James A. FitzPatrick
Nuclear Power Plant
P.O. Box 41
Lycoming, New York 13093
315 342-3840

50-333

New York Power Authority

Harry P. Salmon, Jr.
Resident Manager

December 17, 1993
JAFP-93-0672

Mr. Thomas T. Martin
Regional Administrator
United States Nuclear Regulatory Commission
475 Allendale Road
King of Prussia, PA 19406

Dear Sir:

On December 10, 1993, a cask containing irradiated components sent from the New York Power Authority's James A. FitzPatrick Nuclear Power Plant was surveyed at the South Carolina's Barnwell Burial Site and found with smearable contamination levels greater than that allowed by 10 CFR 20.205(b)(2). The same cask was received at the James A. FitzPatrick Nuclear Power Plant on December 3, 1993 with smearable contamination levels greater than that allowed by 10 CFR 20.205(b)(2). Considerable time and effort was expended by plant staff in decontaminating the cask to ensure that it would be below the required smearable contamination levels upon arrival at Barnwell. The following documents are attached for your review:

1. Chronology of significant events concerning the cask from time of receipt to shipping.

2. Copies of radiological surveys concerning the cask.

3. Results of Spent Fuel Pool water radioisotopic analysis results.

4. Material Safety Data Sheet (MSDS) of the decontamination agent used on the cask.

5. Highlights of the meeting between NYPA and South Carolina Department of Health and Environmental Control - Radwaste Management personnel.

Sincerely,

for HARRY P. SALMON, JR.

HPS:EAM:tlc
Enclosures
cc: NRC Resident Inspector
J. Furia USNRC, Region I
RMS

280017

IE 06 1/1

CHRONOLOGY OF CASK RECEIPT AND DECONTAMINATION

Friday, 12/3/93

0630 TN-RAM cask receipt inspection of the cask from Barnwell, SC performed, all external surfaces of the trailer, truck, and rain cover <1000 dpm/100cm2.

0905 Survey on cask performed under rain cover and found to be contaminated >1000 dpm/100cm2. Verification survey performed after this.

1005 Management informed of survey results on cask with contamination levels up to 32 mrad/hr/100cm2.

1030 NRC Resident Inspector notified of results of survey.

1035 Chem-Nuclear notified of the contamination levels. Asked Chem-Nuclear how they wanted us to proceed. They stated that they would not come up to verify the survey results, and would prefer that we decontaminate the cask.

1110 Rain cover removed and decon of cask started.

1150 NRC Region I inspector notified.

1700 Cask decontaminated to <30,000 dpm/100cm2

Saturday, 12/4/93

0900 Another decontamination performed on cask, cask wrapped and brought into Reactor Building.

1700 Cask brought up to refuel floor, all preparations completed for loading of cask on Sunday.

Sunday, 12/5/93

0800 Cask ready to be loaded into the pool.

0820 Cask over spent fuel pool and being soaked with demineralized water.

0840 Cask placed in the pool.

1014 Liner loaded into cask and cask removed from the spent fuel pool. Cask washed down with demineralized water as it was coming out of the pool.

1105 Cask placed in the cask laydown area and cask draining started.

1230 Decontamination of cask started using "Touch It Up De-Contaminant" (SynTech), cotton towels, demin water, scotch brite pads and pipe cleaners to extract contamination from the small vent holes for the lid bolts.

1600 Post decon survey shows contamination levels of 2100 - 30,000 dpm/100cm2. Began drying operation of cask.

1830 Drying operations discontinued till dayshift.

Monday, 12/6/93

1230 Decontamination of the cask using SynTech, cotton towels, demin water, pipe cleaners and scotch brite pads.

1430 Post decon survey of the cask performed, contamination levels range from <1000 dpm/100cm2 up to 65,000 dpm/100cm2 on the trunions.

1440 Another decon cycle started.

1630 Post decon survey of cask shows <1000 - 18,000 dpm/100cm2.

1830 Cask brought down from refucl floor to ground level of reactor building.

Tuesday, 12/7/93

0800 Decontamination of cask performed using SynTech, cotton towels, demin water, pipe cleaners and scotch brite pads.

0930 Post decon survey of cask shows contamination levels of <1000 to 5730 dpm/100cm2.

1300 Cask moved to Interim Rad Waste Building.

1430 Another decon of cask and impact limiters performed using Syntech, cotton towels, pipe cleaners and demin water.

1700 Post decon survey of cask and impact limiters shows no contamination, all smears <1000 dpm/100cm2.

Wednesday, 12/8/93

0830 Survey of cask performed, contamination levels range from <1000 to 7200 dpm/100cm2.

0845 Decontamination of cask and tie downs performed using SynTech, cotton towel, pipