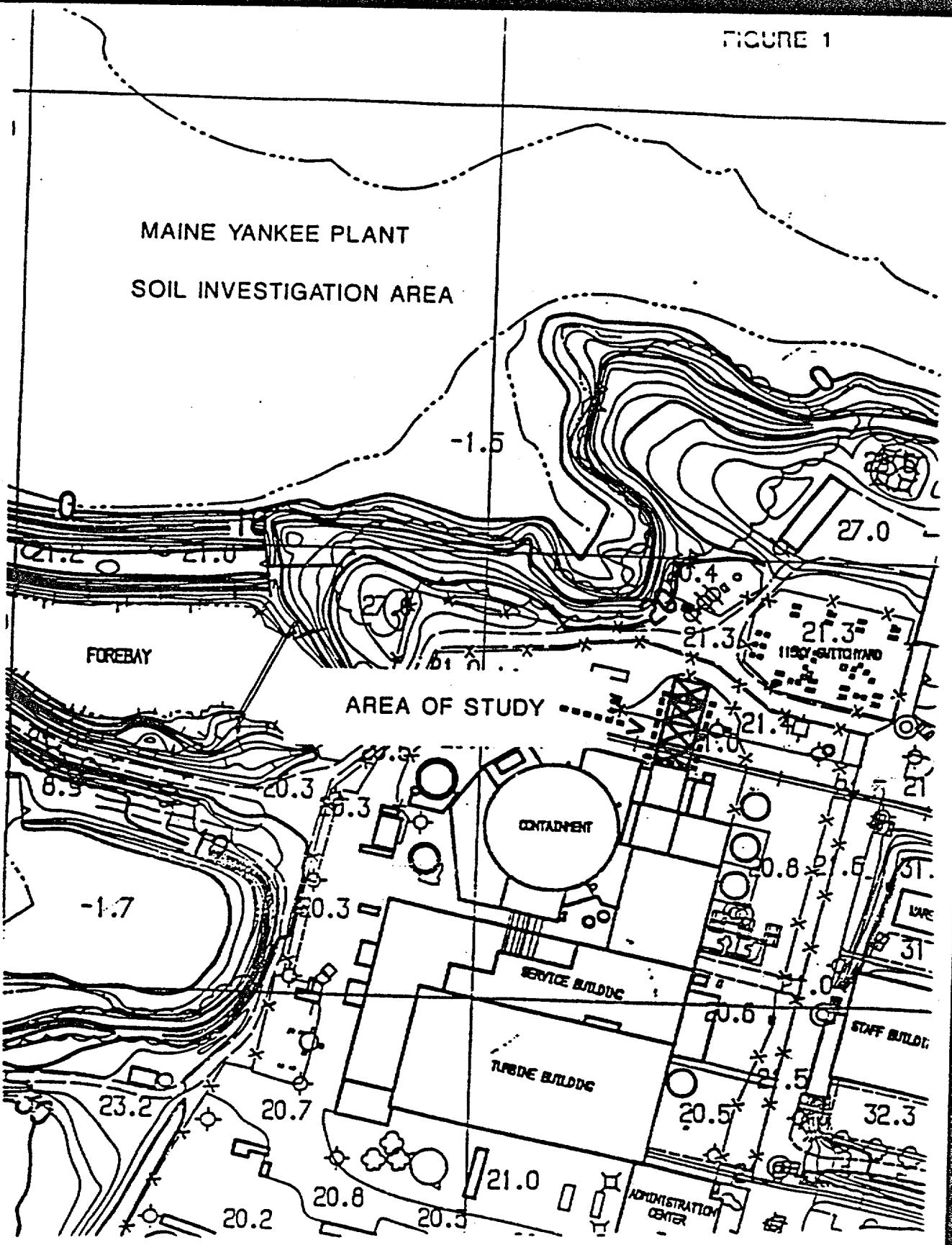
MAINE YANKEE PLANT
SOIL INVESTIGATION AREA
AREA OF STUDY
FOREBAY
CONTAINMENT
SERVICE BUILDING
TURBINE BUILDING
ADMINISTRATION CENTER
-1.6
-1.7
27.0
21.3
21.4
20.3
20.7
20.8
20.5
21.0
20.2
23.2
32.3

Table 1
Analytical Results for Surface Soil Samples

Area	Location	uCi per gram: Co60	Cs137	Cs134	Sb125	TOTAL
1	A-4	1.33E-06	9.69E-06	0.00E+00	0.00E+00	1.10E-05
	A-5*	1.32E-05	2.89E-05	3.28E-07	0.00E+00	4.24E-05
	A-8*	4.55E-06	6.19E-06	1.70E-07	2.55E-06	1.35E-05
	A-9	4.06E-07	3.06E-07	0.00E+00	2.08E-07	9.20E-07
	B-0	1.06E-07	1.11E-06	0.00E+00	0.00E+00	1.22E-06
	B-1	1.66E-07	2.00E-06	5.22E-08	0.00E+00	2.22E-06
	B-2	4.58E-07	1.87E-06	0.00E+00	0.00E+00	2.33E-06
	B-3	3.11E-06	9.42E-07	0.00E+00	8.67E-07	4.92E-06
	B-4	3.34E-07	1.54E-07	0.00E+00	2.30E-07	7.18E-07
	B-5*	1.46E-07	5.56E-07	0.00E+00	1.73E-07	8.75E-07
	B-6*	6.09E-04	4.43E-04	2.48E-06	3.03E-05	1.08E-03
	B-7*	1.01E-03	3.28E-04	1.74E-06	2.22E-05	1.36E-03
	B-8*	0.00E+00	3.52E-07	0.00E+00	0.00E+00	3.52E-07
	B-9	6.89E-08	5.18E-08	0.00E+00	0.00E+00	1.21E-07
	C-4	1.24E-07	1.51E-06	0.00E+00	0.00E+00	1.63E-06
	C-5*	2.77E-06	2.65E-06	0.00E+00	2.35E-07	5.66E-06
	C-6*	1.35E-04	1.28E-04	7.76E-07	0.00E+00	2.64E-04
	C-7*	3.68E-06	8.82E-06	7.45E-08	0.00E+00	1.26E-05
	C-8*	1.23E-06	2.38E-06	0.00E+00	3.48E-07	3.96E-06
	C-9	1.21E-06	2.40E-06	0.00E+00	0.00E+00	3.61E-06
	D-6*	2.00E-07	9.00E-07	0.00E+00	0.00E+00	1.10E-06
	D-7*	9.21E-06	3.77E-05	0.00E+00	1.07E-06	4.80E-05
	D-8*	3.64E-06	4.68E-06	0.00E+00	0.00E+00	8.32E-06
	D-9	1.16E-07	2.21E-07	0.00E+00	0.00E+00	3.37E-07
Total Con uCi/g:		1.80E-03	1.01E-03	5.62E-06	5.82E-05	2.88E-03
Area Avg uCi/g:		7.83E-05	4.05E-05	7.03E-07	5.82E-06	N/A
2	B-12	2.59E-07	9.53E-07	0.00E+00	0.00E+00	1.21E-06
	C-11	5.49E-08	5.29E-07	0.00E+00	0.00E+00	5.84E-07
	C-12	0.00E+00	1.20E-06	0.00E+00	0.00E+00	1.20E-06
Total Con uCi/g:		3.14E-07	2.68E-06	0.00E+00	0.00E+00	3.00E-06
Area Avg uCi/g:		1.05E-07	8.94E-07	0.00E+00	0.00E+00	N/A
3	F-7	0.00E+00	4.33E-07	0.00E+00	0.00E+00	4.33E-07
	F-8	0.00E+00	1.92E-07	0.00E+00	0.00E+00	1.92E-07
Total Con uCi/g:		0.00E+00	6.25E-07	0.00E+00	0.00E+00	6.25E-07
Area Avg uCi/g:		0.00E+00	3.13E-07	0.00E+00	0.00E+00	N/A

Table 1
Analytical Results for Surface Soil Samples
(continued)

Area	Location	uCi per gram: Co60	Cs137	Cs134	Sb125	TOTAL
4	G-0	5.18E-08	4.58E-07	0.00E+00	0.00E+00	5.10E-07
	G-1	0.00E+00	1.76E-07	0.00E+00	0.00E+00	1.76E-07
	G-2	4.08E-08	2.65E-07	0.00E+00	0.00E+00	3.06E-07
	G-3	1.63E-07	1.07E-06	0.00E+00	0.00E+00	1.23E-06
	G-4	5.98E-08	6.52E-07	0.00E+00	0.00E+00	7.12E-07
Total Con uCi/g:		3.15E-07	2.62E-06	0.00E+00	0.00E+00	2.94E-06
Area Avg uCi/g:		6.31E-08	5.24E-07	0.00E+00	0.00E+00	N/A
5	G-9	0.00E+00	1.81E-07	0.00E+00	0.00E+00	1.81E-07
	G-10	0.00E+00	8.40E-08	0.00E+00	0.00E+00	8.40E-08
	G-11	3.33E-07	3.77E-06	0.00E+00	0.00E+00	4.10E-06
	G-12	0.00E+00	2.45E-07	0.00E+00	0.00E+00	2.45E-07
	H-12	0.00E+00	1.82E-06	0.00E+00	0.00E+00	1.82E-06
Total Con uCi/g:		3.33E-07	6.10E-06	0.00E+00	0.00E+00	6.43E-06
Area Avg uCi/g:		6.66E-08	1.22E-06	0.00E+00	0.00E+00	N/A

* Sampling point located within 20 ft radius.

Table 2
Analytical Results for Core Samples

Location	Boring	Core Sample	Nuclide	uCi/g wet	uCi/g dry
approx. 6ft from B-6 & B-7	BK-1	S-1	Co60	1.33E-07	1.14E-07
			Cs137	6.45E-07	7.80E-07
		S-2	*	---	---
		S-3	Co60	9.20E-08	8.50E-08
		S-4	*	---	---
		S-5	*	---	---
		S-6	*	---	---
		S-8	*	---	---
near edge of foot-print;3ft from D-5	BK-2	S-1	*	---	---
		S-2	*	---	---
		S-4	*	---	---
		S-5	*	---	---
		S-6	*	---	---
		S-8	*	---	---
		S-10	*	---	---
		S-11	*	---	---
near edge of foot-print;5ft from C-5	BK-3	S-1	*	---	---
		S-2	*	---	---
		S-3	Cs137	4.83E-10	ND**
		S-4	*	---	---
		S-5	*	---	---
approx. 6ft from B-6 & C-6	BK-4	S-1	Cs137	7.30E-08	8.10E-08
		S-2	*	NR***	---
		S-3	Cs137	1.13E-07	8.80E-08
		S-4	*	---	---
		S-5	*	---	---

* No plant-related nuclides were detected.
** ND = not detected.
*** NR = no results; analysis not performed.

Table 3
Bounding Direct Dose Rates and Doses Resulting from the
Soil Contamination at Maine Yankee's Former Waste Storage Area

Nuclide	Direct Dose Rate (mrem/hr)	Annual Dose (mrem)
Co60[a]	0.1460	5.84
Cs137[a]	0.0175	0.70
Cs134[a]	0.0005	0.02
Sb125[a]	0.0014	0.06
TOTAL	0.1654	6.62
Co60[b]	0.2291	9.16
Cs137[b]	0.0317	1.27
Cs134[b]	0.0009	0.04
Sb125[b]	0.0027	0.11
TOTAL	0.2644	10.58

[a] Asphalt covering in place.
[b] Asphalt covering removed.

Table 4
Bounding Inhalation Dose Rates and Doses Resulting
from Resuspended Soil Contamination at
Maine Yankee's Former Waste Storage Area

Nuclide	Committed EDE per Inhalation Exposure Hour (mrem)	Committed EDE from 8 hrs Exposure (mrem)	Committed DE per Inhalation Exposure Hour (mrem)	Committed DE from 8 hr Exposure (mrem)
Co60	1.27e-2	1.02e-1	7.39e-2	5.91e-1
Cs137	9.91e-4	7.93e-3	1.02e-3	8.16e-3
Cs134	3.77e-6	3.02e-5	3.92e-6	3.14e-5
Sb125	4.45e-5	3.56e-4	2.92e-4	2.34e-3
Total	0.014	0.11	0.075	0.60

Table 5
Expected Decrease in Direct Dose Rates Over Time

Nuclide	Half Life (yr)	mrem/hr at 0 yr	mrem/hr at 5 yrs	mrem/hr at 10 yrs	mrem/hr at 15 yrs	mrem/hr at 20 yrs
Co60	5.26	1.46e-1 (2.29e-1)[a]	7.56e-2 (1.19e-1)	3.91e-2 (6.14e-2)	2.03e-2 (3.18e-2)	1.05e-2 (1.64e-2)
Cs137	30.00	1.75e-2 (3.17e-2)	1.56e-2 (2.82e-2)	1.39e-2 (2.52e-2)	1.24e-2 (2.24e-2)	1.10e-2 (2.00e-2)
Cs134	2.05	5.00e-4 (9.00e-4)	9.20e-5 (1.66e-4)	1.69e-5 (3.04e-5)	3.11e-6 (5.59e-6)	5.70e-7 (1.03e-6)
Sb125	2.71	1.40e-3 (2.70e-3)	3.89e-4 (7.51e-4)	1.08e-4 (2.09e-4)	3.02e-5 (5.83e-5)	8.40e-6 (1.62e-5)
Total		1.65e-1 (2.64e-1)	9.17e-2 (1.48e-1)	5.31e-2 (8.68e-2)	3.27e-2 (5.43e-2)	2.15e-2 (3.64e-2)

[a]Value in the parenthesis is the expected dose rate without the asphalt covering in place.

5.0 CONCLUSIONS

The two extensive sampling efforts provided enough information to define and characterize the residual contamination in the soil at the former waste storage area. The data from the soil sampling indicates that most of the contamination has remained associated with the top few inches of soil. The residual soil contamination is under the control of Maine Yankee, and will remain under Maine Yankee's control through decommissioning of the plant. The contamination is located inside the protected area fence, therefore, only authorized personnel have access to the area. The risk of spreading due to the elements is eliminated by the asphalt covering.

Given the present controls on the residual soil contamination, the only potential pathways by which a worker might receive a dose are (i) direct exposure due to work in the subject area and (ii) inhalation exposure due to resuspension of the residual soil contamination as a result of removing the asphalt covering.

The dose rate and dose estimates conservatively bound expected dose rates and doses, which will decrease in each subsequent year. The estimated total dose rates from direct exposure are only a fraction of the 2 mrem/hr limit established in 10CFR20 for an unrestricted area, and are also indistinguishable from the background radiation levels normally associated with the building, structures and plant activities in that area. Estimates for annual doses are well below the occupational dose limits established in 10CFR20 and by Maine Yankee's administrative dose limits. In addition, the annual dose estimates are consistent with a suggested annual dose rate limit of 10 mrem/yr from residual soil contamination.

The only potential exposure pathway for a member of the general public is through the release to an adjacent body of water. Analysis of soil samples from

the four borings done within the contaminated area indicate only very limited migration of the radionuclides downward toward the ground water table. Clearly, the contamination remains largely concentrated in the top few inches of the soil in the area in question. Furthermore, there is no conceivable pathway resulting in hazard to the general public. Therefore, the residual soil contamination does not pose a threat to the health and safety of the public.

Allowing the residual contamination to remain in place until the plant is decommissioned is appropriate under 10CFR50.75(g) because (i) the former waste storage area has undergone reasonable decontamination and clean up, (ii) the residual contamination is under the control of Maine Yankee by being located under an asphalt covering inside the protected area fence, an area accessible only to authorized personnel, and (iii) permanent disposal of the contaminated soil is merely being deferred until decommissioning of the Maine Yankee Nuclear Power Station.

Leaving the residual soil contamination in place does not involve an unreviewed safety question as defined by 10CFR50.59. This conclusion is reached by responding to 7 questions posed in Reference 12.

(1). The residual activity does not increase the probability of occurrence of an accident previously evaluated in the FSAR since there is no relationship between the residual soil contamination at the former waste storage area and the structures and any accident evaluated in the FSAR.

(2). The residual activity does not increase the consequences of an accident previously evaluated in the FSAR because there is no relationship between the residual soil contamination and accidents evaluated in the FSAR. The radiological consequences associated with the residual soil activity are orders of magnitude below any event analyzed in the FSAR.

(3). The residual soil activity does not increase the probability of occurrence of a malfunction of some equipment currently included in the plant design.

(4). The residual soil activity does not increase the probability of occurrence of a malfunction of some equipment important to safety previously evaluated in the FSAR. The residual soil activity would not create a problem in gaining access to related equipment.

(5). The residual soil activity does not create the possibility of an accident of a different type than any previously evaluated in the FSAR.

(6). The residual activity does not create the possibility of a different type of malfunction of equipment important to safety than previously evaluated in the FSAR.

(7). The residual soil activity does not reduce the margin of safety as defined in the basis for any technical specification. There is no impact on in-plant safety related systems.

(4) Reference 3

MEMORANDUM

YANKEE ATOMIC - BOLTON

MAINE YANKEE PROJECT

JAN 12 1993

To [redacted] Date January 12, 1993

From F.X. Bellini Group # ESG 2/93

W.O.#

Subject DISCUSSION OF COMMENTS BY R.G. GERBER REGARDING GROUND WATER CONSIDERATIONS FOR MY FORMER RAD BUNKER STORAGE AREA

I.M.S.# N02.03.04

File # FXBMY.GWM

BACKGROUND

On December 11, 1992 at a meeting at the offices of R.G. Gerber, Inc. (RGGI), there was discussion among staffs of RGGI, YNSD and MY regarding comments made by RGGI on Reference 1. This memo addresses those comments which deal with ground water pathways for the plant area.

DISCUSSION

RGGI raised issues regarding potential pathways for migration of the contaminants at the former bunker area, as explained in Reference 1. Pathways discussed are: 1) through bedrock fractures to the containment exterior sump, and 2) through backfill in pipe trenches, especially the site storm water drainage system pipes. An understanding of the details and results of our study is necessary to appreciate its specific conclusions.

Results of the Study

The most significant results of our study (Reference 1) are the measurements of radionuclides in the soil samples. These show that virtually all activity is concentrated in the top few inches of soil. Only minute amounts of activity were determined to be present in a few of the samples taken 6 inches to 2 feet below the surface. A few samples at depths of 2 to 4 feet contained traces of radionuclides in concentrations several orders of magnitude lower that at the surface. No activity was found in any samples below the 4 to 6 foot depth, down to bedrock. This is particularly notable given the duration which the activity has been in the ground, maybe as long as 5 to 10 years. We thus conclude with confidence that little if any movement of radionuclides has occurred or will occur in the near term. The reasons for this slow movement are two-fold: 1) retardation factors of radionuclides are significant, and 2) the area is paved and thus infiltration of rain water is very limited.

The four radionuclides in question are Co60, Cs134, Cs137 and Sb125. Retardation factors for movement of these radionuclides through soil are based on data from References 1 and 2. They represent values accepted by the NRC in prior submittals by YAEC. These values are selected on a conservative basis as they represent factors for "highly permeable" soils and yet are still highly significant in terms of limiting the movement of the subject activity.

Calculations done in support of these field observations addressed a conservative scenario with radionuclides assumed to migrate into the ground water and seek a pathway offsite. At the time of the calculation (Reference 4) little data appeared to exist regarding retardation for Sb125, thus as a conservative assumption, no retardation was assumed for that element. In fact, information that a significant retardation factor exists for this element (Reference 3). This make sense in terms of our field observations. Thus our conclusions regarding Sb125 travel are very conservative: like the other three radionuclides, no significant concentration of Sb125 is likely to reach ground water.

TO: GDW for JRH/SGW for FB Hayward
FROM: FLA
DATE 1-14-92
MYP # 93-0064 Read
CC: MYP file ISR
Microfilm file Date

Among the factors constraining travel of the radionuclides is an asphalt cover over the subject area, limiting the infiltration of rainfall. In addition there are two site storm-drain catch basins close to the area in question, limiting the possibility of substantial standing water as a source of infiltration.

Pathways

In our calculation a pathway for Sb125 is evaluated on the very conservative premise of no retardation for that element. As part of these considerations Reference 1, which is based on Reference 4, intentionally discounts a bedrock pathway for the subject investigation as insignificant. The reasons for this are outlined in the calculation as follows:

1) Bedrock in the vicinity of the plant structures is very impermeable, and acts more as a barrier to ground water flow than a conduit for such flow.
2) The ground water gradient from the former bunker site to Bailey Cove is very steep at 0.06 ft/ft (Reference 4) or about 72 inches in 100 ft, indicative of a very strong tendency for ground water to flow through soil toward Bailey Cove.

3) Although the containment exterior foundation sump (Reference 5) draws water continuously from a drainage well in bedrock at the west side of the containment, the rate of pumping is small, about 0.3 to 0.4 gpm (Reference 7) such that significant influence on a particular location on site is judged to be unlikely (groundwater surface contours would help delineate this issue).

4) Water collects in the containment exterior foundation sump from drains under the containment building at depths of 34 and 67 feet below site grade; this water is thus removed from the bedrock and not directly from the soil.

The hydraulic conductivity of the rock has been estimated to be 10^{-3} to 10^{-4} gal/day/ft^2. Permeability of the site soils (engineered backfill is estimated as 10^{-0} gal/day/ft^2. The estimate for bedrock permeability is supported by work done by Gerber in 1980 for the coal ash disposal site at the far end of the site. The amount of water entering the containment exterior sump, 0.3 to 0.4 gpm, is low enough to suggest that no large fractures are present in the rock which would create an important discrete pathway between the subject area and the sump. Description of the bedrock from the FSAR and photos of the rock excavation for the containment showing massive, relatively unfractured bedrock, confirm this conclusion.

As a further rationale for the limited consideration of a bedrock pathway, consider the following data:

Pathway	Distance (approx., m)	Permeability gal/day/ft^2
Via soil to Bailey Cove	75	10^{-0}
Via bedrock to containment exterior sump	45	10^{-3} to 10^{-4}

A pathway through soil to Bailey Cove requires travel through mainly sandy fill with significant retardation. A pathway through bedrock requires water travel through discrete fractures with some amount of retardation: the Seabrook Final Environmental Statement (Reference 6), written by the NRC, documents a retardation value of 50 for Cs through permeable bedrock. In any case, decay due to retardation in the unsaturated zone is so substantial as to result in inconsequential amount of activity available for travel through either of these offsite pathways.

We do recognize the possibility of a path for ground water through bedrock to the exterior containment sump from the former bunker location. However, we conclude that such a pathway is likely to be one of low permeability. It is, in any event, relatively insignificant to our study. Furthermore, the likelihood of a significant fracture in bedrock at a particular location, such as the former bunker area is judged to be unlikely.

Pipe Trench and General Site Backfill

Reference 7 explains the December 1988 leak of about 12,000 gallons of chromated water at the south side of the plant buildings. This water had an average concentration of 185 ppm chromate. A recovery well was installed from which it is estimated that about half of the chromium was recovered. Borings and observation wells installed the following spring attempted to locate the balance of this material. However only trace amounts (20 ppb chromium, close to the amount typical for sea water) were detected in the observation wells and the containment sump. Possible pathways for the migration of the balance of this chemical were suggested to be: 1) bedrock fractures or 2) permeable fill around pipes and utilities in the plant yard. While these are certainly viable possibilities as pathways, the lack of chromium in the ground water 6 months after such a spill may be attributed to other factors, especially simple dilution. A concentration of 185 ppm of 12,000 gallons represents only about 19 pounds sodium chromate. Since sodium chromate is a highly soluble compound (twice as soluble as sodium chloride), it seems entirely possible that in 6 months natural dispersion and ground water action may have caused movement and dilution which could leave only the trace amounts at the site.

Two construction specifications (References 8 and 9) prescribe requirements for backfill at the plant. General fill is compacted bank run sand and gravel. Bedding for pipe including yard storm drains was, as dictated by Reference 10, required to be so-called "select compact granular fill," (Reference 9). Detailed specifications define this select fill including grain size limits and a compaction requirement to the ASTM standard of 95% Modified Proctor; measurements of in-place density were also required after placement. Either fill would result in a considerably more permeable soil than the natural soils, clay or till, generally found at depth on site.

Construction fill configuration may also have created some "channels" which would provide preferential flow direction for ground water in the vicinity of the former bunker area. We feel this possibility is covered by our evaluation of the subject area. If ground water were to flow preferentially along the route of the storm drain for example, it would be kept away from the containment structure and would follow a path at least 120 m long as traced by the path of storm drain pipe shown in Reference 11. This distance compares favorably with the 75 m considered in our assessment.

Some of the storm drain pipe is made of corrugated steel, while other sections are concrete pipe. It has been suggested that corrosion may have caused openings to occur in these steel pipes. If this is the case, such breaches may provide ready channels for ground water, especially where a significant volume of water is added to the ground, as in the case of a spill. Reference 10, under the section titled "Schedule of Pipe Material," is not fully clear, but appears to indicate that storm drains which are corrugated metal (and thus

not concrete) are so-noted on drawings. Those drawings (Reference 12) specifically identify only three such metal pipe lines, although some apparent inconsistencies in the labeling of pipe material may be present on these drawings. It is clear from these drawings that corrugated metal pipe is installed in the vicinity of the chromate spill location. As part of future studies some determination of the type of pipe used for each section of storm drain should be done and results documented on those drawings.

CONCLUSION

The question of the significance of a bedrock pathway with regard to the migration of activity in soil at the former bunker site is considered. We do not recognize the possibility of this pathway as one which is significant to the YAEC's current study. However, we clearly recognize its potential existence for the site in general.

We recognize the differential permeability of construction fill and bedding for yard pipes vs. that for natural soils. References 1 and 4 consider a comparable pathway. In addition because retardation was not considered for Sb125 the conclusions of References 1 and 4 are more conservative than originally envisioned. Thus differential permeability is not considered a crucial issue with regard to migration of the radionuclides from the former bunker location.

F X Bellini

Francis X. Bellini
Environmental Sciences Group
Environmental Engineering Dept.

c: M. S. Strum
J. P. Jacobson
R. A. Marcello
J. H. Arnold (MY-Augusta)
S. D. Evans (MY-Augusta)

MY-A-24-83, Rev. 4

MAINE YANKEE/YNSD SERVICE REQUEST

Service Request No. M-90-183 /Issue Date 12/20/90

TITLE OF PROJECT: 10CFR20.302 analysis for Slightly Contaminated Soil Remaining at the Waste Storage Bunker Site.

DESCRIPTION OF PROJECT: *(State Objectives and Desired Deliverables)*

Perform the analysis required to show that backfilling and paving over the remaining contaminated soil meets the 10CFR20.302 requirements for disposal of licensed material in a manner not otherwise authorized. Prepare the required submittal.

JUSTIFICATION FOR PROJECT: Removing the remaining slightly contaminated soil would result in a much larger excavation and a much larger volume of rad waste for disposal.

MY Cognizant Person: Ellen Heath/Dave Shrimpe

Cost Limit: 3 Man weeks

MY Work Order No.: _____

Schedule Restrictions: _____

Work Control Number: _____

EDCR/CPA No.(s): _____

Attachments: YES ☐ NO ☑

Other: _____

Circle One: Priority #1 (#2) #3

WISCASSET WAIVER

Proj. Requested by: JERichard 12/18/90
Dept. Mgr. Date

Approval: _____ /
Cognizant MY Officer Date

Authorization: J M Griffin 12/19/90
VPL&E Date

YNSD RESPONSE

YNSD Department Manager(s): JG ROBINSON YNSD Work Order No.(s): 5100

Milestone Schedule: Start date 3-4-91 ... 4-5

Cost Estimate: 4 man-weeks

Discussion/Comments: The cost estimate exceeds the [illegible] estimate was made without a review of soil [illegible] previous 10CFR20.302 analysis. Ellen Heath has [illegible] work prohibits a start date until Mar. 14th.

Work Accepted ☐ Rejected ☐ YNSD Department Manager [signature] Date 1/10/91

MYPM [signature] Date 1/14/91

Ellen Heath concurs with schedule change. On site meeting scheduled for 1/16/91 - J.D.McLean 1-14-91

SERVICE REQUEST COMPLETED — CLOSE-OUT

Applicable References _____

YNSD Department Manager _____ Date _____ MYPM _____ Date _____

White — YNSD Until Complete — *Yellow* — YNSD Response — *Pink* — MY Corporate

To: Glenn Collins
From: Frank Bellini

5/29/92

Answers needed to complete 302:

1) How was bunker originally used?

2) What could the sources of contamination have been?

3) What is the paving history of the area? Was the area ever unpaved when bunker was used? Was bunker used after the paving was in place?

4) What are dates of discontinuance of bunker use and dismantling?

5) Have any procedures (name(s) & no(s).) changed to prevent further contamination in this area? When were changes made? How do these changes work?

6) When & how was contamination originally identified?

7) Describe the current use of the general area at and around the bunker.

8) Does the so-called High-Rad bunker currently in use across from the red bunker site represent a potential source for additional contamination?

9) Assess the role of pavement in preventing further contamination due to any further. Is any of the current contamination in the soil likely to have passed through the asphalt pavement?

cc Ellen Heath
G.D.P.

2/5/91
REQUEST G.P. INPUT ON # 4
EMH

To:E.M. Heath Date:January 28,1991
From:J.W. Bisson
Subject: 10CFR20.302 Analysis for Contaminated Soil Remaining at the Waste Storage Bunker Site,YSR#M-90-183

Preliminary review of the material and data provided to me on January 16 indicates that additional information is needed in order to complete the work by the scheduled deadline of April 4, 1991.

1.Although soil sample analysis data from several sampling locations at the two excavated sites have been provided, the data do not permit establishing a radionuclide concentration profile in either the lateral or vertical direction because there is only one measurement at a single depth per sampling location. The concentration profiles are needed to determine the volume of contaminated soil that has not been excavated from the sites and, ultimately, to estimate the amount of radioactivity for dose considerations. Ideally, what is needed for the vertical concentration profile would be samples taken at various depths for each location so that a reduction rate with depth can be determined. Similarly, the lateral profile could be established from analyses data of samples taken at several distances from the point where the digging ended. Does Maine Yankee have available any additional soil sample data from the two bunker sites which would support the establishment of concentration profiles in a manner similar to those established in the last residual soil contamination 20.302 application prepared for the RWST spill in 1988? If not, can such data be collected in time to make the scheduled deadline achievable?

2.According to my understanding of the project, soil was to be removed until a total activity of <2.0E-5 uCi/g was achieved. Sample analyses sheets for several locations show a total activity greater than 2.0E-5 uCi/g, yet there is no indication that further digging and associated sampling was conducted. Did the digging continue? If so, then sample analyses associated with the additional digging may permit the establishment of a vertical concentration profile for these locations (although additional data would still be needed to establish profiles for the remaining locations). Another factor that may come into play is that the <2.0E-5 uCi/g (or <2.0E4 pCi/kg) criterion used to terminate soil excavation is more than two orders of magnitude greater than the environmental sample detection capabilities for cesium in sediment samples (1.5E2 pCi/kg for Cs-134 and 1.8E2 pCi/kg for Cs-137) as established by Technical Specification 4.8, Table 4.8-2, and required by NRC for the determination of positive radioactivity in assessing exemption requests and 10CFR20.302. The argument may be made that soil excavation at the two sites may have been terminated too soon.

3.Analysis sheets for 8 of the 19 samples indicate the presence of Nb-97. I was suprised to find that Nb-97, given its short half-life

(72 minutes), was detected so freguently and in soil samples taken as deep as 12 inches. I am raising this point because I thought that the material stored at the two sites was removed some time ago, but the detection of Nb-97 is contrary to this and I am not sure how to address it for the 302 application. One possible explanation may be that Maine Yankee's counting system is designed to detect only plant-generated radionuclides and, therefore, may be unable to identify some naturally occuring uranium or thorium products that are present in soil. Consequently, when a gamma peak for one of these naturally occuring radionuclides was detected during the the analyses of the soil samples, the counting system may have matched it to the plant-generated nuclide with the closest gamma peak. Is this a valid explanation? Has Maine Yankee looked into the presence of Nb-97 in the soil samples? (Incidently, one of the 8 Nb-97 positive analysis sheets has a line drawn through the Nb-97 data, but no initials are present to indicate that this is a valid correction.)

GIVE COPY DATA TO LACH, HE WILL REVIEW + CONFIRM

4.The 302 application will have to include an explanation of how the contaminating material reached the soil, how the material was detected, steps taken to contain and remove the radioactive contamination, how much radioactivity was involved and how much of it was retrieved, how it was characterized, and what steps are being taken to insure that the event will not occur again. This information should be provided by Maine Yankee to insure historical accuracy.

c.c. J. McCann
P.S. Littlefield
M.S. Strum

HSA ID# 34

1989 LOG BOOK OF MARK READINGER 2.133

10/20 FRI. MAN IN FROM RMC ABOUT PERSONNAL DECON. GOOD TRAINING EVEN HINKLEY LIKED IT. SENT MINI OUTAGE REPORT + CLOSE OUT PLAN UP TO SUE FOR TYPING.

* YESTERDAY B. BLACKMORE GAVE SPEECH TO ALL PLANT PERSONNAL ABOUT PR-A-1 & 2 INCIDENT STRESSED SAFETY & DOING IT RIGHT.
CAME BACK FROM INFO CENTER D. SCHOOLMEYER DECONING T. HALL'S FACE SPLATTED WHILE PUMPING GREESING P-144
ALSO OVERFLOWED TK 109 THRU VENT FILTER TO OUTSIDE & DOWN STORM DRAIN. STAYED TO 5:30 TO HELP OUT

10/25/89 WED. E-PLAN DRESS REHERSAL. RAN METPAC FOR DRILL. JOHN PAGOLLI FROM YNSO UP TO ASSIST. WORKING WITH JOHN WAS VERY INFORMATIVE, GAINED CONFIDENCE ON USE OF THE PROGRAM. WE WERE COMPLIMENT @ CRITIQUE FOR OUR PROFICIENCY AT USE OF SYSTEM. WORKED WITH DAVE O. HELPING WITH RADMAN.

File: MYAPY/1.4.7.1(89-18)
*Priority CAYIA

DEC 18 1989

RESPONSIBILITY

UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406

RESPOND BY 01-03-90

NRC DUE DATE 01-13-90

104

DEC 14 1989

Docket/License: 50-309/DPR-36

XC:JRH-Note pg 2+6
RFP-Note pg 3
JCF-Note pg 6

Maine Yankee Atomic Power Company
ATTN: Mr. C. D. Frizzle
President
83 Edison Drive
Augusta, Maine 04336

Subject: Routine Resident Inspection 50-309/89-18 Routine Resident.

Gentlemen:

This transmits the October 1-31, 1989 inspection findings of Messrs. C. Holden and R. Freudenberger at the Maine Yankee Atomic Power Plant, Wiscasset, Maine. Those findings were discussed with Mr. Blackmore of your staff.

The repair of the Emergency/Auxiliary Feedwater system recirculation piping, the revision of the licensed operator requalification training program, and the performance of pre-power surveillance procedures were considered to have been performed professionally and with an appropriate emphasis on nuclear safety.

Two activities reviewed warrant further management attention. These are repetitive overfill of the Resin Storage Tank and improper maintenance on the Pressurizer Spray Control Valves. Both items involve ineffective management controls and also appear to have violated NRC requirements as set forth in the enclosed Notice of Violation (Appendix A). Please reply to these items in accordance with that Appendix, including your evaluation and assessment of the use of personnel unfamiliar with the task and the influence of schedular pressures in these cases. Your corrective actions in response to these events and your response to this report will be evaluated in order to determine whether additional enforcement actions are necessary.

Thank you for your cooperation.

Sincerely,

Jon R. Johnson

Jon R. Johnson, Chief
Projects Branch No. 3
Division of Reactor Projects

Enclosures:
1. Appendix A, Notice of Violation
2. NRC Region I Inspection Report 50-309/89-18

cc w/encls:
J. H. Garrity, Vice President, Engineering and Licensing
E. T. Boulette, Vice President, Operations
R. W. Blackmore, Plant Manager
G. D. Whittier, Manager Nuclear Engineering and Licensing
P. L. Anderson, Project Manager, Yankee Atomic Electric Company
J. A. Ritsher, Attorney (Ropes and Gray)
Public Document Room (PDR)
Local Public Document Room (LPDR)
Nuclear Safety Information Center (NSIC)
NRC Resident Inspector
State of Maine (2)

APPENDIX A

NOTICE OF VIOLATION

Maine Yankee Atomic Power Company
Maine Yankee Atomic Power Station

Docket No. 50-309
License No. DPR-36

As a result of the inspection conducted on October 1 to October 31, 1989, and in accordance with the "General Statement of Policy and Procedure for NRC Enforcement Actions," 10 CFR Part 2, Appendix C (Enforcement Policy 1988), the following violations were identified:

A. 10 CFR 50, Appendix B, Criterion V specifies that activities affecting quality shall be prescribed by and accomplished in accordance with instructions, procedures, or drawings which include appropriate criteria for determining that important activities have been satisfactorily accomplished.

Contrary to the above, on October 16, 1989, maintenance supervisors assigned to replace corroded nuts on Pressurizer Spray Flow Control Valve PR-A-2 did so without verifying accomplishment of important activities, in that they undertook the work without equipment safety tags and without appropriate component identification or verification of component isolation. They then erroneously removed an uncorroded nut from unisolated Pressurizer Spray Flow Control Valve PR-A-1, degrading but not breaching the primary coolant pressure boundary.

This is a Severity Level IV violation (Supplement I).

B. 10 CFR 50, Appendix B, Criterion XVI specifies that measures shall be established to assure that conditions adverse to quality are promptly identified and corrected. In the case of significant conditions adverse to quality, the measures shall assure that the cause of the condition is determined and that corrective action is taken to preclude repetition.

Contrary to the above, corrective action as a result of the August 21, 1989 overfill of the Resin Storage Tank and subsequent seepage of contaminated water to the yard area was ineffective at precluding repetition as evidenced by a similar occurrence on October 19, 1989.

This is a Severity Level IV violation (Supplement I).

Pursuant to 10 CFR 2.201, Maine Yankee Atomic Power Company is hereby required to submit to this office within thirty days of the date of the letter which transmitted this notice, a written statement of explanation in reply, including: (1) the corrective steps which have been taken and the results achieved; (2) the corrective steps which will be taken to avoid further violations; and (3) the date when full compliance will be achieved. Where good cause is shown, consideration will be given to extending this response time.

The response directed by this Notice is not subject to clearance by the Office of Management and Budget under the Paperwork Reduction Act of 1980, PL 96-511.

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Report No: 50-309/89-18

License No: DPR-36

Licensee: Maine Yankee Atomic Power
83 Edison Drive
Augusta, Maine 04336

Inspection At: Wiscasset, Maine

Conducted: October 1-31, 1989

Inspectors: Cornelius F. Holden, Senior Resident Inspector
Richard J. Freudenberger, Resident Inspector

Approved: Elec C. McCabe, Jr. 12/11/89
E. C. McCabe, Chief, Reactor Projects Section 3B Date

Summary: October 1-31, 1989 (Inspection Report 50-309/89-18)

Areas Inspected: Routine resident inspection of plant operations including: follow-up on previous inspection findings, review of special reports, licensee event follow-up, operational safety verification, maintenance, surveillance, physical security, radiation protection, and fire protection. During this report period, there were two inspectors assigned to the facility; however, the Senior Resident Inspector was temporarily assigned to the NRC Office for Analysis and Evaluation of Operational Data (AEOD) for the majority of the report period. The inspection involved 121 inspector hours including twenty-one (21) backshift and nine (9) deep backshift hours.

Results: Review of the revised licensed operator training program indicated that the licensee is proactive in this area (Detail 3.b). Surveillance activities observed by the inspector were conducted professionally (Detail 5). Improvements in the Security area are continuing as evidenced by the intruder drill and corrective action associated with the issuance of the wrong security badge to a plant employee (Detail 6).

A violation was identified regarding inadequate implementation of corrective action associated with the repetitive overfill of the Resin Storage Tank (Detail 3.d). Improper maintenance on the pressurizer spray valves also is of concern (Detail 4). Otherwise, maintenance was found to be conducted properly and professionally.

Coolant System, Loop 2. The valve is normally locked closed to fulfill two functions: it serves as one of the containment integrity barriers in the RHR suction line containment penetration and also isolates the pump suction from other than Emergency Core Cooling System (ECCS) sources and separates ECCS trains. The RHR suction line has two (2) motor-operated isolation valves located adjacent to the Reactor Coolant System Loop 2, RH-M-1 and RH-M-2, and a manual valve located adjacent to each RHR pump suction. The manual valves are operated by reach rod from the upper level of the Spray Building. The handwheel pedestal in the upper level spray building has remote position indication consisting of a pin attached to a threaded portion of the reach rod assembly. The pin moves in a slot in the handwheel pedestal to indicate valve position.

Licensee investigation into a Reactor Coolant System leakage path to the Refueling Water Storage Tank, during the shutdown of the RHR system, identified that the position pin had bottomed out in the slot, preventing the handwheel from operating although the valve was not fully seated. The position pin was removed and the valve was fully seated. The licensee verified that other spray building valves with similar position pin arrangements were not in a similar condition. The licensee is conducting a review to determine how the position indication got into this condition and plans to submit a Licensee Event Report (LER) on the issue. The inspector will review the licensee's corrective action to resolve this issue concurrent with the LER review. The inspector noted that the licensee's identification of and investigation into the leakage path was timely and thorough.

Note: LER 89-005 Submitted 11/14/89

Routine Note

d. Resin Storage Tank Overflow

On October 19, two operators were transferring resin from the Resin Storage Tank to a High Integrity Container (HIC). When the resin transfer pump became bound, an operator opened a water supply valve to the pump's suction and greased the pump. As the operator removed the grease gun from the fitting, grease sprayed back into his face. While attending to the potentially contaminated grease on his face, the operators failed to close the water valve, resulting in overfilling of the Resin Storage Tank.

The grease was removed from the operators face within fifteen minutes with the assistance of a radiological controls technician. There was no grease in the operators eyes. A nasal smear showed no activity. Grease samples from his face indicated the presence of Cobalt-60 and Cesium-137 at concentrations slightly greater than background. A body count was performed the following day with no adverse indications.

As a result of the overfilling of the tank, contaminated water leaked from the tank vent line filter housing and ran down the building wall. Some of the water ran through a seam in the wall to the outside blacktopped portion of the yard and spilled into the nearest

storm drain. The licensee notified the inspector of the spill immediately. The licensee conservatively estimated that fifteen gallons of water were released from the vent housing. Samples from adjacent storm drains indicated no activity. The storm drain into which the water flowed was pumped out and the area was decontaminated.

To calculate the material released, the licensee conservatively assumed that the entire fifteen gallon estimate was undiluted and leaked out of the vent and reached the area where the storm drains empty into the forebay. The calculated total activity of the release was less than one percent of the quarterly limit established by the Technical Specifications and not reportable to the NRC under 10 CFR 50.72.b.2.iv.

The overfill of the Resin Storage Tank was a repeat occurrence. As documented in NRC Inspection Report 50-309/89-11, Detail 3.d, the Resin Storage Tank was previously overfilled on August 21, 1989. On that occasion, a lesser amount of water leaked and did not reach the storm drain. Shortly before the second incident, an evaluation using the Human Performance Evaluation System (HPES) had been completed by the licensee. Proposed corrective actions based on this evaluation included rewrite of the operations department procedures related to the operation of the resin handling systems, initiation of changes to the design of the resin handling systems, revision of the radiological controls boundaries to allow easier access, the establishment of a policy to assign a supervisor or team leader for resin transfers from the resin holdup tank to the resin storage tank and upgrade of the valve labelling of the liquid waste systems. At the time of the second Resin Storage Tank Overfill, the revised operations department procedures had not been issued, there were insufficient personnel at the work location to allow one person to maintain an overview of the activities, and other corrective actions identified were longer term in nature. The corrective actions identified by the evaluation appear to be appropriate to address the specific causes identified by the Human Performance Evaluation. However, although all operators were required to read the report on the first overfill, the licensee failed to take adequate interim corrective measures to ensure that operations associated with the spent resin handling system would be conducted in a manner which would prevent recurrence of the overfilling of the Resin Storage Tank.

This item violates 10 CFR 50 Appendix B, Criterion XVI, "Corrective Action," as described in Appendix A to the cover letter of this report. (VIO 50-309/89-18-01) AJC

The inspector perceived that there were two additional factors which had an influence in causing the second overfill of the resin storage tank. The operators who performed the evolution were normally control room operators and were not as familiar with the evolution as the plant operators. Also, there was schedular pressure to complete

preparation of the resin in the resin storage tank for shipment and disposal by the end of the year. These factors are similar to the factors which were identified as potential contributors to work which was conducted on a valve that was insufficiently isolated from the reactor coolant system as described in Detail 4.d of this report. The inspector concluded that these factors, if not addressed by the licensee, may lead to further such occurrences.

RJC & RFP

Otherwise, no operational safety inadequacies were identified and operational performance was assessed as good.

4. Maintenance

The inspector observed and reviewed maintenance and problem investigation activities to verify compliance with regulations, administrative and maintenance procedures, codes and standards, proper QA/QC involvement, safety tag use, equipment alignment, jumper use, personnel qualifications, radiological controls for worker protection, retest requirements, and reportability. Portions of the following maintenance evolutions were reviewed:

a. Control Element Assembly 48 (CEA-48) Dropped

During the previous operating cycle, the Control Element Drive Mechanism (CEDM) control circuitry was proven to be unreliable, resulting in a number of inadvertent dropped Control Element Assemblies (CEAs). The licensee evaluated the unreliability and identified short and long term actions to improve the reliability of the CEDM control circuitry. As a result, the frequency of dropped CEAs has been significantly reduced. The final long term action to be completed by the licensee is to modify the CEDM control circuity to install redundant power supplies, the failure of which has been common to many of the dropped CEAs. This modification is to be installed during the next refueling outage.

On October 30, the licensee was troubleshooting the chattering of a relay associated with the timer module of CEA-48. The chattering was determined to be caused by the degradation of the power supply. Further troubleshooting identified that the degraded power supply had also damaged other components in the CEA-48 control circuitry. Replacement of the failed components involved a risk of dropping the CEA; however, failure to replace the components would likely result in damage to the CEDM coil stacks located in a high radiation area in the upper head assembly of the reactor vessel. The licensee, with an onsite vendor representative, replaced the damaged components using a method which would minimize the risk of dropping the CEA. In spite of their efforts, CEA-48 dropped into the core during the maintenance. The maintenance was completed and the CEA was fully withdrawn within seventeen (17) minutes from the time it was dropped. Technical Specification limits were verified to be acceptable by the plant operators.

HSA ID# 35

TO: File
From: C. Pillsbury

Subj: Analysis of RCA Roof Repair Process

The RCA Building roof had been contaminated by past work practices and by bird droppings from the birds living on the yard crane. In the spring of 1990 the roof was decontaminated by removing the contaminated surface layer of roof rocks which will be disposed of as rad waste.

Before a new roof could be layed, the remaining asphalt and embedded rock/gravel material was recontaminated by bird droppings. The bird droppings were again removed. The area around the piles of droppings was surface-scraped and isotopically analyzed. The surface layer of embedded rock and asphalt showed Cs-137 contamination from 2E-5 to 1E-3 μci/gm. The contamination came from approximately the surface layer of approximately 2 foot by 2 foot square areas. Using the highest activity times the entire surface area of the roof results in 297 μci of Cs-137 which could be part of the remaining asphalt. Given that the roof drains go to the storm drain system to the discharge weir, the ODCM projects the dose from the instantaneous release of all the activity at 9.2E-5 mrem total body and 1.1E-4 mrem to the critical organ. These results are well within the dose limits of Tech Specs for liquid releases.

Furthermore the roof repair will bond 2 inches of asphalt to the existing roof thus encapsulating any residual activity. An impermeable rubber liner will be placed over the new asphalt.

There is little potential for the release of any residual contamination from the RCA roof following repairs and minimal impact on the health and safety of the public even in the event material was released.

C. Pillsbury
RPM

MEMORANDUM

TO: George Pillsbury _____ DATE: October 18,1990
company/location

FROM: D.W. Caristo _____ FILE: DWC-90-038
company/location

SUBJECT: Decon of RCA Roof

During the week of October 15, 1990 it was identified that the crushed stone atop the RCA roof was contaminated with pigeon droppings. The pigeon droppings contained a maximum of 1.22 E -3 uCi/gm of Cs -137 and 2.23 x E -3 uCi/gm Co-60 (ie., see attachments).

There was no loose surface contamination and core samples of the insulated roofing materials were less than LLD for the gamma spectrum analysis (ie., see attachments).

All the contaminated crushed stone and pigeon droppings were disposed as radioactive waste.

Dennis Hickey for DWC

D.W. Caristo
Rad Controls Section Head

dwc/lad

Attachments

Distribution

R. Nelson
E. Heath
D. Hickey
B. Wills
File

HSA ID# 36

Several casual conversations indicate that dirt from the "old" CEA extension shaft storage shed area was removed, relased from the Restricted Area and spread out in the "trailer park." The storage shed was dismantled and removed several years ago and the surface paved over.

HSA ID# 37

It has been rumored that a spill, or spills, have occurred in front of the LSA bld. The only formal documentation found related to a spill in this area is detailed in #62 of this Historical Site Assessment document. A copy of the information gathered regarding this event is enclosed.

SJW

62

SAND GRAVEL AND SLUDGE SAMPLE DATA SHEET

Sample Obtained From: Water From Vaccum Cleaner Spill (REENACTMENT) Orignal in LSA Sump

Tech Name: MISKIMEN Sample Time: Date:

Dose Rate or CCPM: BKG

Meter Used and Serial No. RM-14 #5595

Container Description/Geometry: 20 ml VIAL

Dispostion of Item Sampled:

Supervisor Approval: Date:

20 Smears taken 15 in S.S.A Building <1000 dpm/100cm$_2$ (Wet) 5 On and around outside drain <1000 dpm/100cm$_2$
Dose Rate around area <2mR/HR

Most of the orignal water when into S.S.A. Building. Which was cleaned into S.S.A. Sump. About ½ gallon of water when into Outside Drain/per J. Dunick

3049F

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* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *
*                                                                       *
*                  G A M M A   S P E C T R U M   A N A L Y S I S        *
*                                                                       *
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *

ERRA SPECTRAN-F V4.1

                                                    16-NOV-89  12:20:00
E YANKEE

                    A N A L Y S I S   P A R A M E T E R S

 Unit Number:     2       /      ADC Unit Number:   4.0
ector Number:     4       /      Geometry Number:     3
ctrum Size:    4096 channels from MCA Region FULL
st channel for Search:      0
er of Smoothing Function:  5
ber of Background Channels:  4 on each side of peak.
% Confidence Factor: 75.0%
tiplet Sensitivity:  3
ntification Energy Window: +- 1.00 keV.
or Quotation: 1.00 sigma uncertainty.

ironmental Background Subtracted.
 Calculation Performed.
sured Energy Differences Listed.
tiplet Analysis Performed.

     Output.
c    data read directly from Multichannel Analyzer AN1
lyzed by:          RS

ple Description: VAC SPILL WATER
metry Description:  20 ML LIQUID IN SCINT VIAL
ple Size:   2.0000E+01 ML          / Conversion Factor: 1.0000E+00
ndard Size: 1.0000E+00 EA
alysis Library file: ANL000

LECT started on 16-NOV-89 at 11:57:52

LECT Live Time:     1000. seconds
     Real Time:     1317. seconds
     Dead Time:     24.07 %

ecayed to       0. days,  0.0167 hours BEFORE the start of COLLECT

ergy Calibration performed 15-NOV-89
ficiency Calibration performed 10-JUL-89
```

MAINE YANKEE 16-NOV-89 12:20:00

Sample: VAC SPILL WATER
Data collected on 16-NOV-89 at 11:57:52
Decayed to 0. days, 0.0167 hours BEFORE the start of COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

Nuclide	Activity Concentration in uCi/ML				Energy Comparison (keV)	
	Measured	Error	Decay corrected	Error	Expect	Diff
AG-110M	LLD<1.38E-05		LLD<1.38E-05		657.74	
AR-41	LLD<1.32E-05		LLD<1.32E-05		1293.60	
BA-139	LLD<2.17E-05		LLD<2.19E-05		165.85	
BA-140	LLD<3.54E-05		LLD<3.54E-05		537.33	
BA-141	LLD<6.69E-06		LLD<6.95E-06		190.33	
BE-7	LLD<6.20E-05		LLD<6.20E-05		477.59	
BR-84	LLD<1.73E-05		LLD<1.74E-05		881.59	
CD-109	LLD<1.72E-04		LLD<1.72E-04		88.04	
CE-139	LLD<4.72E-06		LLD<4.72E-06		165.85	
CE-141	LLD<8.66E-06		LLD<8.66E-06		145.44	
CE-144	LLD<4.39E-05		LLD<4.39E-05		133.53	
CO-57	LLD<6.02E-06		LLD<6.02E-06		122.06	
CO-58	LLD<1.15E-05		LLD<1.15E-05		810.76	
CO-60	1.52E-04	+- 1.71E-05	1.52E-04	+- 1.71E-05	1332.46	-0.08
					1173.21	-0.14
CR-51	LLD<6.13E-05		LLD<6.13E-05		320.08	
CS-134	LLD<1.33E-05		LLD<1.33E-05		795.81	
CS-136	LLD<9.79E-06		LLD<9.79E-06		818.50	
CS-137	1.57E-05	+- 9.01E-06	1.57E-05	+- 9.01E-06	661.64	0.20
-138	LLD<2.42E-05		LLD<2.48E-05		1435.79	
)	LLD<4.85E-06		LLD<4.88E-06		511.01	
FE-59	LLD<2.99E-05		LLD<2.99E-05		1099.22	
HG-203	LLD<6.88E-06		LLD<6.88E-06		279.19	
I-131	LLD<8.01E-06		LLD<8.01E-06		364.46	
I-132	LLD<1.55E-05		LLD<1.56E-05		667.68	
I-133	LLD<9.30E-06		LLD<9.31E-06		529.89	
I-134	LLD<1.42E-05		LLD<1.44E-05		847.02	
I-135	LLD<4.29E-05		LLD<4.30E-05		1260.41	
K-40	4.70E-04	+- 1.71E-04	4.70E-04	+- 1.71E-04	1460.73	0.12
KR-85	LLD<2.35E-03		LLD<2.35E-03		514.00	
KR-85M	LLD<6.08E-06		LLD<6.10E-06		151.18	
KR-87	LLD<1.65E-05		LLD<1.67E-05		402.58	
KR-88	LLD<1.27E-05		LLD<1.28E-05		196.10	
KR-89	LLD<1.20E-04		LLD<1.49E-04		220.90	
LA-140	LLD<1.72E-05		LLD<1.72E-05		1596.60	
LA-142	LLD<2.16E-05		LLD<2.18E-05		641.26	
MN-54	1.44E-05	+- 8.88E-06	1.44E-05	+- 8.88E-06	834.83	0.02
MN-56	LLD<1.25E-05		LLD<1.25E-05		846.60	
MO-99	LLD<4.93E-06		LLD<4.93E-06		140.51	
NA-24	LLD<1.03E-05		LLD<1.03E-05		1368.60	
NB-95	LLD<1.06E-05		LLD<1.06E-05		765.79	
NB-97	LLD<1.46E-05		LLD<1.47E-05		658.17	
NP-239	LLD<2.10E-05		LLD<2.10E-05		106.40	
RB-88	LLD<5.70E-05		LLD<5.93E-05		1836.02	
-89	LLD<3.32E-05		LLD<3.47E-05		1031.94	
.06	LLD<1.11E-04		LLD<1.11E-04		621.80	
-103	LLD<7.39E-06		LLD<7.39E-06		497.08	
SB-122	LLD<1.33E-05		LLD<1.33E-05		564.10	
SB-124	LLD<9.99E-06		LLD<9.99E-06		602.71	
SB-125	LLD<2.48E-05		LLD<2.48E-05		427.86	
SE-75	LLD<9.18E-06		LLD<9.18E-06		264.67	

Revised

SN-113	LLD<9.90E-06		LLD<9.90E-06		391.69	
SR-85	LLD<1.04E-05		LLD<1.04E-05		514.00	
SR-91	LLD<4.48E-05		LLD<4.49E-05		1024.27	
SR-92	7.15E-06	+- 9.41E-06	7.18E-06	+- 9.45E-06	1386.00	-0.40
TC-99M	LLD<5.95E-06		LLD<5.96E-06		140.51	
[illegible] 31	LLD<5.81E-06		LLD<5.97E-06		149.80	
[illegible] 31M	LLD<2.41E-05		LLD<2.41E-05		773.70	
TE 32	LLD<5.28E-06		LLD<5.28E-06		228.30	
TE-133M	LLD<1.40E-05		LLD<1.42E-05		912.58	
TE-134	LLD<1.54E-05		LLD<1.57E-05		79.50	
W-187	LLD<2.84E-05		LLD<2.85E-05		685.72	
XE-127	LLD<6.41E-06		LLD<6.41E-06		202.84	
XE-131M	LLD<2.44E-04		LLD<2.44E-04		163.98	
XE-133	LLD<1.74E-05		LLD<1.74E-05		81.00	
XE-133M	LLD<4.52E-05		LLD<4.52E-05		233.19	
XE-135	LLD<5.42E-06		LLD<5.43E-06		249.74	
XE-135M	LLD<1.33E-05		LLD<1.39E-05		526.80	
XE-138	LLD<2.33E-05		LLD<2.42E-05		258.30	
Y-88	LLD<1.52E-05		LLD<1.52E-05		898.02	
Y-91M	LLD<1.65E-05		LLD<1.67E-05		555.62	
Y-92	LLD<1.05E-04		LLD<1.05E-04		934.00	
Y-93	LLD<9.71E-05		LLD<9.72E-05		267.00	
Y-94	LLD<4.84E-05		LLD<5.01E-05		920.00	
ZN-65	LLD<3.45E-05		LLD<3.45E-05		1115.50	
ZR-95	LLD<1.98E-05		LLD<1.98E-05		756.71	
ZR-97	LLD<1.28E-05		LLD<1.28E-05		743.41	
Total	6.60E-04	+- 1.73E-04	6.60E-04	+- 1.73E-04		

Standard Deviation = 0.22

EBAR = 2.29 MeV/Disintegration
Max Permissable Activity = 0.00E-01 uCi/ML
Total Measured Activity = 1.90E-04 (+-2.32E-05) uCi/ML

Error Quotation at 1.00 Sigma
LLD Confidence Level at 75.0%

HSA ID# 38

1974.2.12
1974.2.13

RADIOLOGICAL INCIDENT REPORT

88-2
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 2/23 1230

LOCATION: RWST Siphon Heater Area

HOW RADIATION CONTROLS WAS NOTIFIED: Rad Control Tech "C. Haynes"

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation):
A Flange leaked water from the RWST onto the Ground. A sand sample was taken and found to have an exposure of 30MR/HR with KO2A "Cs-137, Cs-134, Co-60". A drip bag was installed and Maint repaired the leak. The area is posted as Contaminated. Clean up of area will be undertaken upon review of proper clean-up methods.
Chem samples of storm drains revealed no release of activity. Robert Wills
PREPARER SIGNATURE

DATE 3/1/88 TIME 1200

SECTION II RADIOLOGICAL CONTROLS SECTION HEAD REVIEW

☐ This incident requires no further reports, documentation or followup

☒ This incident requires the following corrective action and/or notification or reports:
1. Rad Controls and Facilities need to develop a closeout plan to remove the contaminated sand and repave or seal the asphalt in the area.
2. A PED review of the components and why they failed may be in order.

Rad Controls Section Head

DATE 3/2/88

Route to: 1. Dept. Head Tech Sup. Dept. Please review & return in 14 days.
~~2. Plant Mgr.~~ Not required
3. File (Return to Radiological Controls)

1974.2.15
1974.2.15

MY-HP-161-83

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter	BC-4 #204	NMC	Inst. Type & No.	RO2A 3070
Eff.	22.5%	28.1%		
Bkg.	60 cpm	1ct/10min		

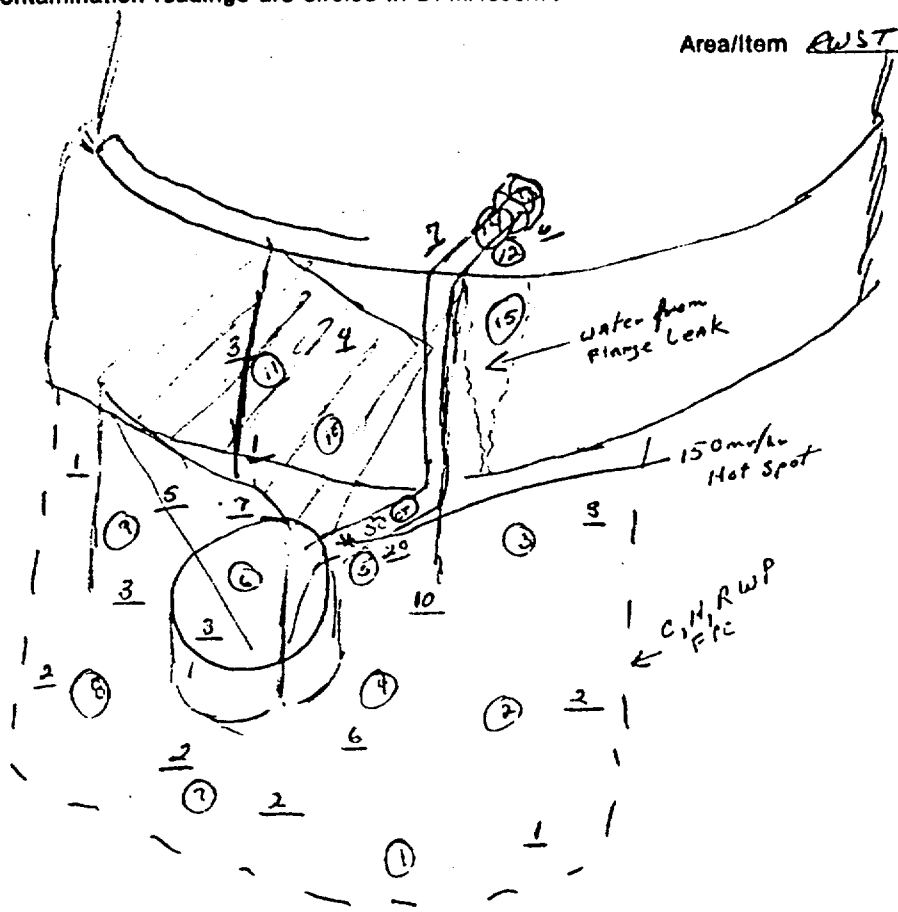
Date 2/23/88

Time 1015

Tech. CR Haynes

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item AWST Siphon Heater Repair area



Smears - DPM/100cm² BG

1 - <1000
2 - <1000
3 - <1000
4 - <1000
5 - 2844
6 - <1000
7 - <1000
8 - <1000
9 - <1000
10 - <1000
11 - <1000
12 - 1733
13 - <1000
14 - <1000
15 - 1269

Smear #5 DPM/100cm² < 5 - <200 DPM/100cm²

1974.2.15
1974.2.15

MAINE YANKEE ATOMIC POWER COMPANY
GENERAL SURVEY FORM

Counter N/A Inst. Type & No. — RO2A #1983 Date 2-23-88

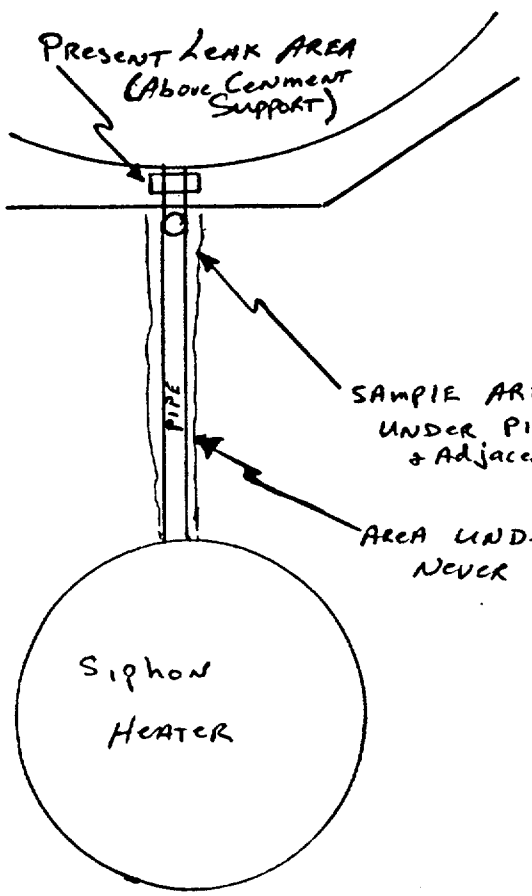
Eff. / Time 1235

Bkg. / Tech. CAY

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm².

Area/Item RWST Siphon Heater

RWST



MARANELLI SAMPLE READ
30 mR/HR for
½ liter

SAMPLE: SOIL SAMPLE RWST
DATA COLLECTED ON 23-FEB-88 AT 12:47:47
DECAYED TO 0. DAYS, 0.0167 HOURS BEFORE THE START OF COLLECT.

R A D I O N U C L I D E A N A L Y S I S R E P O R T

NUCLIDE	ACTIVITY CONCENTRATION IN UC/CC				ENERGY COMPARISON (KEV)	
	MEASURED	ERROR	DECAY CORRECTED	ERROR	EXPECT	DIFF
CO-60	5.05E-03	+-2.34E-04	5.05E-03	+-2.34E-04	1332.46	0.39
					1173.21	0.46
CS-134	6.65E-03	+-2.83E-04	6.65E-03	+-2.83E-04	604.71	0.34
					795.81	0.47
CS-137	4.29E-01	+-5.96E-03	4.29E-01	+-5.96E-03	661.64	0.38
TOTAL	4.40E-01	+-5.97E-03	4.40E-01	+-5.97E-03		

STANDARD DEVIATION = 0.06

EBAR = 0.84 MEV/DISINTEGRATION
MAXIMUM PERMISSABLE ACTIVITY = 1.19E+02 UC/CC
TOTAL MEASURED ACTIVITY = 4.40E-01 (+-5.97E-03) UC/CC
% TECH. SPEC. = 0.37 (+-0.00)

ERROR QUOTATION AT 1.00 SIGMA

ALL DETECTED PEAKS WERE USED IN THE ANALYSIS

HSA ID# 39

GENERAL SURVEY

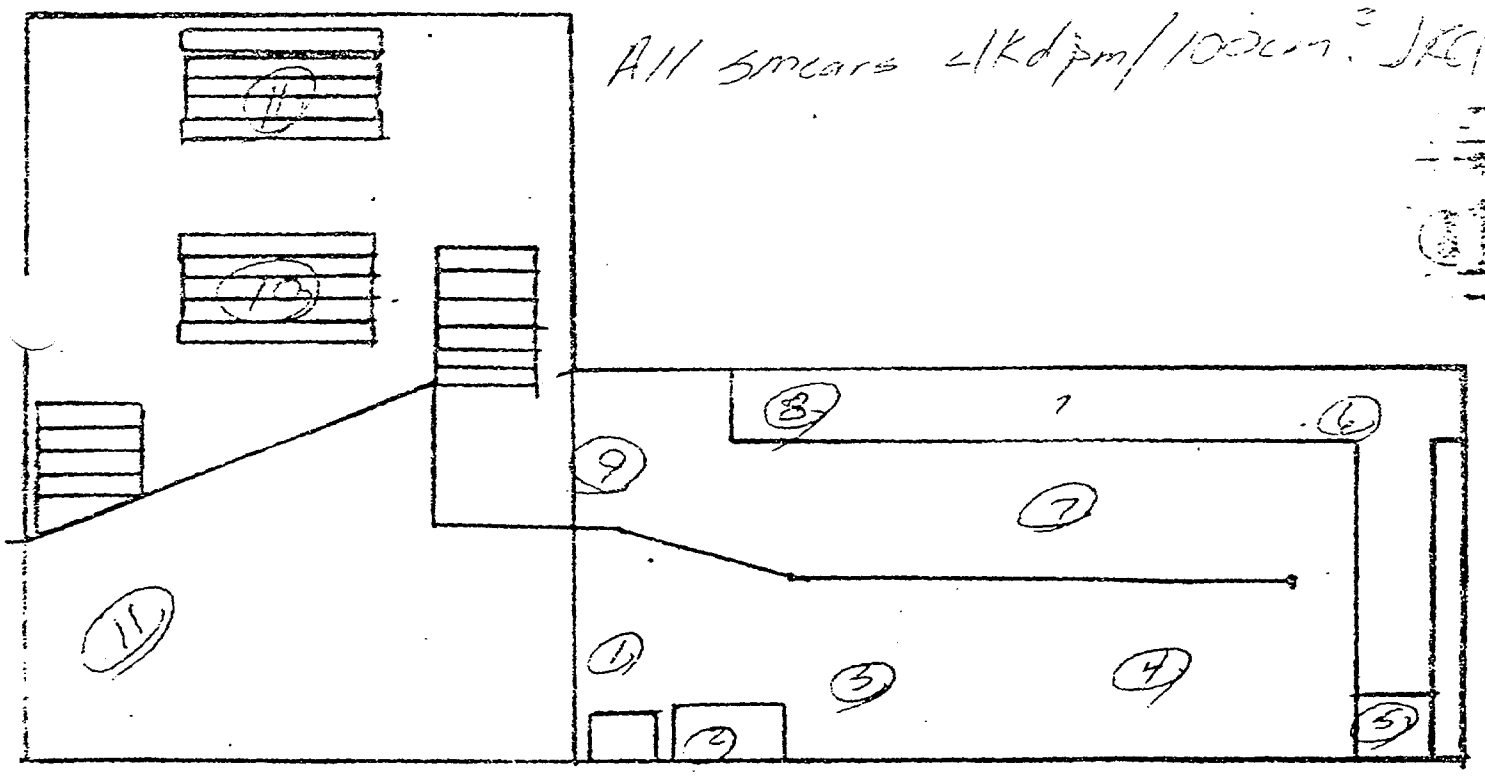
Counter BC4 - #132 Inst. Type & No. RM-14 #452 Date 5-22-87

ER 23.4 °/₀ Time 2015

BKg 55 cpm Tech. J Clarke

NOTE: All Dose Rate readings in MR/HR
All Contamination readings are stated in DPM/100cm²

Area/Item DOMLIT TRAILER



All smears <1K dpm/100cm². JRQ

Massilin swipe of floor, found 10K dpm/100cm² chip on mop - Recommended thorough decon. JRQ

Direct frisk following showed <1K dpm/ppa. JRQ

MAINE YANKEE ATOMIC POWER COMPANY

GENERAL SURVEY FORM

Counter BC-4 #204 / NMC PC-55   Inst. Type & No. E-140 #1258   Date 4-10-87

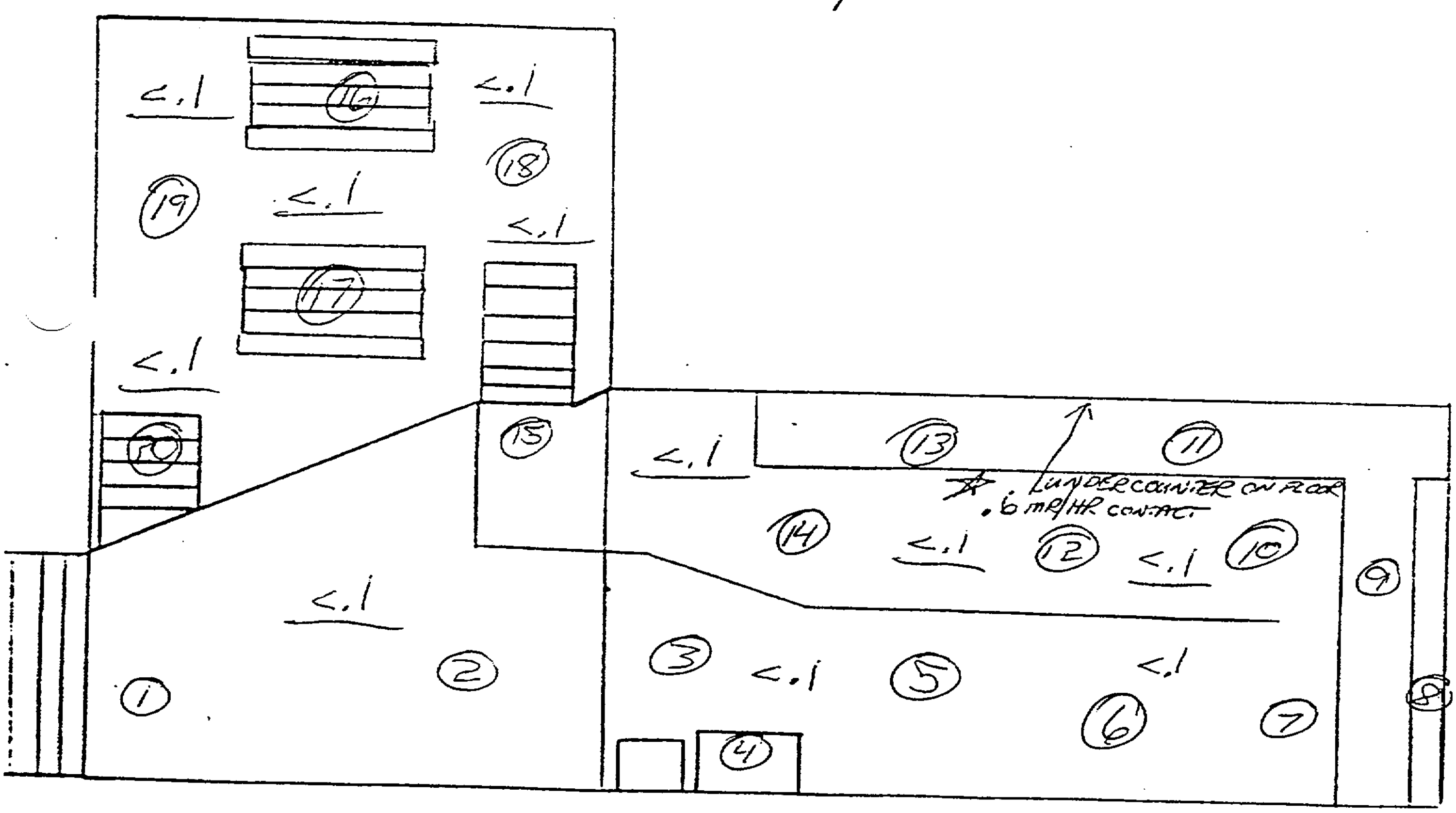
Eff. 24.8% / 22.8%   Time 1100

Bkg. 78 CPM / 0 CPM   Tech. M. [signature]

NOTE: All Dose Rate readings in MR/HR. CONTACT DIRECT FRISK
All Contamination readings are circled in DPM/100cm².

SMEAR RESULTS: #1 + #8 COUNTED FOR ALPHA < 20 DPM/100cm² α
ALL CONTAM. LEVELS < 100 DPM/100cm² βγ

Area/Item DONUT TRAILER



HSA ID# 40

40

MY-HP-161-83

MAINE YANKEE ATOMIC POWER COMPANY

GENERAL SURVEY FORM

Counter RM-14 5595 Inst. Type & No. _____ Date 5-4-87

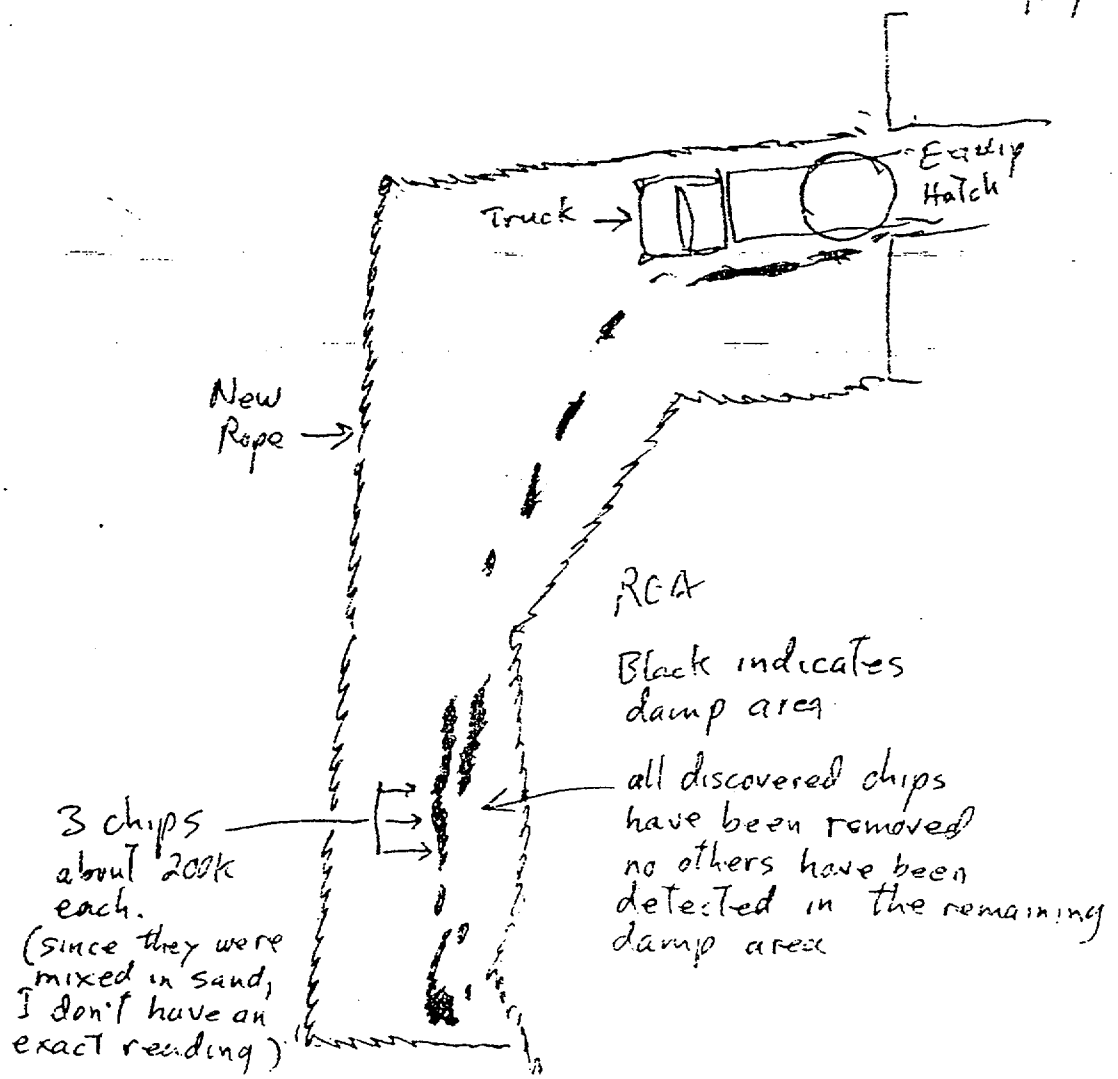
Eff. 10% Time 2010

Bkg. 5K Tech. Richard V Grant
Owner Tech

NOTE: All Dose Rate readings in MR, HR.
All Contamination readings are circled in DPM/100cm^2.

Area/Item Yard Vic Equip Hatch

Damp area where water dripped from core barrel shield while it was moved to Equip Hatch



HSA ID# 41

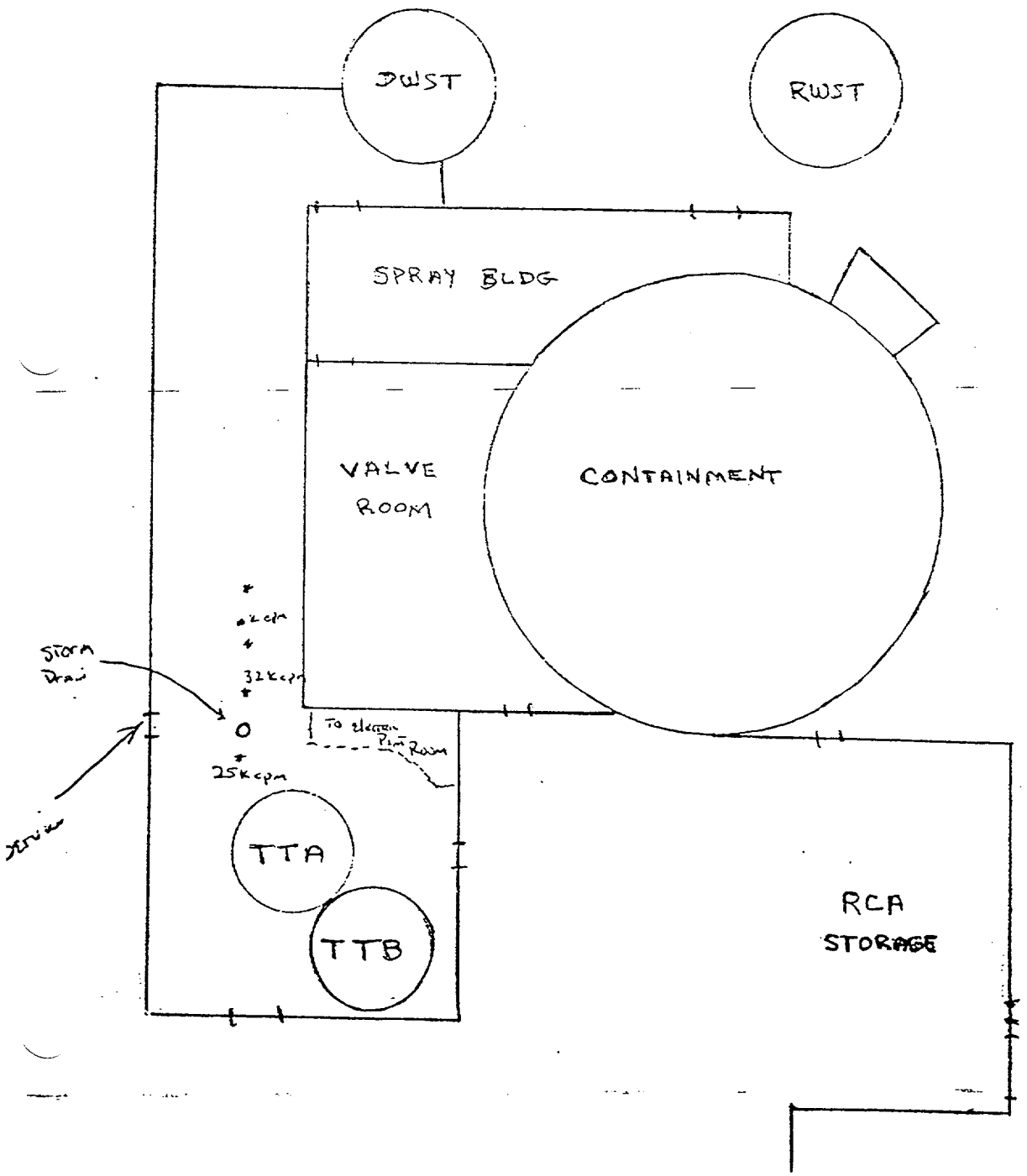
41

MY-HP-59-75

MAINE YANKEE ATOMIC POWER COMPANY
OUTSIDE CONTROL AREA FORM

Scales/Inst RM-14
Model 5694
Efficiency ≈ 10%
Bkg 100 cpm

Date 9-30-85
Time 0530
Tech WS/DMD
Area or Item CTMT Alley/way



HSA ID# 42

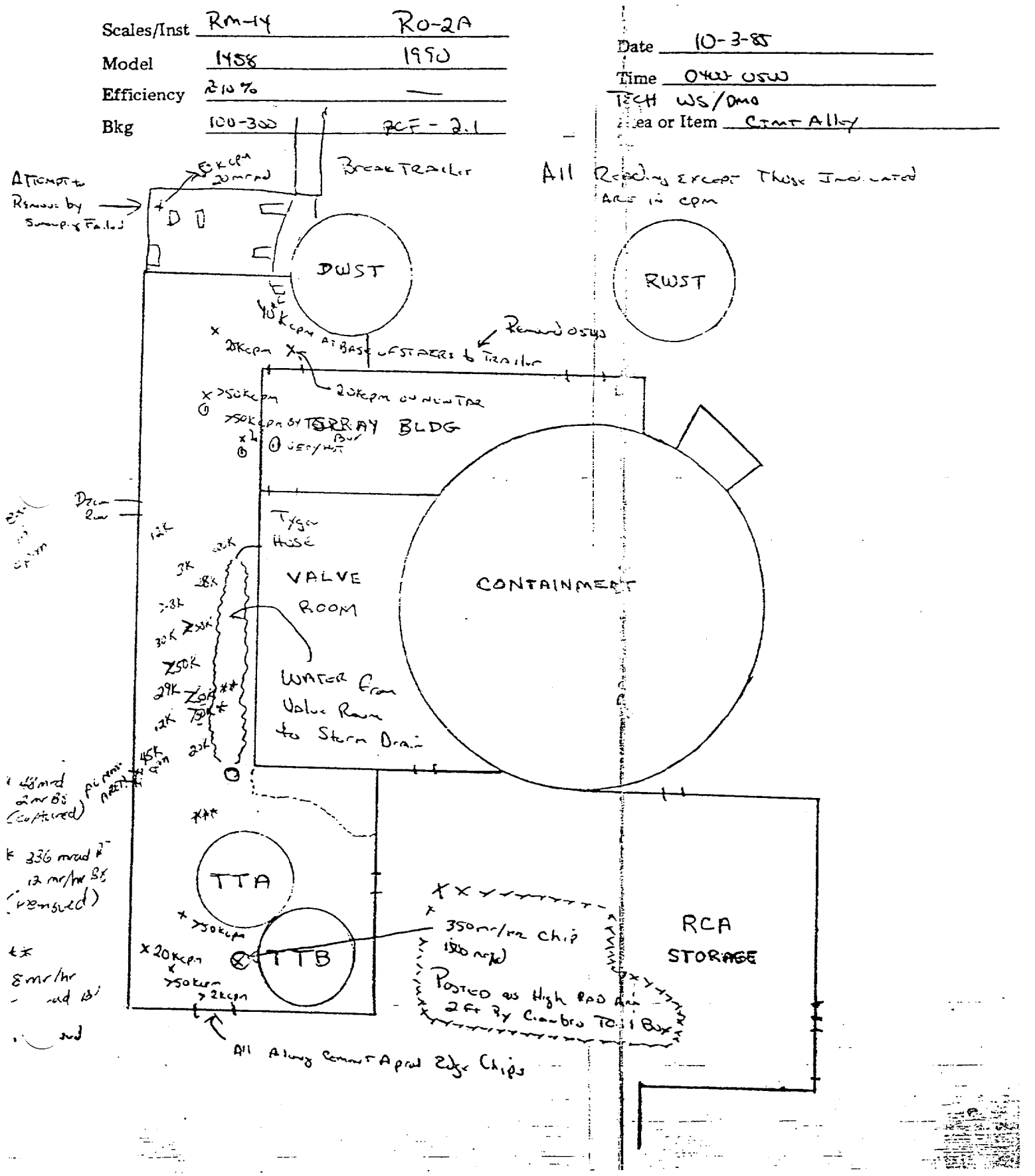
4/2

MY-HP-59-75

MAINE YANKEE ATOMIC POWER COMPANY
OUTSIDE CONTROL AREA FORM

Scales/Inst: Rm-14 / RO-2A
Model: 1458 / 1950
Efficiency: ≥10% / —
Bkg: 100-300 / BCF - 2.1

Date: 10-3-85
Time: 0900 0500
TECH: WS/DMO
Area or Item: Cont Alley



HSA ID# 43

MY-HP-66-71 Rev. 2

13

MAINE YANKEE ATOMIC POWER COMPANY

GENERAL SURVEY FORM

Counter BC-4 # 132 Inst. Type & No. E-520 # 3565 Date 4-12-84

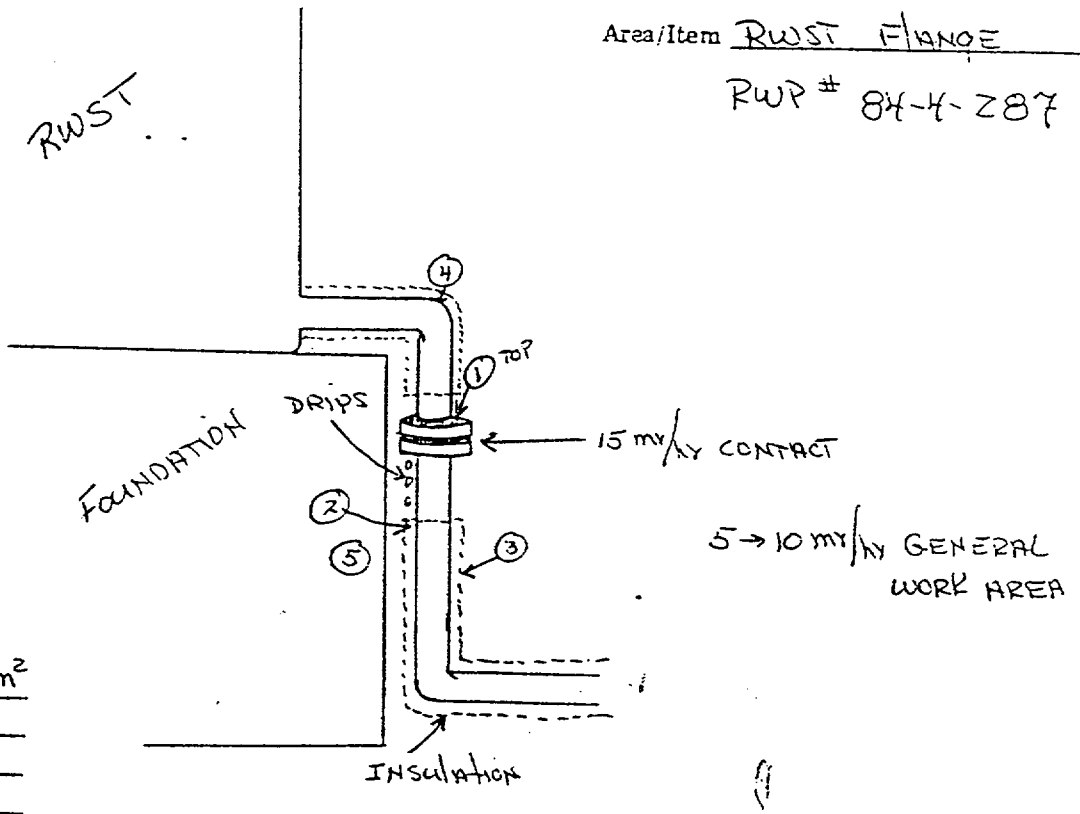
Eff. 23.35% Time 0730

Bkg. 63 Tech. P. HAMLETTE

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm^2.

Area/Item RWST FLANGE

RWP # 84-4-287



SMEAR No#	DPM/100cm^2
1	5000
2	200,000
3	50,000
4	1000
5	1500

HSA ID# 44

1.4

MY-HP-161-83

MAINE YANKEE ATOMIC POWER COMPANY

GENERAL SURVEY FORM

Counter BC-4 #204 Inst. Type & No. ~~BC-4 #204 W~~ RO-2A # 3466 Date April 1, 1987

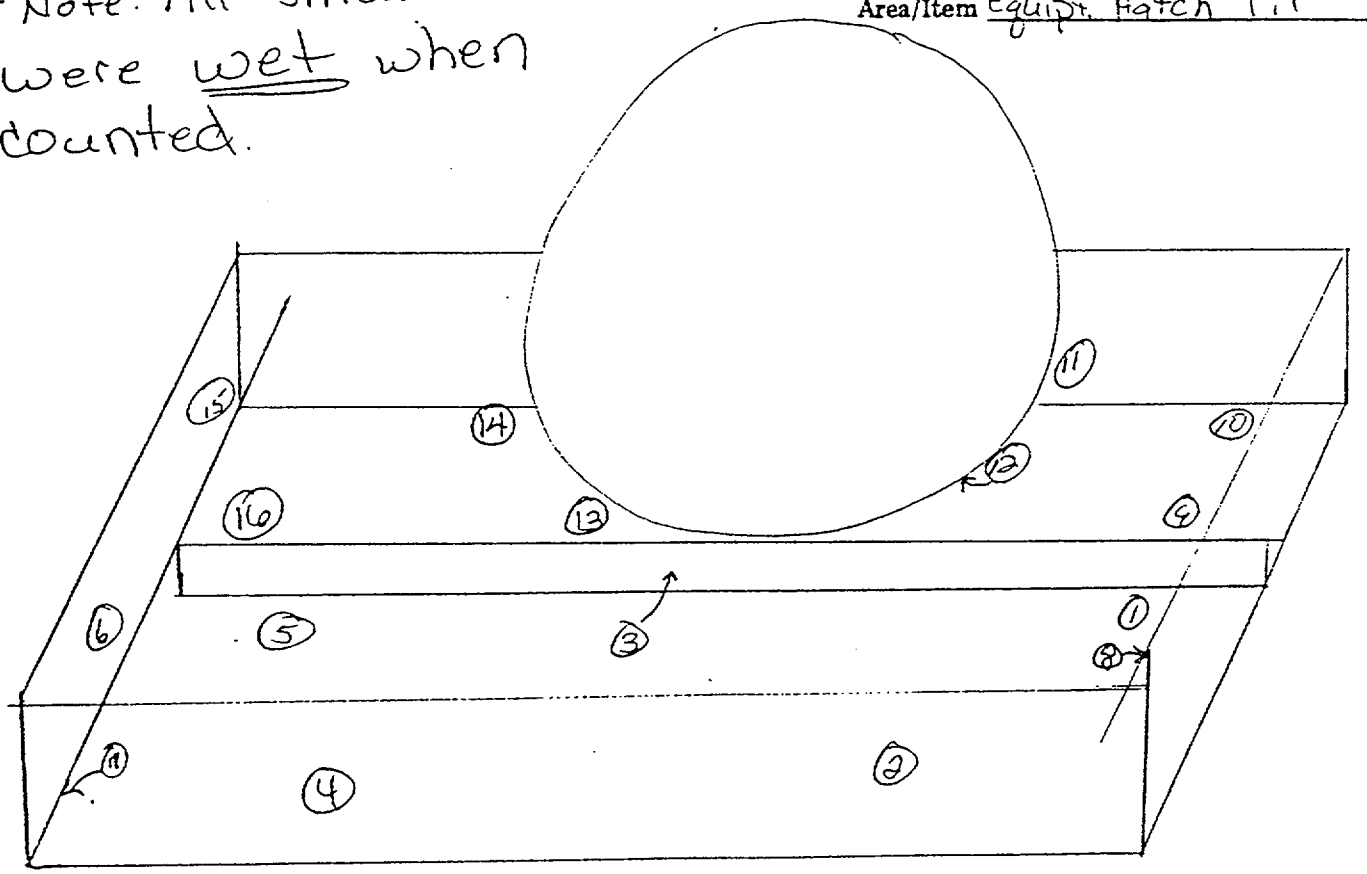
Eff. 24.8% Time 1030

Bkg. 92 cpm Tech. D. Jackson | HD

NOTE: All Dose Rate readings in MR/HR.
All Contamination readings are circled in DPM/100cm^2.

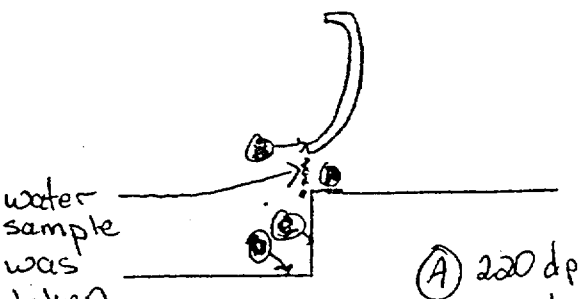
* Note: All smears were wet when counted.

Area/Item Equipt. Hatch Pit



① 220 dpm/100cm²
② 880
③ 240
④ 893
⑤ 925
⑥ 285
⑦ 320
⑧ 333

⑨ 390 dpm/100cm²
⑩ 385
⑪ 395
⑫ 410
⑬ 395
⑭ 435
⑮ 320
⑯ 450



Ⓐ 220 dpm/100cm²
Ⓑ 380 dpm/100cm²
Ⓒ 240 dpm/100cm²
Ⓓ 382 dpm/100cm²

HSA ID# 45

45

George - FYI

MY-HP-59-75
Rev. 3

MAINE YANKEE ATOMIC POWER COMPANY

OUTSIDE CONTROL AREA

COUNTER ESCO #3544 INST. TYPE & NO. E140 #1268 Rosa #3064 DATE 2-22-87

EFF. _____ TIME 1300

BKG. _____ TECH. MHR

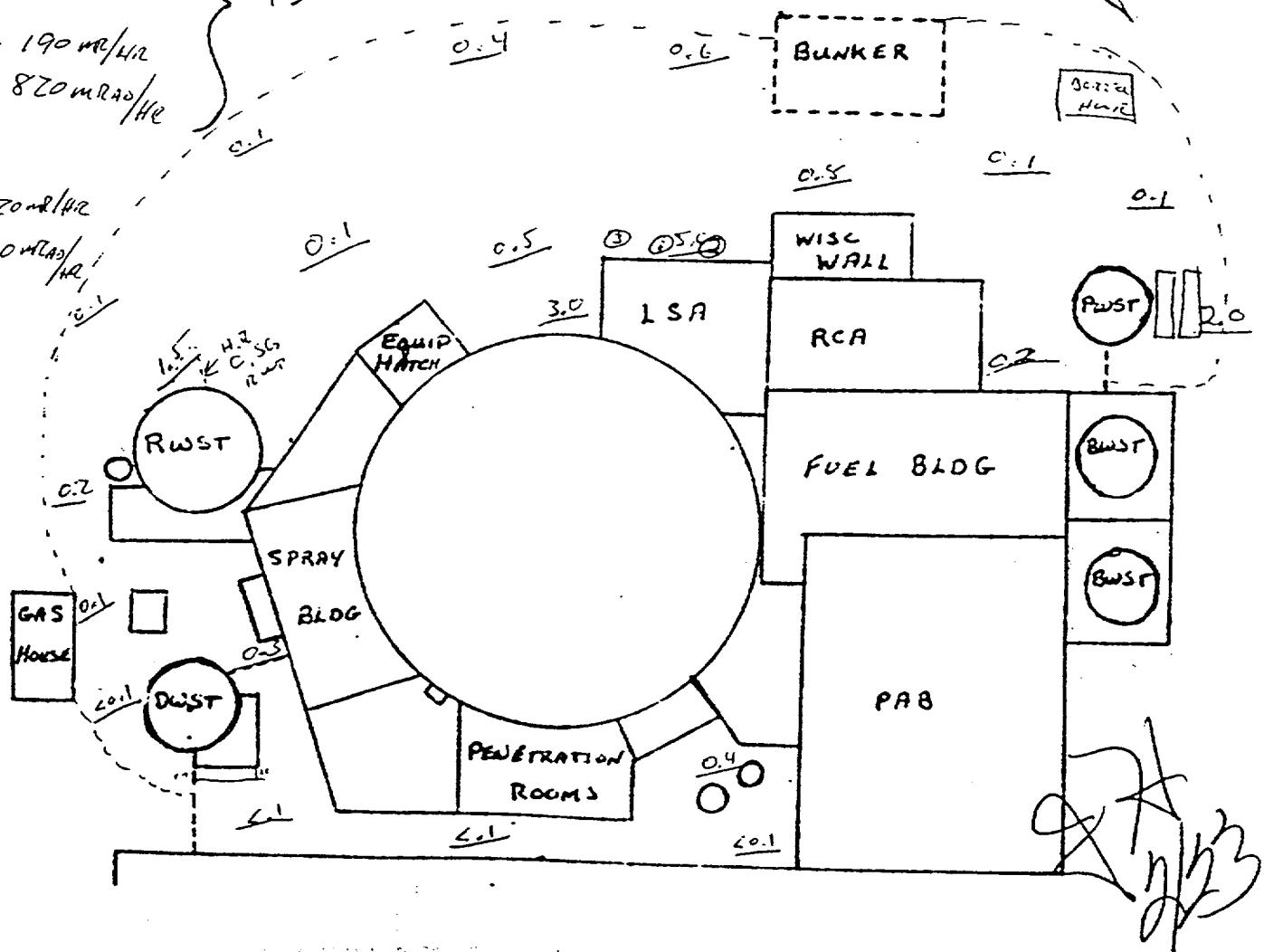
NOTE: All Dose Rates in MR/HR. All Contamination Readings in DPM/100cm^2.

NO SMEARS TAKEN DUE TO ICE, SNOW & WATER.
RANDOM SWEEP MADE WITH ESCO W/ITH HP210 PROBE.
3 "CHIPS" LOCATED (#1 ON MAP)
#1 + #2 REMOVED #3 COULD NOT BE REMOVED

#1 - 80 MR/HR
480 MREM/HR
#2 - 190 MR/HR
820 MRAD/HR
} 150'd - both pure Co-60

#3 - 20 MR/HR
560 MRAD/HR

1. Recover 3rd chip.
2. Look for more
3. Thoroughly vacuum LSA Bldg. Move containers, wipe bottoms of barels, etc.



HSA ID# 46

COPY M. Finn

ATTACHMENT A (Page 1 of 2)

RADIOLOGICAL INCIDENT REPORT 95-016
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 6/27/95 11:25 Location: Security Gate House

HOW RADIATION PROTECTION WAS NOTIFIED: By Security - Gate House Portal monitor ALARM.

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation. See Section 5.1.4 of Procedure):

SEE ATTACHED SURVEY "GUARD HOUSE" DATED 6-27-95/11:25

Was "for cause" testing recommended? ☐ Yes ☒ No

Mark J Reedy
PREPARER SIGNATURE

DATE 6/29/95 TIME 1300

SECTION II RADIOLOGICAL CONTROLS/RP PROGRAMS SECTION HEAD REVIEW

Immediate Corrective Actions Taken (Including Notifications and Reports per 10CFR20 and/or 10CFR50.72):

REED SWITCHES (2) RETURNED TO RA, SURVEYED, LABELED AS RAD MATERIAL AND RETURNED TO I E C HOT SHOP.
RC SUPERVISOR / RC SECTION HEAD NOTIFIED.
FOLLOW UP Surveys of designated areas (ie Training Labs, Cold Lab, RC/I facility) Dose Assessment for workers involved in work outside the Restricted Area,

☑ Incident history files have been reviewed. There were/~~were not~~ similar occurrences to this event in the files.

☐ This incident requires no further reports, documentation or follow-up

☒ Long Term Corrective Actions Recommended: Note: This RIR elevated to PRCE # 197

① See evaluation attached PRCE

② See recommendations attached PRCE

I approve this Incident Report including the recommendations with the exceptions noted below:

Thomas Shaver 8/4/95
Responsible Section Head Date

RPM / Date

Route to:
1. Radiological Controls or Radiation Protection Programs Section Head
2. Radiation Protection Manager
3. Tech. Support Department Manager
4. Plant Manager
5. ALARA Committee/RPM and Training Department
6. File 19.11.4
7. Tech File #19.1.1.1

ATTACHMENT A (Page 2 of 2)

RADIOLOGICAL INCIDENT REPORT

COPY

SECTION III TECH SUPPORT DEPT. MANAGER REVIEW

☐ I approve this Incident Report including the recommendations with the exceptions noted below.

_____

_____

_____

_____

_____

_____

☐ ALARA COMMITTEE REVIEW Required

_____
Department Manager

_____
Date

SECTION IV PLANT MANAGER REVIEW

☐ I approve this Incident Report including the recommendations with the exceptions noted below.

_____

_____

_____

_____

_____

_____

_____
Plant Manager

_____
Date

RETURN THIS COMPLETED FORM TO THE RADIATION PROTECTION MANAGER.

SECTION V

Approved recommendations have been implemented and documentation is attached or added to the appropriate Task List or Tracking System. (Identification #/Task #_____).

Copies have been sent to:
Training
RP Required Reading
NRC Resident

_____
Radiation Protection Manager

_____
Date

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
Stephen W. Callnan / Stephen W. Callnan	Welding Training Lab	6-30-95 / 1130

Instruments Used			
Model	Serial #	Cal Due	Bkdg
Mod 3	65877-90	7-30-95	100 cpm
N /	N /	N /	N /
/	/	/	/
/ A	/ A	/ A	/ A

RWP #('s): N/A Rx Power: N/A

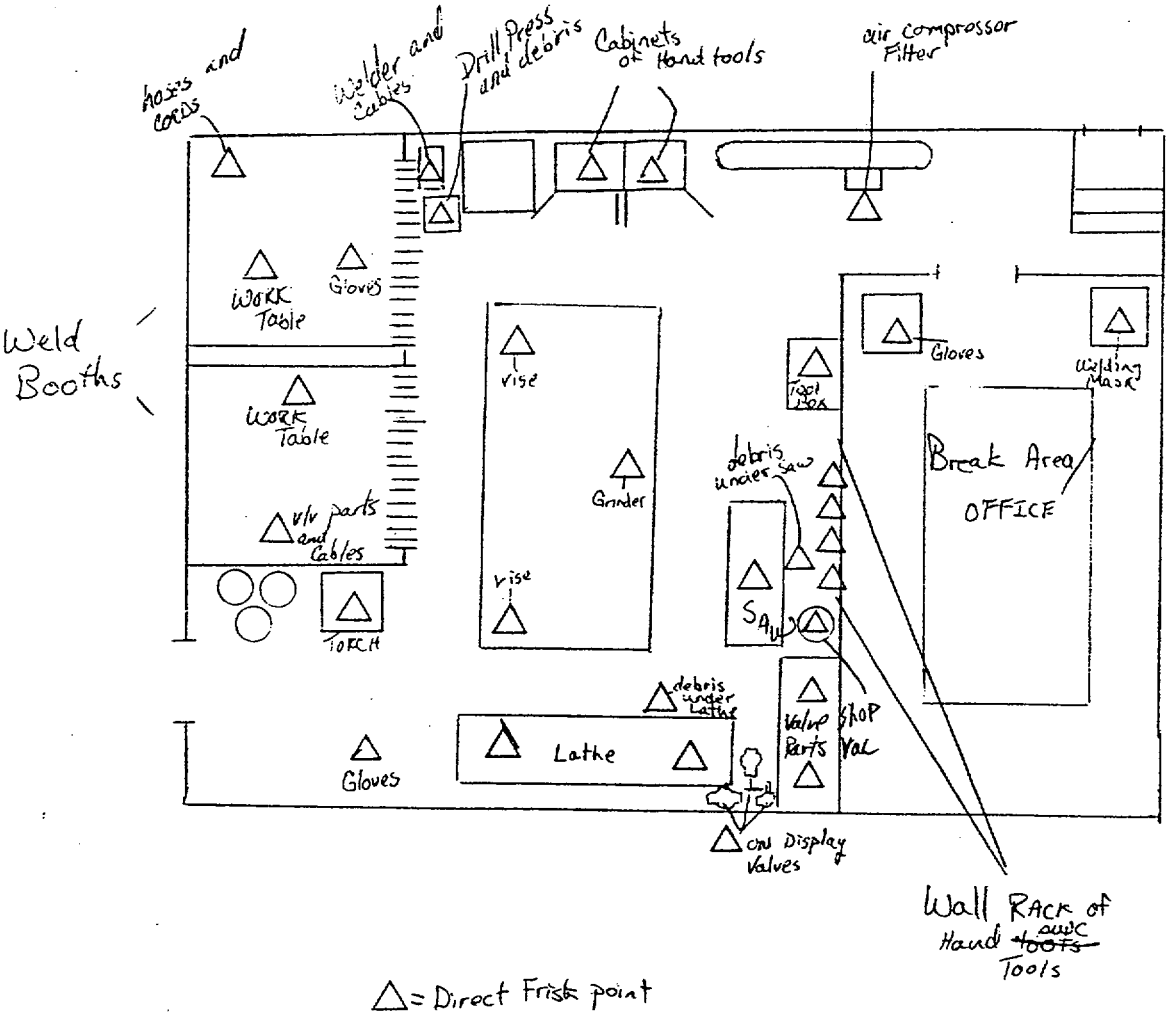
☐ Routine ☐ PRE - JOB[1] ☐ JOB- COVERAGE[1]
☐ Temp Shlding[2] ☒ Verification[1] ☐ Breach[1]
☐ Uncond Release ☐ Other (Specify):

[1]Require R.C. Supervisor Review: SCW RJW Date: 6/30/95

[2]Require ALARA Coordinator Review: Date:

Dose received fromsurvey performance: 0

Contamination	
Sample Pt #	Results
N/A	A



△= Direct Frisk point

All direct Frisks showed
No increase above background

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): Charles Matthews / Charles Matthews

LOCATION: OUTSIDE AREA I&C CLEAN TRAINING LAB

DATE & TIME: 6-30-95 / 1100

Instruments Used

Cal	Serial #	Cal Due	Eff
Ludlum 3	72384-91	9-6-95	80
N/A			

RWP #'s: 95-0660

Rx Power: Ø

- ☐ Routine
- ☐ Tamp Shicing
- ☐ Uncond Release
- ☐ PRE-JOB
- ☐ Verification
- ☒ Other (Specify): check for contaminated items d/s RA
- ☐ JOB-COVERAGE
- ☐ Breach

Require R.C. Supervisor Review: SCO Date: 6/30/95

Require ALARA Coordinator Review: Date:

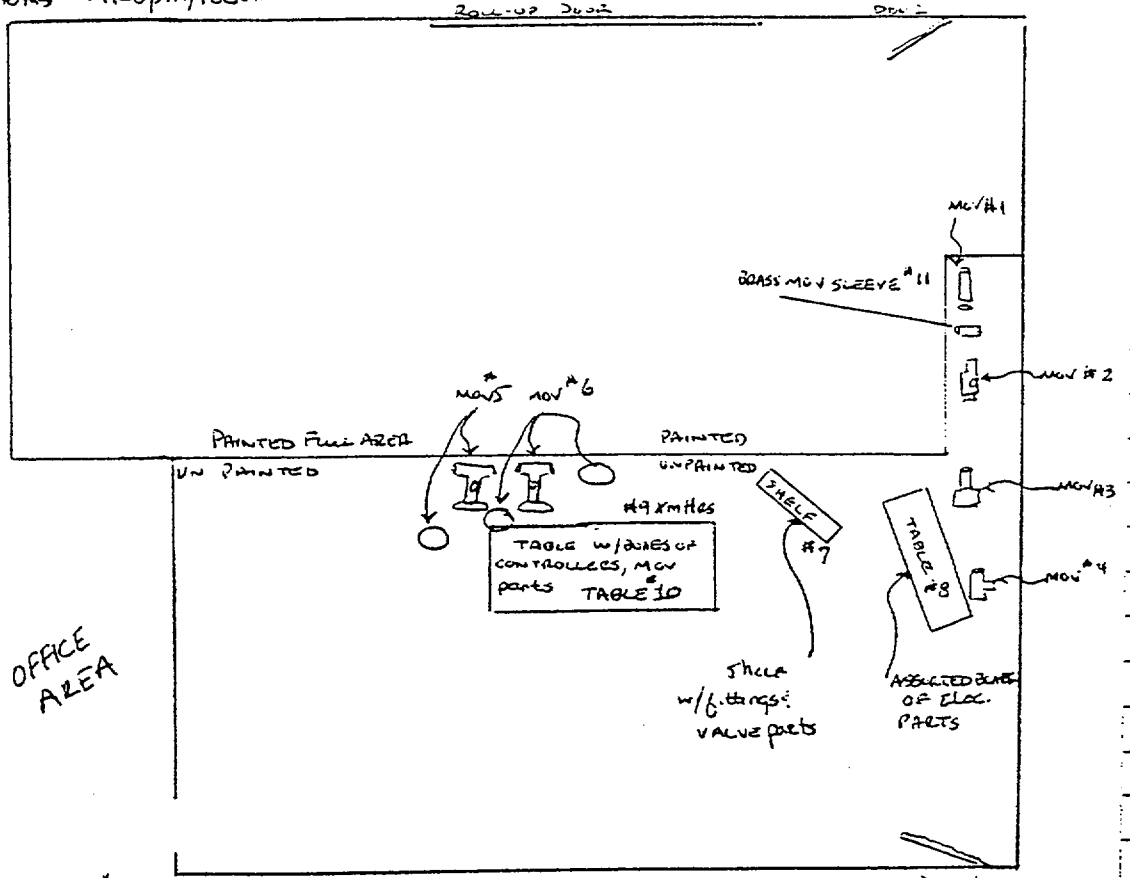
Dose received from survey performance: Ø

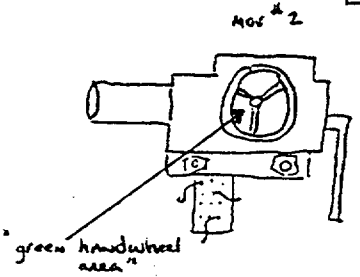
Caution (Rad material) tagged items #2 / #11 and notified Mark Readings; locked door @ exit

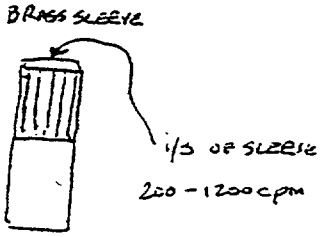
All items <1Kdpm/100cm²

Contamination Sample Results

#1	<600cpm
#2	500cpm
#3	<600cpm
#4	<600cpm
#5	<600cpm
#6	<600cpm
#7	<600cpm
#8	<600cpm
#9	<600cpm
#10	<600cpm
#11	1200cpm







LEGEND
Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
Charlie Matthews / Charlie Matthews	c/s Restricted Area - I&C Training Lab	6-30-95 / 1445

RWP #('s): NA Rx Power: Ø

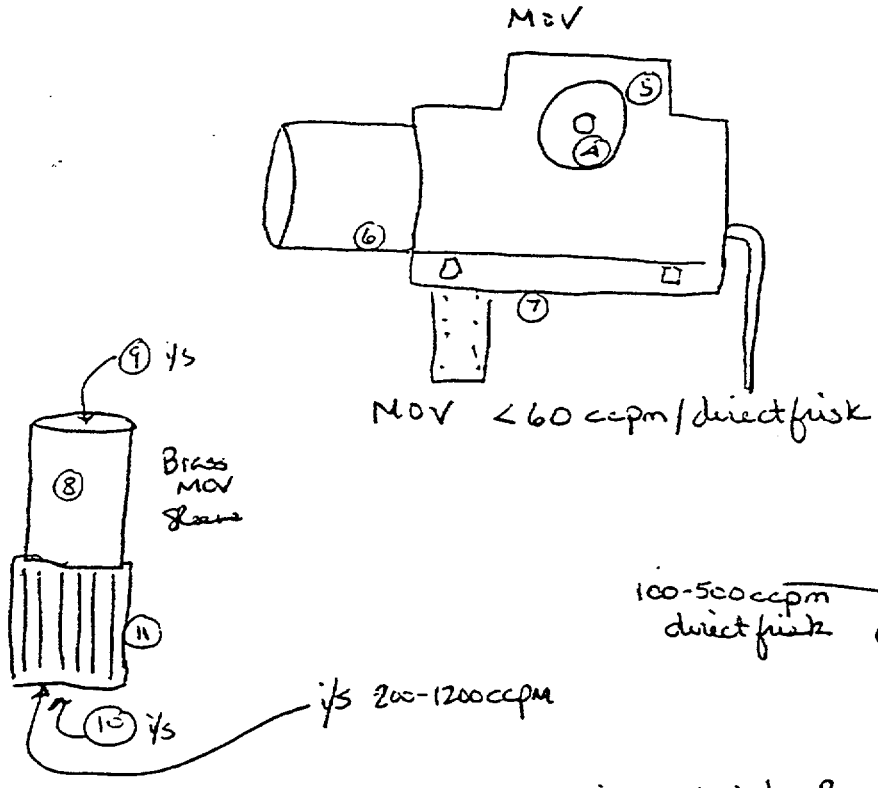
Instruments Used			
Model	Serial #	Cal Due	Bkdg
Ludlum	T2334-91	9-6-95	200cpm
NA			

☐ Routine ☐ PRE - JOB[1] ☑ JOB - COVERAGE[1]
☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]
☐ Uncond Release ☑ Other (Specify): Remove handwheel from MOV / Brass MOV Sleeve

[1]Require R.C. Supervisor Review: See Mgr Date: 6/30/95

[2]Require ALARA Coordinator Review: Date:

Dose received fromsurvey performance: Ø



Removed handwheel from MOV: xported to Rad Con Checkpoint.

xported Brass MOV sleeve to Rad Con checkpoint.

Notified Mark Reckinger

Handwheel and MOV sleeve have RMA stickers affixed

Contamination	
Sample Pt #	Results
1	<1K
2	
3	
4	
5	
6	
7	
8	41K
9	
10	
11	

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): J ROSS [signature] WUEST / [signature]	LOCATION: I+C TRAINING LAB	DATE & TIME: 7/1/95 - 0500

Instruments Used

Model	Serial #	Cal Due	Bkdg
Ludlum 3	72550-91	9/22/95	100 cpm
Ludlum 3	72354-91	9/6/95	100
←	N/A		→

RWP #('s): —— N/A

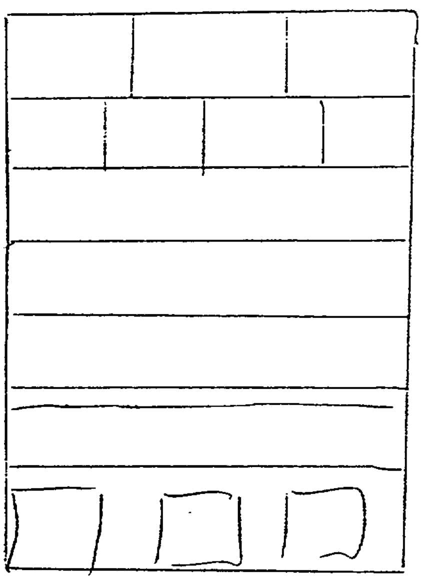
Rx Power: ZERO

- ☐ Routine
- ☐ Temp Shlding[2]
- ☐ Uncond Release
- ☐ PRE - JOB[1]
- ☐ Verification[1]
- ☑ Other (Specify): CLEAN AREA SURVEY
- ☐ JOB- COVERAGE[1]
- ☐ Breach[1]

[1]Require R.C. Supervisor Review: [signature] Date: 7/3/95

[2]Require ALARA Coordinator Review: Date:

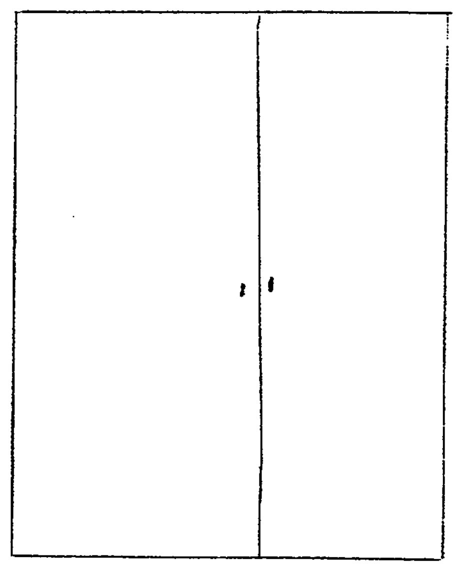
Dose received fromsurvey performance: ____________



STORAGE SHELVES IN I+C SHOP

ALL DIRECT FRISKS:

NO DETECTABLE COUNTS ABOVE BACKGROUND



STORAGE CABINET IN I+C SHOP

ALL DIRECT FRISKS:

NO DETECTABLE COUNTS ABOVE BACKGROUND

Contamination	
Sample Pt #	Results
N/A	

LEGEND Exposure rates are gamma and are in mR/hr. unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(〜〜〜)
Air sample location denoted by [AS - #]

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): JE S MATTHEWS / [signature]

LOCATION: STAFF BUILDING FIRST FLOOR

DATE & TIME: 7-3-95 1300

Instruments Used			
Model	Serial #	Cal Due	Bkdg
L-3	72550-91	9-22-95	150 cpm

RWP #('s):

Rx Power: 0

☐ Routine ☐ PRE-JOB[1] ☐ JOB-COVERAGE[1]

☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]

☐ Uncond Release ☑ Other (Specify): Verify radiological conditions - clean area

[1]Require R.C. Supervisor Review: [signature] Date: 7/3/95

[2]Require ALARA Coordinator Review: Date:

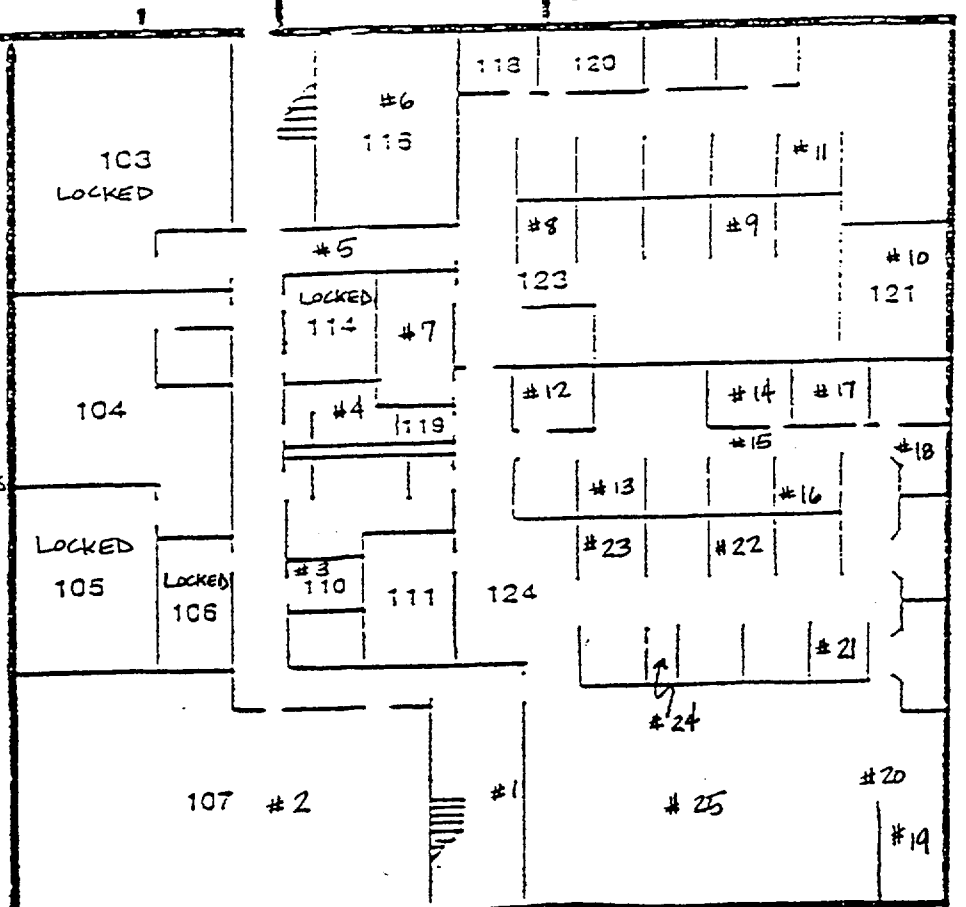
Dose received fromsurvey performance: 0

SURVEY POINT ITEMS:

#1- CHAIR
#2- HARD HAT
- BLUEPRINTS
#3- MOP BUCKET
#4- CHAIR
#5- HARDHATS
#6- NITROGEN BOTTLES & CART
- POLY SAMPLE BOTTLES
- SAM rial # 463-83
- CAM serial # 467-86
#7- CLIPBOARD
#8- WORK GLOVES
#9- OIL SAMPLES
#10- BALL VALVE BALL/PENCIL HOLDER
#11- MISC. METAL SAMPLES
#12- BOLTS
#13- ELECTRICAL SWITCHES
#14- METAL PLATES
#15- FLANGE
#16- MISC. METAL PARTS

NOTE: DIRECT FRISK OF ALL ITEMS LISTED < 100 CCPM ABOVE BKGD. EXCEPT CAM # 467-86. (200 CCPM DIRECT FRISK ON FILTER HOLDER AND 2000 DPM/100 cm² SMEARABLE) (@ O-ring area)

SHIFT. H.P. LEAD NOTIFIED OF RESULTS.



#17- metal sleeves #20- bearings #23- work gloves
#18- flange #21- magnet valve #24- bearings
#19- bearings #22- bolt #25- misc. valve & parts

Contamination	
Sample Pt #	Results
1	<100 ccpm
2	
3	
4	
5	↓
6	See Note
7	<100 ccpm
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	↓

) Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

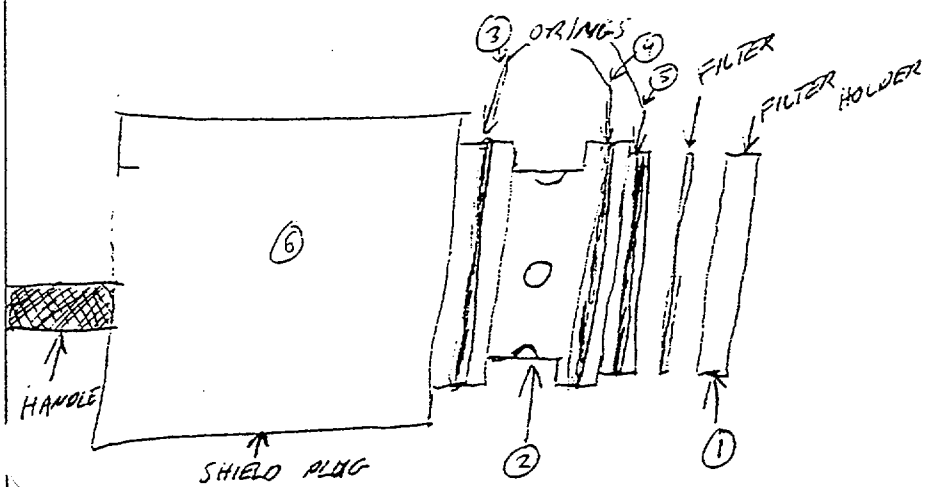
orm routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File # 19.12.2.2

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
P.A. WILSON / Paul A. Wilson	CAM FILTER HOLDER IN AM #116	7-3-95 / 1655

Instruments Used				RWP #('s): 95-00660	Rx Power: NONE
...odel	Serial #	Cal Due	Bkdg	☐ Routine ☐ PRE - JOB[1] ☐ JOB- COVERAGE[1]	
RM14 SA	566-93	9-16-95	160cpm	☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]	
				☐ Uncond Release ☑ Other (Specify): POST / PRE DECON OF FILTER UNIT	
				[1]Require R.C. Supervisor Review: [signature]	Date: 7/3/95
				[2]Require ALARA Coordinator Review:	Date:

Dose received fromsurvey performance: 0 mR



7 on CAM HOUSEING

PRE DECON

<100 cpm/FRK OF HANDLE

<100 cpm/FRK OF SHIELD PLUG

150 cpm/FRK OF FILTER/GASKET SIDE

POST DECON

<100 cpm/FRK OF FILTER/O-RING SIDE

8 ON WORK AREA

Contamination

Sample Pt #	Results cpm/Bkg
PRE DECON 1	<100
2	150
3	150
4	<100
5	<100
6	<100
7	<100
	N/A
POST DECON 2	<100
3	<100
8	<100
	N/A

NOTE: 1) REPLACED O-RING W/ 150 cpm/SMEAR (100 cpm/FIXED)
2) REPLACED FILTER (150 cpm/FRK)
3) WIPED DOWN O-RINGS & O-RING GROVES TO <100 cpm/SMEARLE
4) ALL TRASH BROUGHT TO PLANT FOR DEPOST

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
T Matthews / Charlie Matthews	OFFSITE – S/G MOCK-UPS TRAINING COMPLEX	7-3-95 / 1100

Instruments Used

Model	Serial #	Cal Due	Bkdg
Ludlum 3	72550-91	9-22-95	80cpm
N.A			

RWP #('s): 95-00660 | Rx Power: Ø

☐ Routine ☐ PRE-JOB[1] ☐ JOB-COVERAGE[1]
☐ Temp Shlding[2] ☑ Verification[1] ☐ Breach[1]
☐ Uncond Release ☑ Other (Specify): VERIFY RADIOLOGICAL CONDITIONS / CLEAN AREA VE

[1]Require R.C. Supervisor Review: [signature] Date: 7/3/95

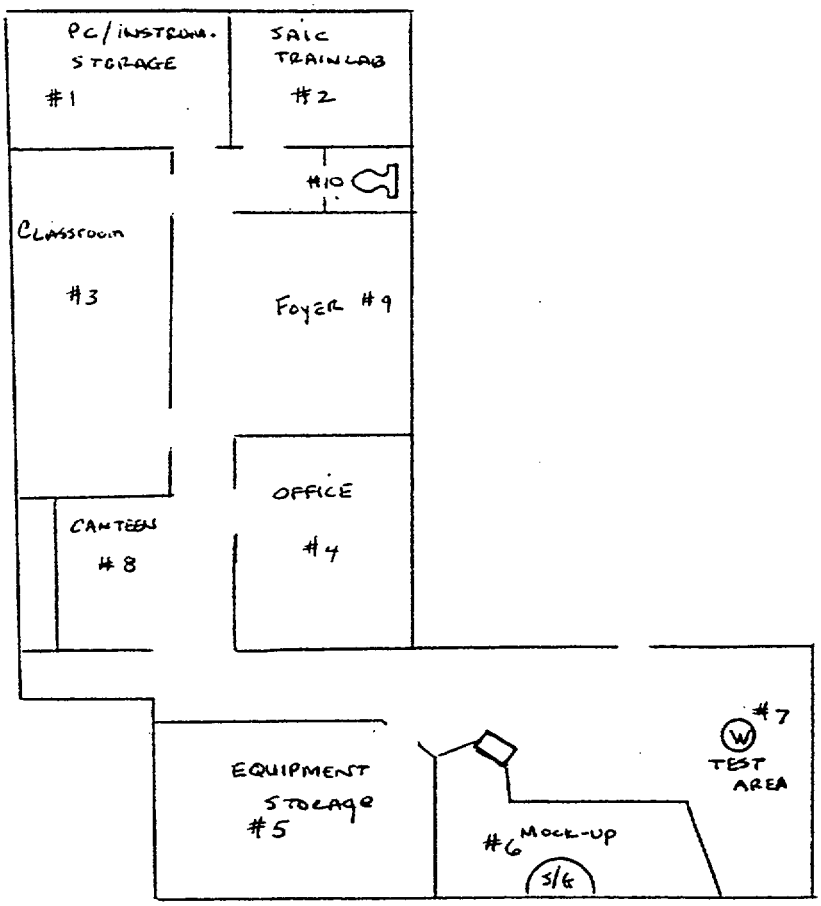
[2]Require ALARA Coordinator Review: Date:

Dose received fromsurvey performance: Ø

BKG N 80cpm on Ludlum 3. MDCR 60ccpm. RANDOM checks OF EQUIPMENT & SURFACES ALL INDICATE <60ccpm. CHAR.

SURVEY PTS

#1 - PC's / RP instruments
#2 - SAIC instrumentation
#3 - RESPIRATOR, DESKS
#4 - FLOOR, DESKS
#5 - VALVE PARTS, RP POSTINGS MISC. EQUIP.
#6 - S/G ROBOT, GRATING, CABLES
#7 - (W) CONSOLES, CABLES, HOSES
#8 - FLOOR, FRIDGE
#9 - FLOOR
#10 - FLOOR



Contamination	
Sample Pt #	Results
#1	< 60ccp
#2	
#3	
#4	
#5	
#6	
#7	
#8	
#9	
#10	

NA

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS-#

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

Program VARSKIN-MOD2

REED SWITCH

2-D Disk Source Geometry

Nuclide : Sr-90
1.8*X90 Distance : 1.438200E-01 cm
Average Beta Energy : 2.014000E-01 MeV
No gamma dose calculation
Source Strength : 4.500000E-02 uCi
Diameter of Disk : 46524.260000 um
Area of Disk : 16.999990 cm^2
Skin Depth : 7.000000 mg/cm^2
Thickness of Cover : 0.000000E+00 mm
Air Gap Thickness : 0.000000E+00 mm
Irradiation Time : 1440.000000 min

Calculated Results:

Radial Distance (cm)	Dose Rate (rad/hr)
.0000	1.47E-02
.1128	1.46E-02
.1596	1.45E-02
.1954	1.45E-02
.2257	1.44E-02
.2523	1.45E-02
.2764	1.45E-02
.2985	1.45E-02
.3192	1.45E-02
.3385	1.45E-02
.3568	1.41E-02
.3742	1.43E-02
.3909	1.45E-02
.4068	1.45E-02
.4222	1.45E-02
.4370	1.44E-02
.4514	1.44E-02
.4652	1.44E-02
.4787	1.45E-02
.4918	1.45E-02
.5046	1.45E-02
.5171	1.45E-02
.5293	1.45E-02
.5412	1.45E-02
.5528	1.45E-02
.5642	1.45E-02

The area of irradiation is larger than 1.0000 square cm

The beta dose rate averaged over	1.0000 square cm =	1.44E-02 rad/hr
The total beta dose averaged over	1.0000 square cm =	3.45E-01 rad

MAINE YANKEE GENERAL SURVEY RECORD FORM Copy

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
- KLINE / [signature]	INFO BUILDING	7-14-95 / 0730

Instruments Used

Model	Serial #	Cal Due	Bkdg
TENNELEC	1-83	9-12-95	14
LUD #3	72384-91	9-6-95	.5
N/A			

RWP #('s): 95-00660 Rx Power: 3/D

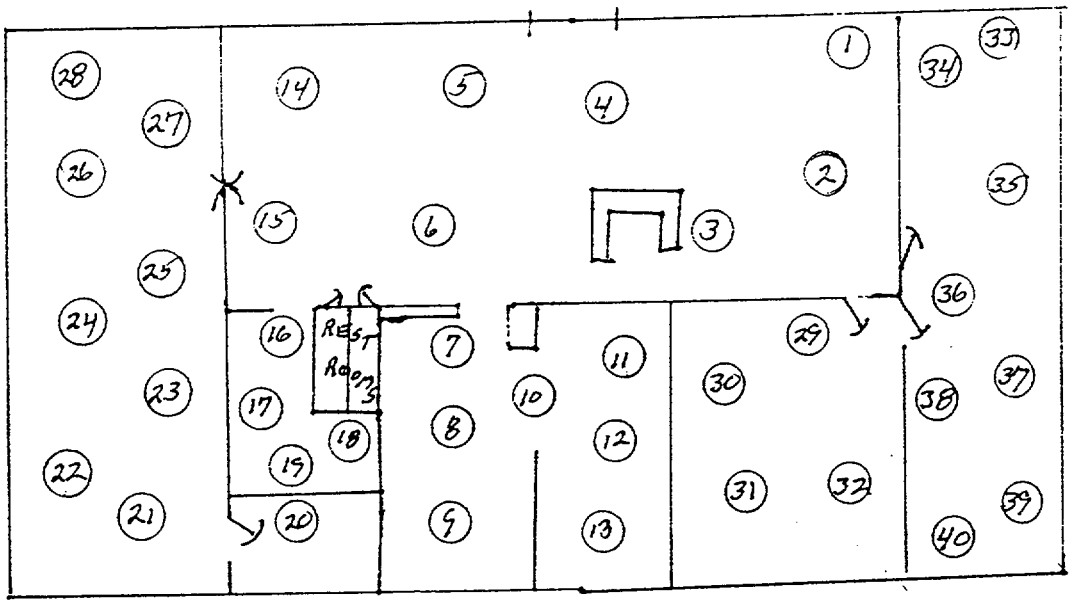
☐ Routine ☐ PRE - JOB[1] ☐ JOB- COVERAGE[1]
☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]
☐ Uncond Release ☒ Other (Specify): FOLLOW UP SURVEY (SEE NOTE)

[1]Require R.C. Supervisor Review: [signature] Date:

[2]Require ALARA Coordinator Review: [signature] Date:

Dose received fromsurvey performance: Ø

Contamination	
Sample Pt #	Results
1-40	< MDA < 1K
	N/A



NOTE = VERIFICATION THAT NOTHING WAS FROUND FROM THE RCA, I ONLY FOUND ITEMS THAT WAS ~~BOX~~ NOT RELATED TO THE PLANT, USEING DIRECT FRISK AND SMEARS, ALL ITEMS FRISK WERE < MDCR, WITH THE EXCEPTION OF DEMO ITEMS, ALL ITEMS SMEARED WERE < 1K, SPENT 7HRS ON DOING FRISKING AND SMEARING OF ITEM'S

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma)
unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

* Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

FRI JUL 14, 1995
GROUP B SMEARS-SIMULTANEOUS MODE

SAMPLE NUMBER	COUNT TIME	GROSS ALPHA	GROSS BETA	ACTIVITY(DPM) ALPHA	ACTIVITY(DPM) BETA	TIME OF DAY COUNTED
98	1.00	0	15	0	0	10:16:34
1	1.00	0	13	0	-6.98	10:17:46
2	1.00	0	18	0	10.47	10:18:58
3	1.00	0	17	0	6.98	10:20:10
4	1.00	0	12	0	-10.47	10:21:22
5	1.00	0	13	0	-6.98	10:22:34
6	1.00	0	11	0	-13.96	10:23:46
7	1.00	0	14	0	-3.49	10:24:58
8	1.00	0	12	0	-10.47	10:26:10
9	1.00	1	12	4.71	-10.47	10:27:22
10	1.00	0	6	0	-31.41	10:28:34
11	1.00	0	7	0	-27.92	10:29:46
12	1.00	0	20	0	17.45	10:30:58
13	1.00	0	14	0	-3.49	10:32:10
14	1.00	0	9	0	-20.94	10:33:22
15	1.00	0	16	0	3.49	10:34:34
16	1.00	0	8	0	-24.43	10:35:45
17	1.00	0	12	0	-10.47	10:36:57
18	1.00	0	13	0	-6.98	10:38:09
19	1.00	0	13	0	-6.98	10:39:21
20	1.00	0	5	0	-34.90	10:40:33
21	1.00	0	21	0	20.94	10:41:45
22	1.00	0	11	0	-13.96	10:42:57
23	1.00	0	15	0	0	10:44:09
24	1.00	0	9	0	-20.94	10:45:21
25	1.00	0	16	0	3.49	10:46:33
26	1.00	0	7	0	-27.92	10:47:45
27	1.00	0	14	0	-3.49	10:48:57
28	1.00	0	7	0	-27.92	10:50:09
29	1.00	0	5	0	-34.90	10:51:21
30	1.00	0	10	0	-17.45	10:52:33
31	1.00	0	6	0	-31.41	10:53:45
32	1.00	0	10	0	-17.45	10:54:57
33	1.00	0	10	0	-17.45	10:56:09
34	1.00	0	5	0	-34.90	10:57:21
35	1.00	0	16	0	3.49	10:58:33
36	1.00	0	11	0	-13.96	10:59:45
37	1.00	0	15	0	0	11:00:57
38	1.00	0	18	0	10.47	11:02:09
39	1.00	0	12	0	-10.47	11:03:20
40	1.00	0	9	0	-20.94	11:04:33

RATION COMPLETE

OPERATION COMPLETE

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
J. WEST / W. DAVIS	INDOCT. CENTER - LEFT WALL	7-17-95/2030

Instruments Used			
Model	Serial #	Cal Due	Bkdg
M-3	72550-91	9-22-95	125
M-3	60769-90	7-20-95	125
	N		
	A		

RWP #('s): N/A Rx Power: 0

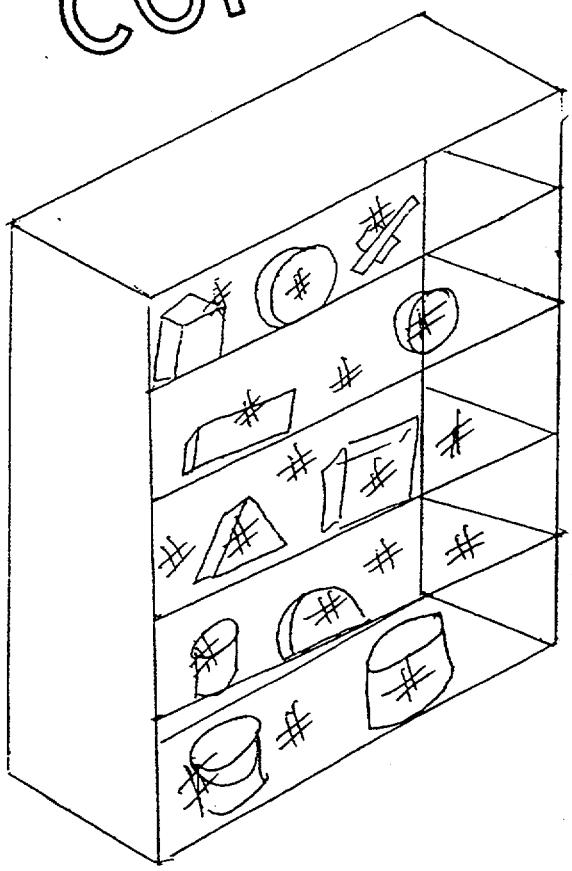
☐ Routine ☐ PRE - JOB[1] ☐ JOB- COVERAGE[1]
☐ Temp Shlding[2] ☑ Verification[1] ☐ Breach[1]
☐ Uncond Release ☐ Other (Specify):

[1]Require R.C. Supervisor Review: [illegible] Date: 7/17/95

[2]Require ALARA Coordinator Review: J Date:

Dose received fromsurvey performance: —

COPY



DOORS LABLED "MN PARTS"

(1-15) SMEARS TAKEN ON MISC. EQUIPMENT

= DENOTES DIRECT FRISK

ALL ITEMS AND MISCELLANEOUS EQUIPMENT DIRECT FRISKED. RESULTS < 100CPM.

Contamination	
Sample Pt #	Results
1	<1K
2	<1K
3	<1K
4	<1K
5	<1K
6	<1K
7	<1K
8	<1K
9	<1K
10	<1K
11	<1K
12	<1K
13	<1K
14	<1K
15	<1K

N

A

NOTE: Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
E KLINE / [signature]	GUARD HOUSE	6-27-95 / 11:25

Instruments Used				RWP #('s): 95-00660	Rx Power: S/D
Model	Serial #	Cal Due	Bkdg	☐ Routine ☐ PRE-JOB[1] ☐ JOB-COVERAGE[1]	
RM14	366-89	8-14-95	80cpm	☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]	
RO2	4396-89	12-13-95	N/A	☐ Uncond Release ☑ Other (Specify): ALARM AT GUARD HOUSE	
N/A				[1]Require R.C. Supervisor Review:	Date:
				[2]Require ALARA Coordinator Review:	Date:

Dose received from survey performance: Ø

Contamination

Sample Pt #	Results
	N A

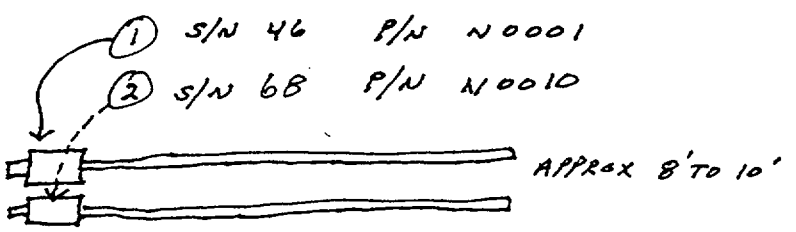
ALARM AT GUARD HOUSE

AT ABOUT 1125 HRS I GOT A CALL FROM THE GUARD HOUSE, I TOOK A RM14 TO THE GUARD HOUSE WITH ME AND FOUND TWO CEDM REED SWITCHERS WITH 100K dpm/FIXED ON THEM BUT NO LOSE CONTAMINATION.

THE PERSON THAT HAD THE ITEMS WAS A 1⅓C TRAINING TECH, MR SCOTT HILL HE STATED THAT ITEM'S CAME FROM COLD SIDE 1⅓C SHOP, BUT WAS CLEARED OUT OF HOT SIDE ON 6-26-95, THE 1⅓C TECH WAS MR B. GRIFFIN.

MR GRIFFIN DID NOT KNOW THE PERSON THAT RELEASED THEM ON 6-26-95 BUT HE WAS A CONT TECH

I TOOK THE ITEMS BACK IN TO THE 1⅓C HOT SHOP AND ALSO MARKED THEM WITH RAD STICKERS



LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

COPY

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): E. KLINE / [signature]

LOCATION: RC CHECK POINT

DATE & TIME: 6-29-95 / 1330

Instruments Used

Model	Serial #	Cal Due	Bkg
19 MICRO R	109915-54	11-9-95	20
RM14SA	667-93	9-21-95	70
N/A			

RWP #('s): 95-00660

Rx Power: S/D

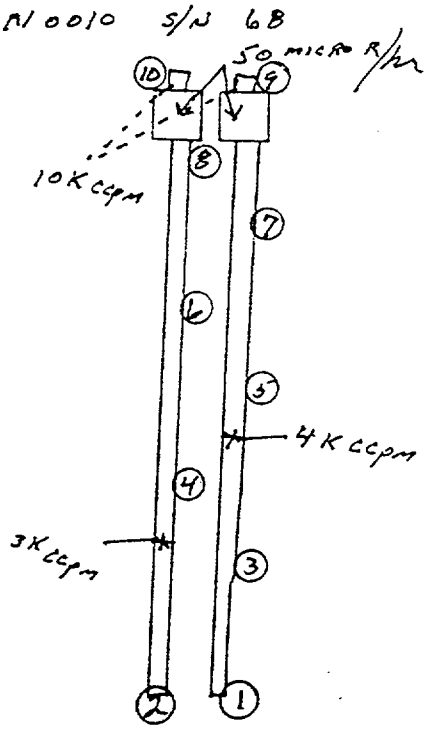
☐ Routine ☐ PRE-JOB ☐ JOB-COVERAGE
☐ Temp Shielding ☑ Verification ☐ Breach
☐ Uncond Release ☐ Other (Specify):

Require R.C. Supervisor Review: SOD Date: 6/29/95

Require ALARA Coordinator Review: Date:

Dose received fromsurvey performance: 0

REED SWITCH
① P/N N0001 S/N 46 ③ P/N N0010 S/N 68



Contamination Sample Pt #	Results
SEE ATTACHED SHEET	

NOTE = ALL READINGS ARE CONTACT FIXED
TENNELEC USED FOR SMEARS & ITEMS RETURNED TO I&C HOT SHOP

TENNELEC / 1-B3 / CAL DUE 9-12-95 BKG 18

LEGEND
Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS-#

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

Kline

JUN 29, 1995
GROUP B SMEARS-SIMULTANEOUS MODE

SAMPLE NUMBER	COUNT TIME	GROSS ALPHA	GROSS BETA	ACTIVITY(DPM) ALPHA	ACTIVITY(DPM) BETA	TIME OF DAY COUNTED
(1) 98	1.00	0	13	0	0	12:20:09
(2) 5	1.00	0	21	0	27.92	12:21:20
(3) 4	1.00	0	60	0	164.04	12:22:32
(4) 3	1.00	0	46	0	115.18	12:23:44
(5) 2	1.00	0	30	0	59.33	12:24:56
(6) 1	1.00	1	21	4.71	27.92	12:26:08
(7) 10	1.00	0	16	0	10.47	12:27:20
(8) 9	1.00	0	29	0	55.84	12:28:32
(9) 8	1.00	0	24	0	38.39	12:29:44
(10) 7	1.00	1	110	4.71	338.56	12:30:56

OPERATION COMPLETE

OPERATION COMPLETE

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): Ronald D. Doerr, Jr. Ronald D. Doerr Jr.

LOCATION: 21' PAB I&C Shop Hot side

DATE & TIME: 7-3-95 1000

Instruments Used

Model	Serial #	Cal Due	Eff
RO-2	4397-39	8-23-95	N/A
BC-4	132-33	5-5-96	41
RM-14	1462-87	9-9-95	200
~~	N/A	~~~	

RWP #'s: 95-00660

Ex Power: 0%

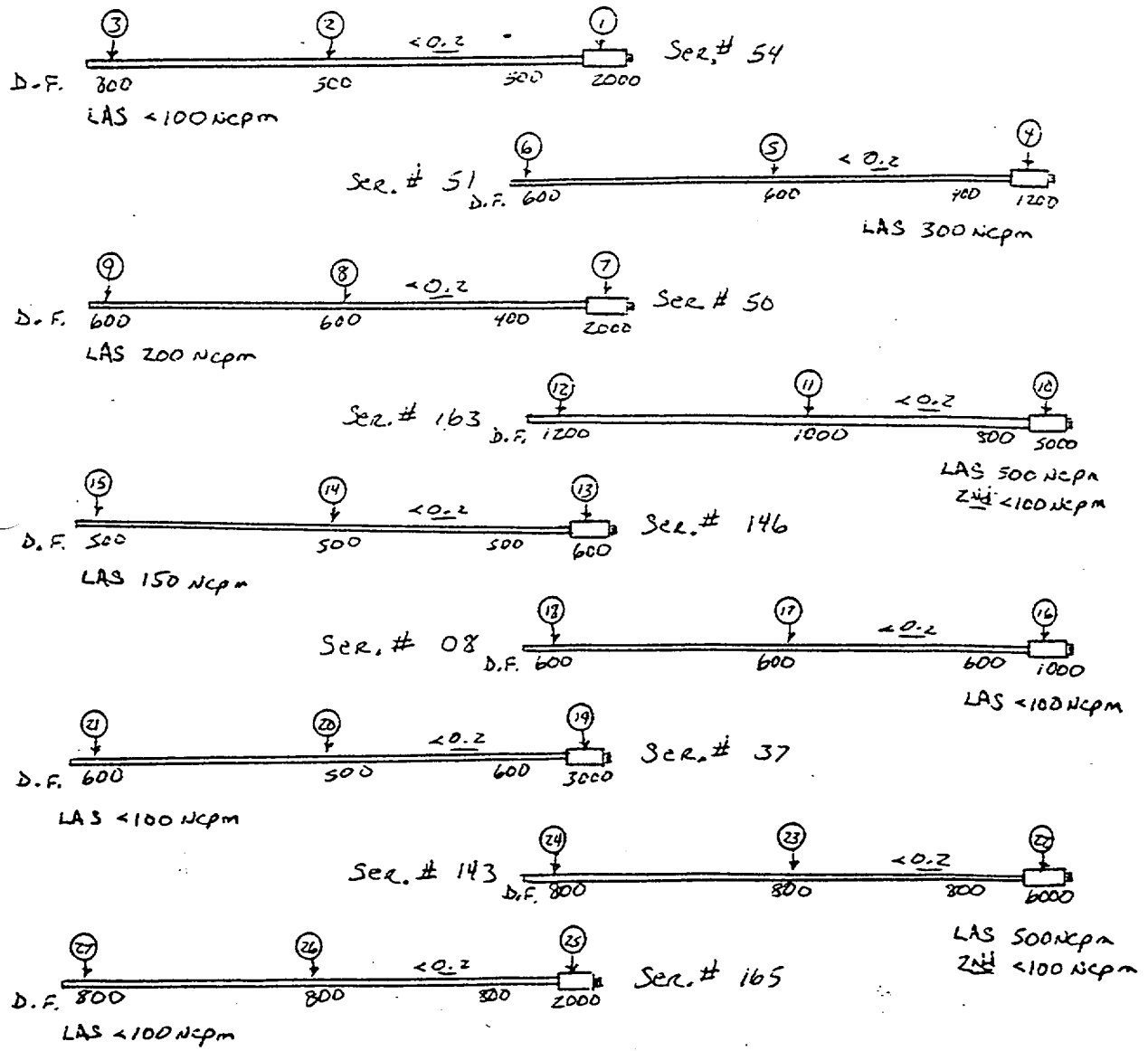
☐ Routine ☐ PRE-JOB ☐ JOB-COVERAGE
☐ Temp Shicing ☑ Verification ☐ Breach
☐ Uncond Release ☐ Other (Specify):

Require R.C. Supervisor Review: Date: 7/3/95

Require ALARA Coordinator Review: Date:

Dose received from survey performance: Ø mrem

Reed Switches



Contamination Sample Results

Pt #	
1	440 dpm
2	< MDA
3	< MDA
4	490 dpm
5	< MDA
6	< MDA
7	155 dpm
8	< MDA
9	113 dpm
10	625 dpm
11	518 dpm
12	575 dpm
13	101 dpm
14	69 dpm
15	87 dpm
16	335 dpm
17	134 dpm
18	25 dpm
19	462 dpm
20	82 dpm
21	215 dpm
22	550 dpm
23	< MDA
24	< MDA
25	576 dpm
26	25 dpm
27	164 dpm

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.
D.F. denotes direct Feisked

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~)
Air sample location denoted by AS-#

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): Cheryl Dorris / Cheryl Dorris | LOCATION: 21 Turbine Bldg I&C Coldside | DATE & TIME: 6-29-95 / 1430

Instruments Used | RWP #(s): 95-0066C | Rx Power:

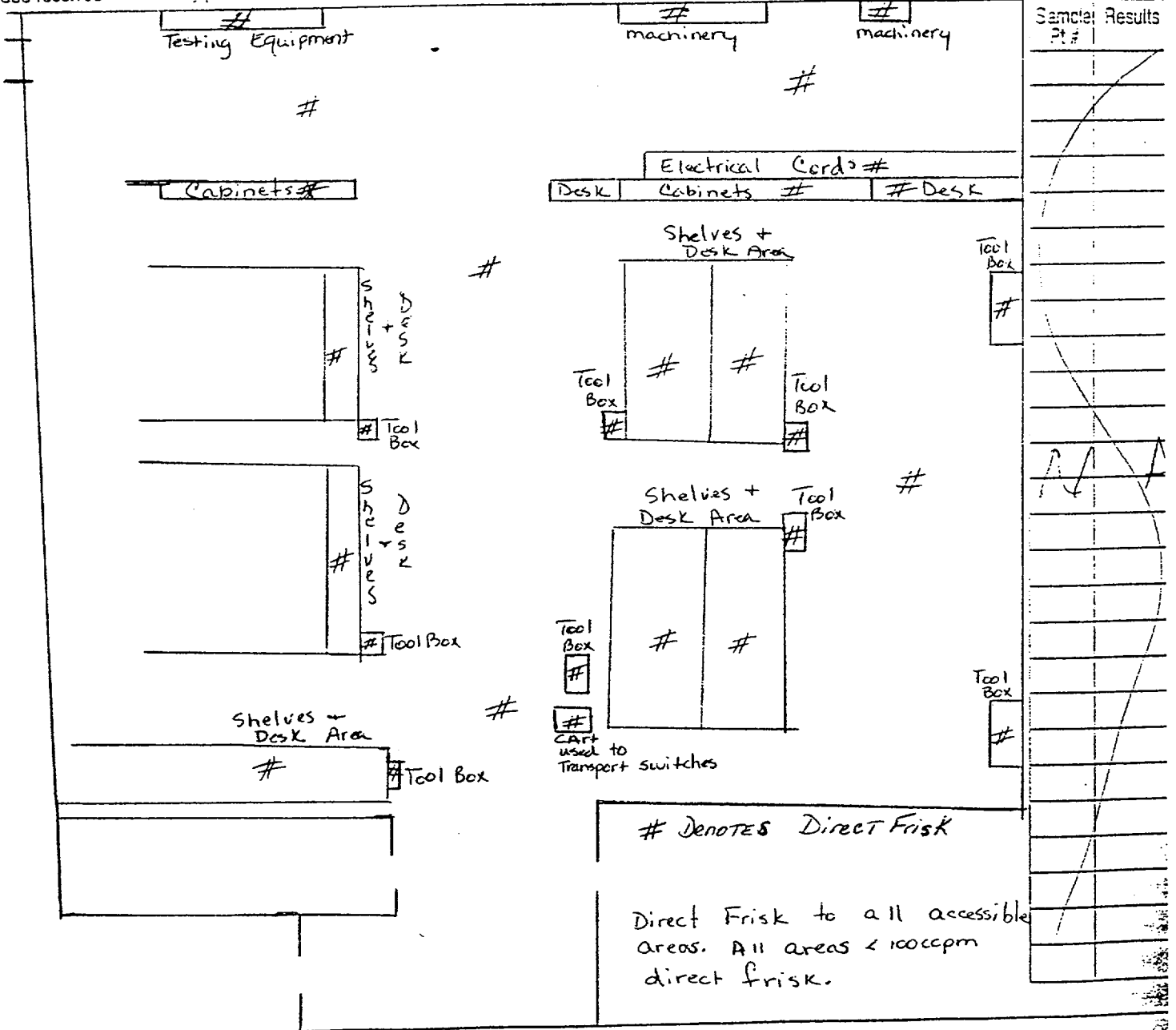
Model	Serial #	Cal Due	Bkgd
M-3	60769-9C	7-30-95	150cpm
N/A			

☐ Routine ☐ PRE-JOB ☐ JOB-COVERAGE
☐ Temp Shilding ☒ Verification ☐ Breach
☐ Uncond Release ☐ Other (Specify): To verify Area is Clean

Require R.C. Supervisor Review: SIG Mon Date: 6/29/95

Require ALARA Coordinator Review: Date:

Dose received fromsurvey performance: 0



LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): Harry D. Depew Jr / Harry D Depew Jr

LOCATION: I&C TRAINING LAB

DATE & TIME: 6/29/95 1445

Instruments Used

Model	Serial #	Cal Due	Bkgd
L-3	60769-90	7/95	~100
	N/A		

RWP #('s): N/A

Rx Power: Ø

- [ ] Routine
- [ ] Temp Shlding[2]
- [ ] Uncond Release
- [ ] PRE - JOB[1]
- [ ] Verification[1]
- [x] Other (Specify): Informational
- [ ] JOB- COVERAGE[1]
- [ ] Breach[1]

[1]Require R.C. Supervisor Review: Mgt Review Date: 6/30/95

[2]Require ALARA Coordinator Review: Date:

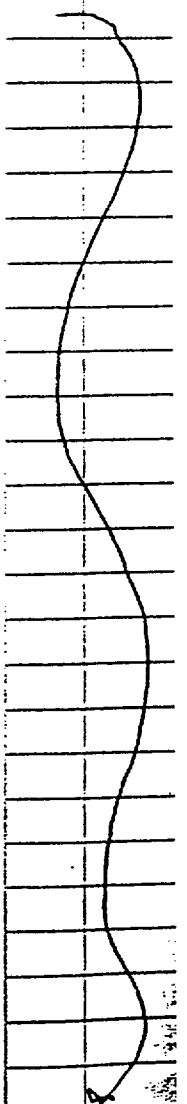
Dose received fromsurvey performance: Ø

DIRECT FRISK of RANDOM ITEMS IN LAB

1) ALL ITEMS FRISKED WERE <100CCPM
2) NO RADIOACTIVE MATERIAL STICKERS WERE OBSERVED
3) THIS SURVEY REFLECTS ABOUT 5% of THE ITEMS IN THE LAB
4) A DETAILED SURVEY SHOULD BE COMPLETED AS TIME AND RESOURCES PERMIT

Contamination

Sample Pt #	Results
N/A	



LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): Ron Shippee, Nick Breault | LOCATION: ITC TRAINING FACILITY, MOV LAB | DATE & TIME: 6-29-95 / 2230

Instruments Used | RWP #('s): N/A | Rx Power: 5/0

Model	Serial #	Cal Due	Bkgd
L-177	669079	10/4/95	12cpm
	N/A		

☐ Routine ☐ PRE - JOB ☐ JOB - COVERAGE
☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]
☐ Uncond Release ☒ Other (Specify): Verify Unconditional Release of tools

Require R.C. Supervisor Review: MPM Date: 6/29/95

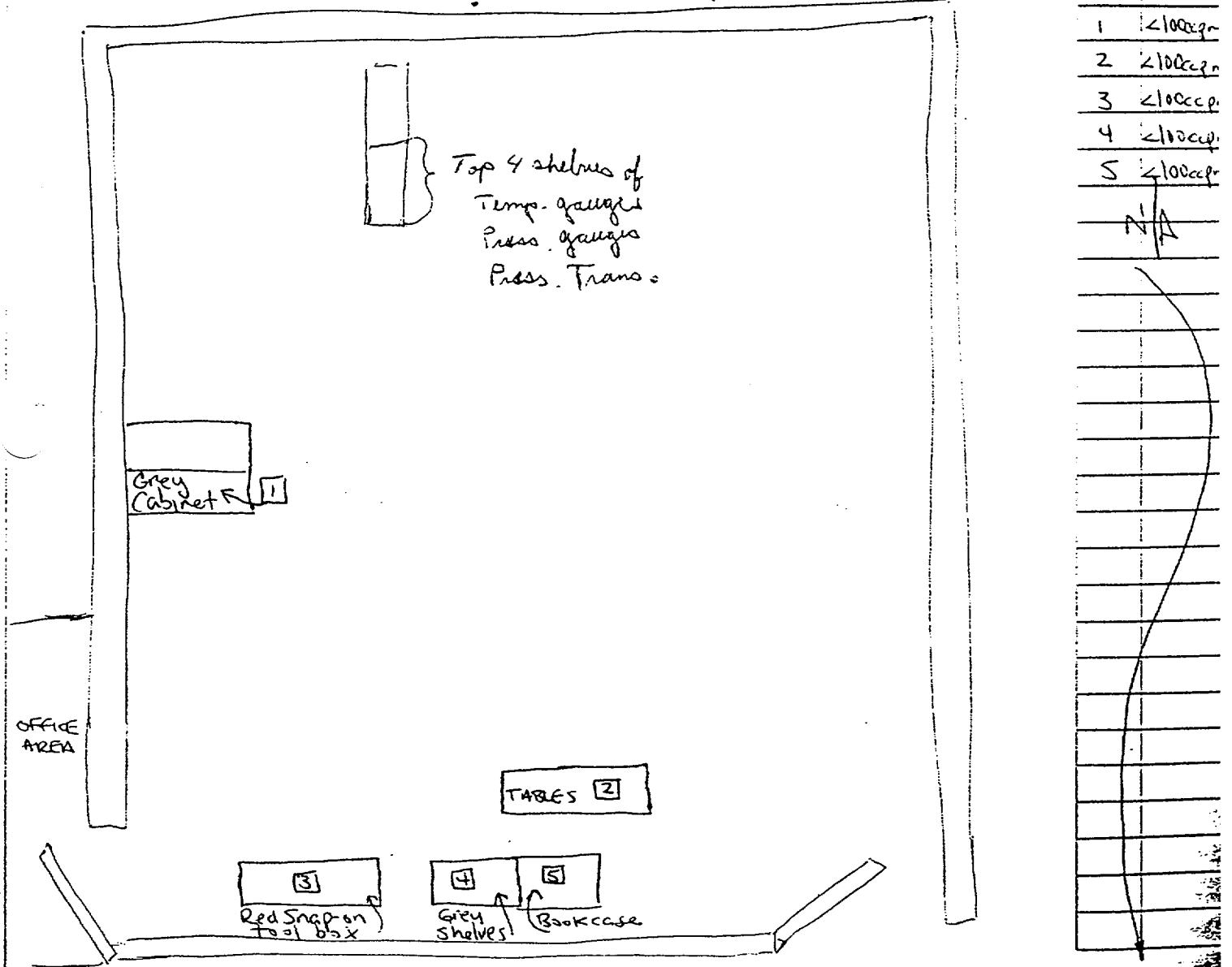
[2]Require ALARA Coordinator Review: Date:

Dose received fromsurvey performance: —

All items frisked were <1500 ncpm/probe area

Direct Frsk →

Contamination Sample Pt #	Results
1	<1000cpm
2	<1000cpm
3	<1000cpm
4	<1000cpm
5	<1000cpm
	N/A



LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.
(#) = Direct Frsk of items + what they are on

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): THERESA MARSHALL / Theresa Marshall
MICHAEL OKONIEWSKI / Michael Okoniewski

LOCATION: IOC training Facility, mov lab

DATE & TIME: 6-30-95 02:15

Instruments Used			
Model	Serial #	Cal Due	Bkgd
L-177	72384-91	9-6-95	100cpm
L-177	72530-91	9-22-95	50cpm
N	N	N	

RWP #(s): N/A

Rx Power: SD

☐ Routine ☐ PRE - JOB ☐ JOB - COVERAGE
☐ Temp Shlding ☐ Verification ☐ Breach
☐ Uncond Release ☒ Other (Specify): Verify Unconditional Release of tools

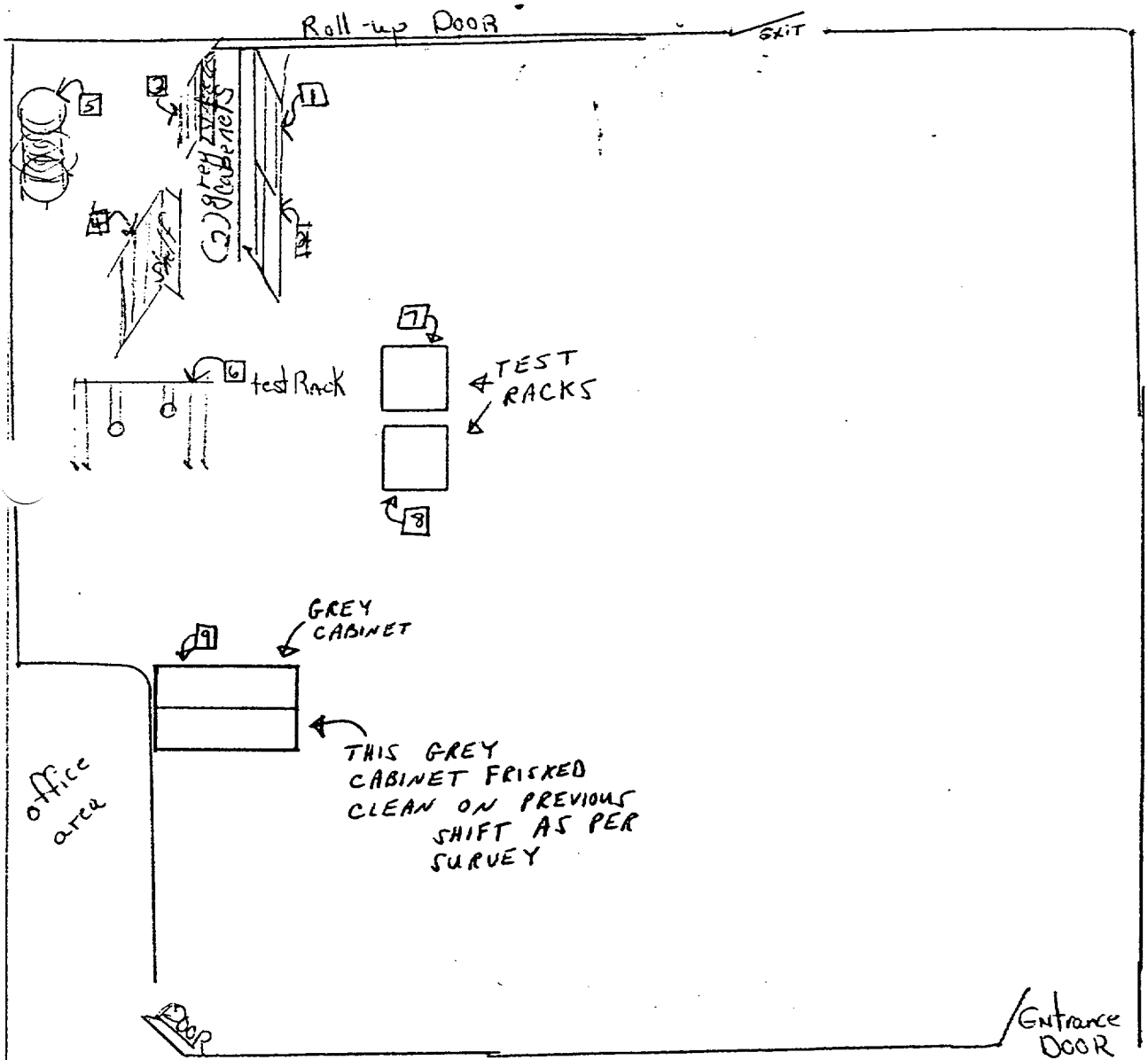
Require R.C. Supervisor Review: MM Date:

Require ALARA Coordinator Review: Date:

Dose received from survey performance: 0

ALL ITEMS FRISKED WERE <100 CCPM/DIRECT FRISK

DIRECT FRISK →



Contamination

Samples Pt #	Results Direct Frisk
1	<100cpm
2	<100cpm
3	<100cpm
4	<100cpm
5	<100cpm
6	<100cpm
7	<100CPM
8	<100CPM
9	<100CPM
N/A	

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.
☐ = DIRECT FRISK of Items ON shelving

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

HSA ID# 47

ATTACHMENT A (Page 1 of 2)

RADIOLOGICAL INCIDENT REPORT

95-30
NUMBER

SECTION I

DATE AND TIME OF INCIDENT: 10-1-95 0750 Location: Gate House

HOW RADIATION PROTECTION WAS NOTIFIED: Security Response to Portal Monitor Alarm.

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation. See Section 5.1.4 of Procedure):

(1) worker alarmed portal Monitor at gate house was found to have contaminated work/duty garment in his possession

Was "for cause" testing recommended? ☐ Yes ☑ No

Ronald D Shepler
PREPARER SIGNATURE

DATE 10-4-95 TIME 1400

SECTION II RADIOLOGICAL CONTROLS/RP PROGRAMS SECTION HEAD REVIEW

Immediate Corrective Actions Taken (Including Notifications and Reports per 10CFR20 and/or 10CFR50.72):

SEE ATTACHED

☒ Incident history files have been reviewed. There were/were not similar occurrences to this event in the files.

☐ This incident requires no further reports, documentation or follow-up

☒ Long Term Corrective Actions Recommended:

SEE ATTACHED

I approve this Incident Report including the recommendations with the exceptions noted below:

Responsible Section Head 11/16/95 Date

RPM 11/20/95 Date

Route to:
1. Radiological Controls or Radiation Protection Programs Section Head
2. Radiation Protection Manager
3. Tech. Support Department Manager
4. Plant Manager
5. ALARA Committee/RPM and Training Department
6. File 19.11.4
7. Tech File #19.1.1.1

ATTACHMENT A (Page 2 of 2)

RADIOLOGICAL INCIDENT REPORT

SECTION III TECH SUPPORT DEPT. MANAGER REVIEW

☒ I approve this Incident Report including the recommendations with the exceptions noted below.

☐ ALARA COMMITTEE REVIEW Required

Department Manager

12/1/95
Date

SECTION IV PLANT MANAGER REVIEW

☒ I approve this Incident Report including the recommendations with the exceptions noted below. / COMPLETED 10/1/95 EMH

{Does Locker # 274/275 STILL need to be Surveyed?

This is the 2ND Time in Recent History that GATE House portal monitor has prevented Contamination from exiting the plant.

Plant Manager

12/11/95
Date

RETURN THIS COMPLETED FORM TO THE RADIATION PROTECTION MANAGER.

SECTION V N/A

Approved recommendations have been implemented and documentation is attached or added to the appropriate Task List or Tracking System. (Identification #/Task # ~~TI RPT~~).

Copies have been sent to:
Training
RP Required Reading
NRC Resident

ALL RECOMMENDATIONS COMPLETE

Radiation Protection Manager

12/16/95
Date

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature): E. FOX

LOCATION: CHECK Pt.

DATE & TIME: ~~10/1/1992~~ 10/1/95 0825

Instruments Used			
Model	Serial #	Cal Due	Bkdg
RM-14	5708	3/20/96	100
CM-7	467	3/13/96	Ø
N/A			

RWP #('s): 95-660

Rx Power: S/D

☐ Routine ☐ PRE-JOB[1] ☐ JOB-COVERAGE[2]

☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]

☐ Uncond Release ☑ Other (Specify): ITEM RECOVERED @ Gatehouse

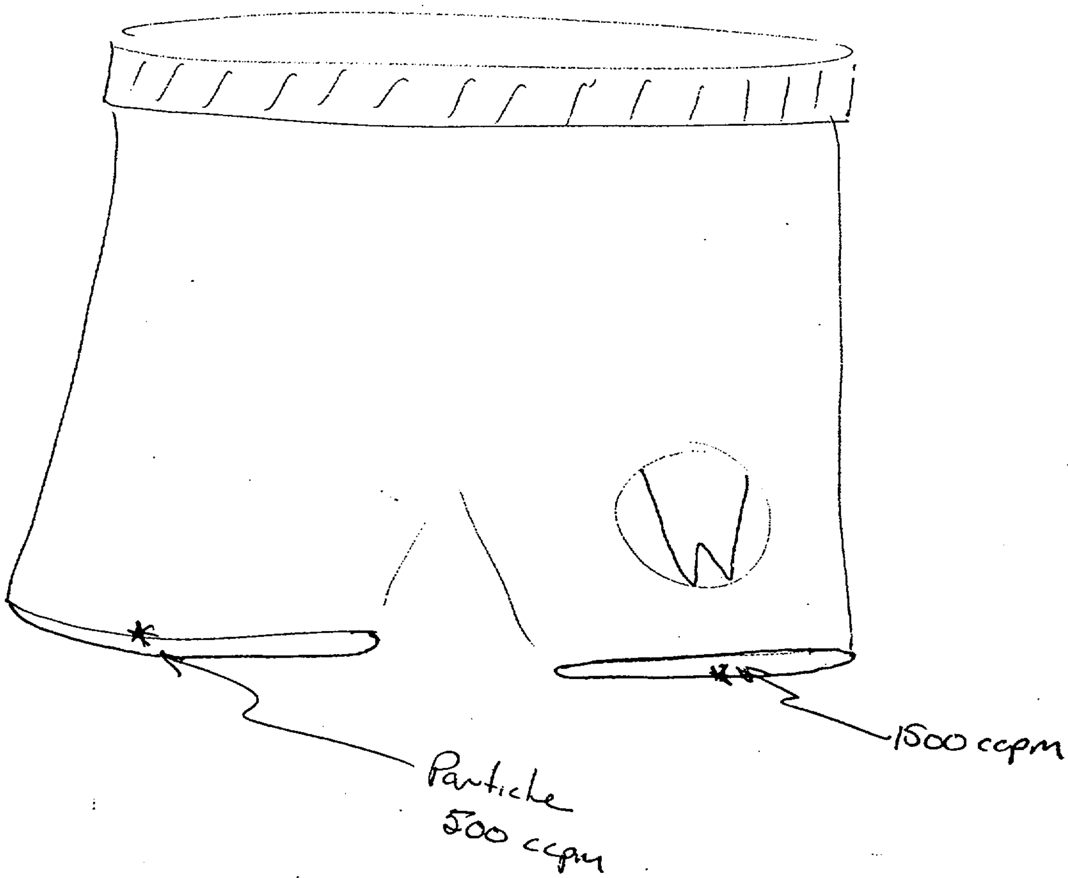
[1]Require R.C. Supervisor Review: Date:

[2]Require ALARA Coordinator Review: Date:

Dose received fromsurvey performance: Ø

Contamination	
Sample Pt #	Results
N/A	

1 Bag of 4 items. (2 shirts/2 shorts) the other 3 items were frisked w/ CM-7 & RM-14. All 3 were ≤ MDCR. on frisker.



Note: TRIED TO CLEAR Portals @ CK Pt w/ Shorts & RECIEVED 4 alarms lights.

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(〰)
Air sample location denoted by [AS - #]

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

understood

Meeting Summary

This morning, a bag belonging to a Westinghouse platform worker set off the alarm in the gatehouse portal monitor. The bag was retained by MY rad controls. Upon surveying the contents of the bag, a pair of shorts was found to be reading 1500 counts above background.

At approximately 11am, Ron Shippee conducted a telephone interview with the worker. The worker indicated that he had picked up the shorts earlier this past week at the HP control point, in an area where clean garments are temporarily stored after deconing and cleaning. This area is inside the RCA. Thinking they were clean, he placed them outside the RCA, and he passed through the portal monitor. He did not frisk the shorts. He placed the shorts in his locker in the mens locker room until this morning when he packed them in a bag so he could take them home for laundering. He indicated that the above practice has been routine at the checkpoint.

Until a formal root cause is completed, and corrective actions are formulated and implemented the following actions were taken:

1. Westinghouse supervision will discuss this event with Westinghouse personnel and stress the need to verify that all articles are either frisked or worn through the portal monitors. Unattended articles located inside the RCA cannot be assumed to have been surveyed by rad controls. All unsurveyed articles must be assumed to be contaminated.

2. Ron Shippee and Bill Baxter (PSS) will contact and discuss the event with appropriate plant management personnel.

3. Rad Controls will establish interim controls at the check point (today) to preclude this type of event from recurring.

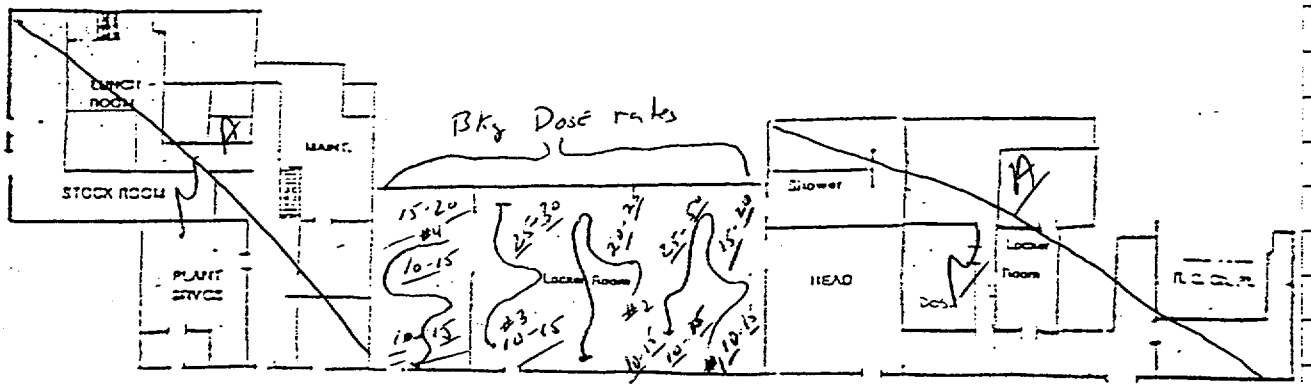
69

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
Cross [illegible] / ROBERT MEADER / Radiation	COLDSIDE SERVICE BUILDING	10/1/95 15:00

Instruments Used				RWP #('s): N/A	Rx Power: Ø
Model	Serial #	Cal Due	Bkg	☐ Routine ☐ PRE - JOB[1] ☐ JOB- COVERAGE[1]	
M-19	109915-94	11-9-95	N/A	☐ Temp Shiding[2] ☐ Verification[1] ☐ Breach[1]	
M-19	10164693	2-17-96	N/A	☐ Uncond Release ☑ Other (Specify): Follow up survey - RIR investigation	
RM-14	5708-89	3-20-96	100	[1]Require R.C. Supervisor Review: RJ Warnick	Date: 10-1-95 RW
RM-14	574-93	2-22-96	120	[2]Require ALARA Coordinator Review: N/A	Date:

Dose received fromsurvey performance: Ø mr



Contaminatio

Sample Pt #	Result

Dose rates are in Micro R/hr

Dose rates were taken on Exterior of all men's Locker - no activity above bkg was detected.

(4) massline smears were taken inside men locker room on Floor all ~~[illegible]~~ < MDCR

LEGEND Exposure rates are gamma and are in mR/hr. unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

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Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File # 19.20.15.4

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
David M Widger David M Widger	Outside YARD	10-2-95 1400

Instruments Used				RWP #('s): n/a	Rx Power: S/D
Model	Serial #	Cal Due	Bkg	☐ Routine ☐ PRE - JOB[1] ☐ JOB - COVERAGE[1]	
M19	109915-94	11-19-95	n/A	☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]	
M3	72550-91	3-28-96	200cpm	☐ Uncond Release ☒ Other (Specify): Corrective action IRI 95-30	
	n/A			[2]Require R.C. Supervisor Review:	Date:
	n/A			[2]Require ALARA Coordinator Review:	Date:

Dose received fromsurvey performance: Ø

BKG = 15 micro R/HR

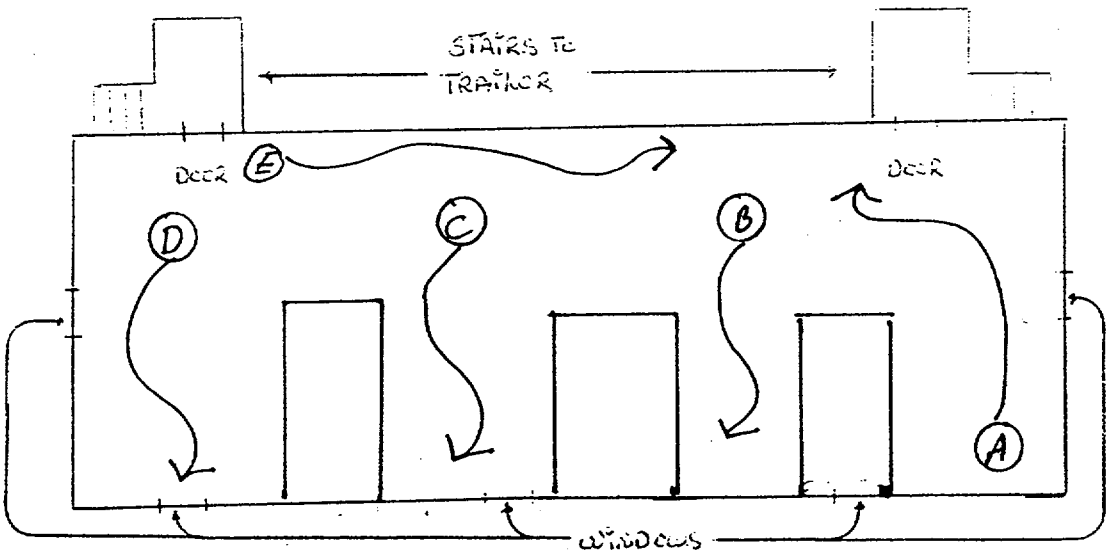
MDCR = 200cpm

Contamination Sample #	Results

"ROSA Trailer"

All LAS < MDCR

Trailer was BKG



N/A

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

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Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
David M Widger David M Widger	outside yard	10-2-95 1900

Instruments Used				RWP #('s):			Rx Power: 5/D
ocel	Serial #	Cal Due	Bkcg	☐ Routine	☐ PRE - JOB[1]	☐ JOB- COVERAGE[1]	
M19	109915-94	11-7-95	N/A	☐ Temp Shlding[2]	☐ Verification[1]	☐ Breach[1]	
M3	70550-91	3-28-96	150cpm	☐ Uncond Release	☒ Other (Specify):	Correction action IRI 95-30	
	N/A			Require R.C. Supervisor Review:		Date:	
	N/A			[2]Require ALARA Coordinator Review:		Date:	

Dose received fromsurvey performance: Ø

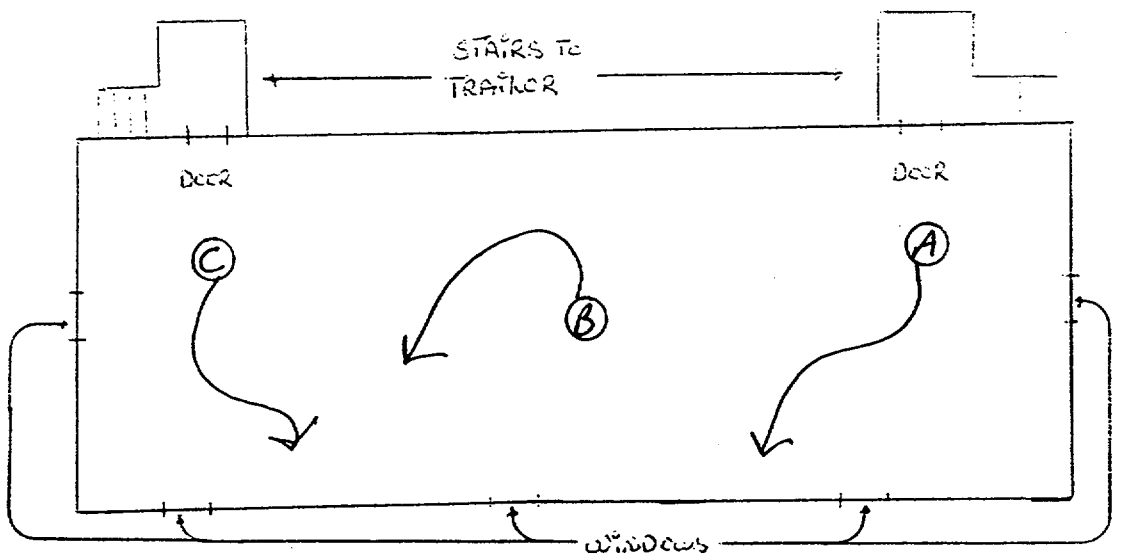
BKG = 10 micro R/HR
MDCR = 150 cpm

Contamination Sample Results #'s

N/A

Bartlett Trailer # 24-26
Burns + Roe # 15-17
Westinghouse # 19-21
16-18
20-22

All Trailers BKG
All LAS < MDCR



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Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
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Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
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Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
DAVID M Widger / David M Widger	"Outside YARD" TRAILERS	10-2-95 1400

Instruments Used			
Model	Serial #	Cal Due	Bkdg
19	109915-94	11-8-95	N/A
M3	72550-91	3-28-96	200 cpm
	N/A		
	N/A		

RWP #('s): N/A

Rx Power: 5/0

- ☐ Routine
- ☐ Temp Shiding[2]
- ☐ Uncond Release
- ☐ PRE - JOB[1]
- ☐ Verification[1]
- ☒ Other (Specify): Corrective action IRI 95-30
- ☐ JOB- COVERAGE[1]
- ☐ Breach[1]

[1]Require R.C. Supervisor Review: Date:

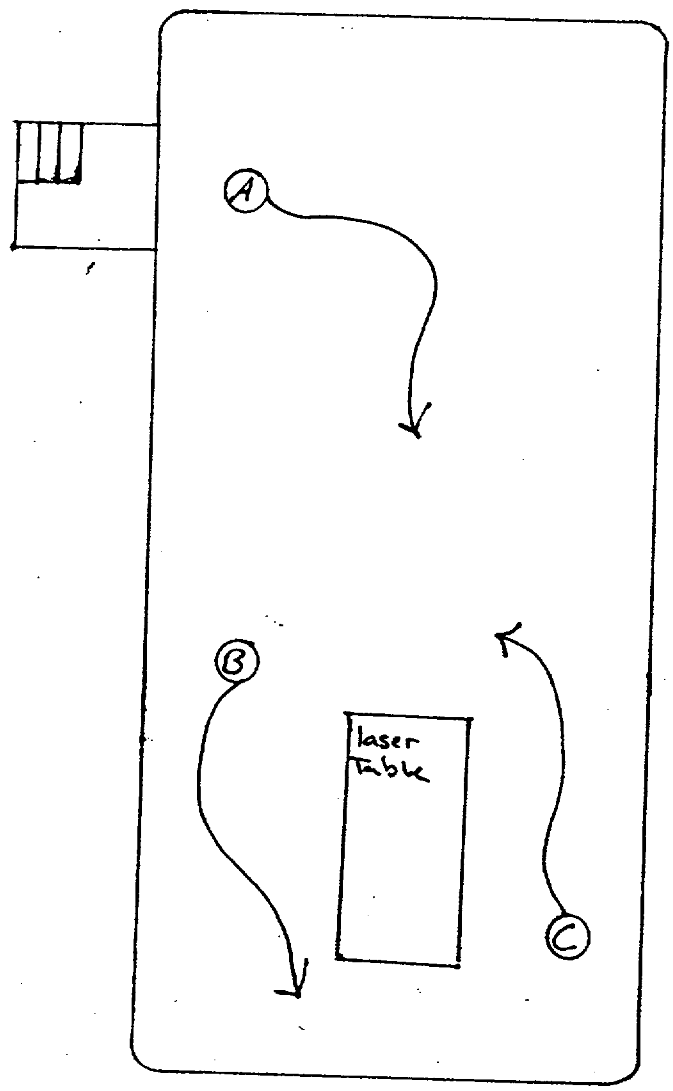
[2]Require ALARA Coordinator Review: Date:

Dose received fromsurvey performance: Ø

BKG = 15 micro R/HR

MDCR = ~~200~~ 200 dpm cpm

"Westinghouse EURO, U.S. laser TRAilers"



A,B,C LAS <MDCR

Both trailers BKG

Contamination	
Sample Pt #	Results
N/A	

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

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Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by [AS - #]

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

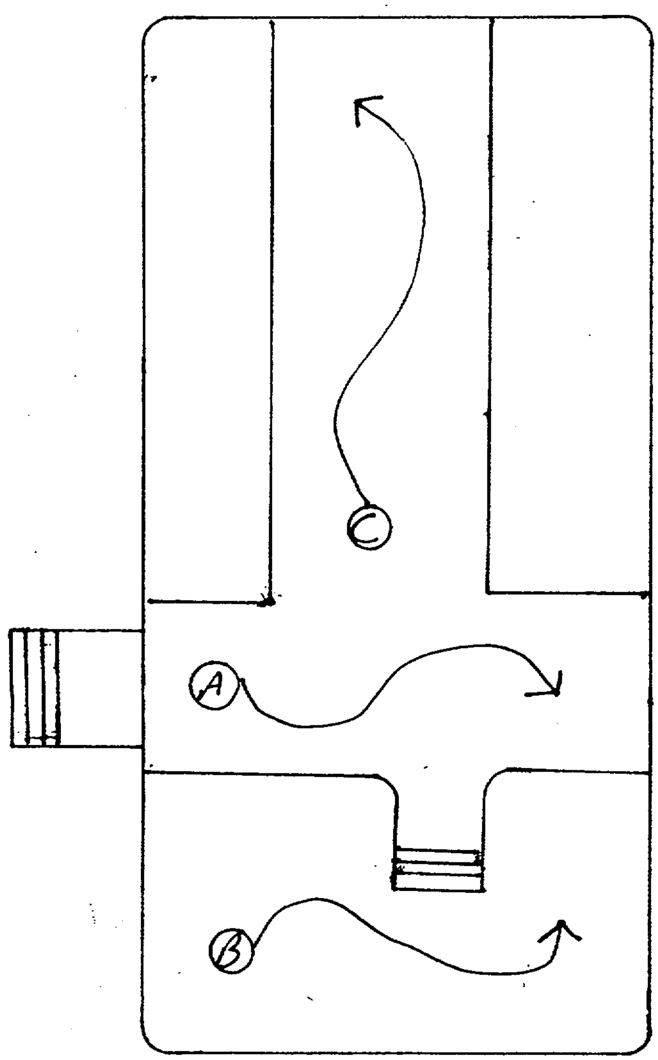
SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
David M Wicker / David M Wicker	Outside Yard	10-2-95 1400

Instruments Used				RWP #('s): N/A	Rx Power: S/D
Model	Serial #	Cal Due	Bkdg	☐ Routine ☐ PRE - JOB[1] ☐ JOB- COVERAGE[1]	
19	109915-94	11-9-95	N/A	☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]	
M3	72550-91	3-28-96	150cpm	☐ Uncond Release ☒ Other (Specify): Corrective action IRI 95-30	
	N/A			[1]Require R.C. Supervisor Review:	Date:
	N/A			[2]Require ALARA Coordinator Review:	Date:

Dose received fromsurvey performance: Ø

MDCR = 150 cpm

"Westinghouse Inventory trailer"



ABC LAS < MDCR

BKG = 10 micro R/HR

Contamination	
Sample Pt #	Results
N/A	

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

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Circled numbers indicate smear location.
Dotted lines (- - - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(〰)
Air sample location denoted by [AS - #]

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
DAVID Ancel / D. Roverson DW Ancel / D. Roverson	MENS Locker Room	10/01/95 1630

Instruments Used			CPM
odel	Serial #	Cal Due	Bkdg
L-3	72622	2-29-96	30
L-3	60769	1-30-96	30
N/A	N/A	N/A	N/A

RWP #('s): Rx Power: S/D

☐ Routine ☐ PRE - JOB[1] ☐ JOB- COVERAGE[1]
☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]
☐ Uncond Release ☑ Other (Specify): Per RP Supervision RIR Investigate

[1]Require R.C. Supervisor Review: R.H. Wennink Date: 10-1-95

[2]Require ALARA Coordinator Review: N/A Date:

Dose received fromsurvey performance: 0

THE FOLLOWING LOCKERS WERE OPENED BY WESTINGHOUSE PERSONNEL. #256, 258, 260, 261, 271, 272, 277, 564, 565, 567, 570, 571 & 572 THESE ARE WESTINGHOUSE DAY SHIFT LOCKERS. DIRECT FRISK OF ARTICLES (CLOTHING) AND LOCKER INTERIORS WERE PREFORMED.

ALL ARTICLES (CLOTHING) AND LOCKER INTERIORS WERE ≤ BKGD. BKGD = 30 cpm.

Contamination	
Sample Pt #	Results
N/A	
N/A	

END Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

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Dose rates are underlined
Large area smears denoted by boxed number and(~~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

MAINE YANKEE GENERAL SURVEY RECORD FORM

SURVEYOR (Name & Signature):	LOCATION:	DATE & TIME:
Brian Carberry / Brian Carberry	MENS LOCKER ROOM	10/1/95 2330

Instruments Used

Model	Serial #	Cal Due	Bkdg
-3	60165-90	1/30/95	100
	N/A		

RWP #('s): N/A

Rx Power: Ø

☐ Routine ☐ PRE - JOB[1] ☐ JOB- COVERAGE[1]

☐ Temp Shlding[2] ☐ Verification[1] ☐ Breach[1]

☐ Uncond Release ☑ Other (Specify): SEARCH FOR CONTAMINATED NODESTYE

[1]Require R.C. Supervisor Review: [signature] Date: 10-2-95

[2]Require ALARA Coordinator Review: N/A Date:

Dose received fromsurvey performance: Ø

Surveyed lockers assigned to night shift Westinghouse personnel. Performed direct frisk of clothing and other articles in the following lockers;

256, 257, 258, 260, 261, 262, 266, 267, 268, 269, 271, 272, 273, ~~274, 275~~, 276, 277, 336, 568, 567, 564, 565, 569, 570, 571, 572, 383, 391, 479.

Lockers 274 and 275 could not be opened by the westinghouse representative. (Blair Pomernackas).

All lockers and items surveyed displayed no detectable contamination.

Contamination

Sample Pt #	Results
N	
	A

LEGEND Exposure rates are gamma and are in mR/hr, unless otherwise noted
Beta exposure rates shall be expressed in mRad/hr or Rad/hr.
Neutron exposure rates shall be expressed in mRem/hr or Rem/hr.
Contamination results are in terms of dpm (Beta-Gamma) unless otherwise noted.
Dose equivalant are in terms of rem or mrem.

★ Denotes contact exposure rates.
Circled numbers indicate smear location.
Dotted lines (- - -) denote boundries or barriers.
Dose rates are underlined
Large area smears denoted by boxed number and(~~~)
Air sample location denoted by AS - #

Form routing: 1) RC Technician 2) RC Supervisor 3) ALARA Coordinator 4) Document Control - Tech File #

HSA ID# 48

ATTACHMENT A (Page 1 of 3)

RADIOLOGICAL INCIDENT REPORT 96-011

SECTION I

DATE AND TIME OF INCIDENT: 7/27/96 13:45 Location: Rerack downender bath tub

HOW RADIATION PROTECTION WAS NOTIFIED: RP in attendance at time of incident.

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation. See Section 5.1.4 of Procedure):

Water not drained from rack. Spilled out when down ended.

Was "for cause" testing recommended? ☐ Yes ☑ No

☑ Incident history files have been reviewed. There were/~~were~~ not similar occurrences to this event in the files.

☐ Yes ☑ No Individual(s) restricted?

☐ Yes ☑ No Dosimetry Confiscated?

PREPARER SIGNATURE 7 Aug 96

DATE 8/7/96 TIME 1020

SECTION II RADIOLOGICAL CONTROLS/RP PROGRAMS SECTION HEAD REVIEW

Immediate Corrective Actions Taken (Including Notifications and Reports per 10CFR20 and/or 10CFR50.72):

☑ This incident requires no further reports, documentation or follow-up

☐ Long Term Corrective Actions Recommended:

Approved with exception noted:

Responsible Section Head , 8/9/96 Date

RPM , 8/9/96 Date

Route to:

1. Radiological Controls Section Head
2. Radiation Protection Manager
3. Tech. Support Department Manager
4. Plant Manager
5. ALARA Committee/RPM and Training Department
6. File 19.11.4

Trend Code:

1. Failure to Follow Procedures
2. Tech Spec/HRA Control
3. ALARA
4. RWP Adherence
5. Training
6. RP Policy
7. Miscellaneous

T/S Secretary send copies to: Training, Originator, RP Required Reading, NRC Resident, QPD

ATTACHMENT A (Page 2 of 3)

RADIOLOGICAL INCIDENT REPORT

SECTION III TECH SUPPORT DEPT. MANAGER REVIEW

☒ I approve this Incident Report including the recommendations with the exceptions noted below.

(1) CED SHOULD REVIEW THIS RIR AT A MORNING MANAGEMENT MEETING. COMPLETED 9/4/96 BMH

(2) RECOMMENDATIONS I AND II SHOULD BE MYTTS TO CED. COMPLETE

☐ ALARA COMMITTEE REVIEW Required

Department Manager

8/13/96
Date

SECTION IV PLANT MANAGER REVIEW

☑ I approve this Incident Report including the recommendations with the exceptions noted below.

(3) WAS THE LACK OF HOLES IN RACK C A SAFETY CONCERN IN THE PAST IN REGARDS TO SHIELDING, CRITICALITY, etc? CED TO EVAL W/RE SUPPORT. DID WE MEET OUR SER W/THE NRC FROM THE LAST RERACKING.

MYTTS 05-22-09

Plant Manager

8/13/96
Date

RETURN THIS COMPLETED FORM TO THE RADIATION PROTECTION MANAGER.

SECTION V

Approved recommendations have been implemented and documentation is attached or added to the appropriate Task List or Tracking System. (Identification #/Task # MYTTS AS INDICATED).

Copies have been sent to: MYTTS 05-22-09
Training 05-22-07
RP Required Reading 05-22-08
NRC Resident

Radiation Protection Manager

9/4/96
Date

ATTACHMENT A (Page 3 of 3)

RADIOLOGICAL INCIDENT REPORT

Some good questions to be asked when completing/reviewing a RIR.

A. Is this or another activity ongoing or likely to occur before corrective actions have been implemented? ☐YES ☑NO

If so should we let it continue without implementing some interim corrective measures? ☐YES ☐NO ☑NA

B. Did this event have the potential for serious personnel injury? ☐YES ☑NO

If serious injury had occurred would we be doing anything differently? ☐YES ☐NO ☑NA

C. If the problem involved a technical specification ~~was involved~~ was the necessary compensatory measures implemented as soon as possible? ☐YES ☐NO ☑NA

D. What similar equipment or process in the plant could have the same concerns? What are the generic implications?

None - Resacking Specific

E. Was a lack of procedural guidance, training, or knowledge a contributor to this event? ☑YES ☐NO

If yes, are corrective actions being taken to remedy the situation? ☑YES ☐NO
↳ FCR TO PROCED

F. Does anyone have any questions or concerns not previously identified/discussed? ☐YES ☑NO

G. Should we put something on the "Nuclear Network"? ☐YES ☑NO

INITIATED BY: Paul F Plante DATE/TIME: 9/4/96 0830 AM

WED BY: [signature] DATE/TIME: 9/4/96 1 0845

A. RADIOLOGICAL INCIDENT REPORT #96-011

B. Date of Incident: 7/27/96 @ 1345

C. Location: Rerack downender "bathtub"

D. Evaluator: Wayne Norton (Asst. Proj. Mgr. - Reracking)

E. Executive Summary:

On Saturday, July 27, 1996, the Vendor (Rust Utilities) responsible for the execution of reracking activities moved the existing "PaR" rack "C" from the decon pad to the "downender bathtub". A similar operation of downending, loading into a shipping container and shipment off-site to Georgia Power had occurred previously on rack "F".

At approximately 1345 the rack was downended as planned when the Rust and Rad Programs personnel observed bulges in the rack bag and, eventually, water flowing from the bag. The rack was promptly upended to prevent additional water from draining out of the top of the rack.

Immediate efforts were taken by RP to remove approximately 100 gallons of water from the "bathtub" containment that was originally installed to control such unexpected leakage of water and prevent contamination of the yard area.

Additional "bagging" was installed on the bottom of Rack "C" and it was returned to the decon pad for unbagging and surveillance to identify the cause of the unexpected drainage.

RP managed a clean-up effort in the bathtub and was able to "recover" the area and restore it for "non-contaminated" use.

The rack was unbagged on the decon pad on Monday, July 29, 1996 and Rust performed a surveillance (ATT. #1) that indicated the lack of drainage holes at the bottom corners of the boral panel wrapper. These holes are necessary to permit drainage of the rack as it is removed from the Spent Fuel Pool. This was the case with Rack "F".

HSA ID# 49

ATTACHMENT A (Page 1 of 3)

RADIOLOGICAL INCIDENT REPORT 96-015

SECTION I

DATE AND TIME OF INCIDENT: 10/16/96 Location: Turbine Bldg Tool Room

HOW RADIATION PROTECTION WAS NOTIFIED: Identified during Routine Survey

PERTINENT DETAILS (Attach copies of surveys, samples, etc. as necessary for documentation. See Section 5.1.4 of Procedure):

3 Tools with fixed Radioactive Contamination were identified outside the restricted area

Was "for cause" testing recommended? ☐ Yes ☒ No

☐ Incident history files have been reviewed. There were/were not similar occurrences to this event in the files.

☐ Yes ☒ No Individual(s) restricted?

☐ Yes ☒ No Dosimetry Confiscated?

PREPARER SIGNATURE

DATE 10/17/96 TIME 0945

SECTION II RADIOLOGICAL CONTROLS/RP PROGRAMS SECTION HEAD REVIEW

Immediate Corrective Actions Taken (Including Notifications and Reports per 10CFR20 and/or 10CFR50.72):

1) The identified Tools were returned to the Restricted area
2) Additional Survey of Tool Crib was initiated on 10/17/96

☐ This incident requires no further reports, documentation or follow-up

☒ Long Term Corrective Actions Recommended:

See Attached

☐ Approved with exception noted:

N/A
Responsible Section Head / Date

RPM, 12/23/96 Date

Route to:

1. Radiological Controls Section Head
2. Radiation Protection Manager
3. Tech. Support Department Manager
4. Plant Manager
5. ALARA Committee/RPM and Training Department
6. File 19.11.4

Trend Code:

1. Failure to Follow Procedures
2. Tech Spec/HRA Control
3. ALARA
4. RWP Adherence
5. Training
6. RP Policy
7. Miscellaneous

T/S Secretary send copies to: Training, Originator, RP Required Reading, NRC Resident, QPD

ATTACHMENT A (Page 2 of 3)

RADIOLOGICAL INCIDENT REPORT

SECTION III TECH SUPPORT DEPT. MANAGER REVIEW

[X] I approve this Incident Report including the recommendations with the exceptions noted below.

NONE

[ ] ALARA COMMITTEE REVIEW Required

Department Manager

12/24/96
Date

SECTION IV PLANT MANAGER REVIEW

[✓] I approve this Incident Report including the recommendations with the exceptions noted below.

Plant Manager

1/3/97
Date

RETURN THIS COMPLETED FORM TO THE RADIATION PROTECTION MANAGER.

SECTION V

Approved recommendations have been implemented and documentation is attached or added to the appropriate Task List or Tracking System. (Identification #/Task # AS INDICATED).

Copies have been sent to:
Training
RP Required Reading
NRC Resident

Radiation Protection Manager

1/3/97
Date

ATTACHMENT A (Page 3 of 3)

RADIOLOGICAL INCIDENT REPORT

Some good questions to be asked when completing/reviewing a RIR.

A. Is this or another activity ongoing or likely to occur before corrective actions have been implemented? ☐YES ☒NO

If so should we let it continue without implementing some interim corrective measures? ☐YES ☐NO ☒NA

B. Did this event have the potential for serious personnel injury? ☐YES ☒NO

If serious injury had occurred would we be doing anything differently? ☒YES ☐NO ☐NA

C. If the problem involved a technical specification was involved was the necessary compensatory measures implemented as soon as possible? ☐YES ☐NO ☒NA

D. What similar equipment or process in the plant could have the same concerns? What are the generic implications?

ALL TOOLS IN THE COLD SIDE TOOL CRIB WERE INSPECTED

E. Was a lack of procedural guidance, training, or knowledge a contributor to this event? ☒YES ☐NO

If yes, are corrective actions being taken to remedy the situation? ☒YES ☐NO

F. Does anyone have any questions or concerns not previously identified/discussed? ☐YES ☐NO

G. Should we put something on the "Nuclear Network"? ☐YES ☒NO

INITIATED BY: J. O'CONNOR DATE/TIME: 10/16/96 / 0945

EWED BY: [signature] DATE/TIME: 1/3/97 / 1225

ROOT CAUSE ANALYSIS FOR
RIR 96-015

Title: Contaminated tools found in clean side (turbine building) tool room

Personnel Performing the Evaluation

Jim O'Connor

Executive Summary

On 10/16/96 During performance of the Quarterly routine tool room survey three (3) tools were identified that exceeded the release criteria of 9-303-11. The tool room is located in the Turbine Building on the 21' elevation outside the restricted area. The tools in question were returned to the restricted area on 10/16/96. Radioactivity of the tools varied from 100 - 300 corrected counts per minute (CCPM). On 10/17/96 Rad Controls personnel began a piece by piece survey of the entire tool room using the Small Article Monitor (SAM) -9. Technicians using the SAM-9 monitored all tools. When an alarm was received they then checked the item using a Ludlum Model -3 survey instrument with HP - 210 probe. As a result of these surveys ~130 items (of the several thousand items checked) did alarm the SAM-9.All the items alarming the SAM-9 were then direct frisked using a Ludlum Model - 3 with a HP-210 probe. 15 of the 130 items had observed count rates that exceeded 100 ccpm with a maximum of 350 ccpm. Additionally surveys were performed of the Maintenance and Test Equipment (M&TE) storage areas, however, there are a number of locked tool boxes and gang boxes that were not surveyed at this time. Routine surveys of tool rooms do not normally include rigging cages and scaffold storage Areas on the cold side of the plant.

Discussions with Rad Controls Technicians indicate the use of the SAM-9 to screen items for total contamination improved the ability of the technician to find fixed contamination on the item being surveyed. Other discussions with technicians also confirmed the difficulty encountered when trying to survey items in areas where background is greater than 150 CPM or is fluctuating.

A Model 19 micro-R meter was used to measure the dose rate on some of the items which were identified as exceeding the release criteria. This survey took place in the Hot machine shop and indicated no detectable dose rate above background (~15-20 Micro R/hr).

Corrective Actions

All items alarming the SAM-9 were returned to the restricted area.

Facts

1. Contaminated tools were identified outside the restricted area

2. Some of the tools that alarmed the SAM-9 did meet the unconditional release criteria for RM-14 with HP-210 probes (or Ludlum Model-3 with HP-210 probe)

3. Not all tool boxes and/or gang boxes in the turbine building were surveyed as part of this event.

4. Dose rates measured on the tools with fixed contamination indicated ~background.

Conclusions

A. The release of tools and/or equipment with background conditions >150 CPM should be avoided.

B. The use of SAM-9 monitors greatly improves the ability of Rad Controls personnel to effectively implement the unconditional release criteria of procedure 9-303-11.

C. Personnel working with fixed contamination tools found in the clean side tool room would not have received any recordable radiation exposure from those tools.

Recommendations

RIR 96-015-1

I. Procedure 9-303-11 should be revised to lower the allowable background for unconditional release of tools and/or equipment.

ASSIGN TO H. FARR

RIR 96-015-2

II. Additional SAM-9's should be purchased for use in routinely monitoring tools being released from the Restricted Area.

ASSIGN TO Y. ZHU

NOTIFY BOTH + ADD TO IFI REPORT, LEARNING BANK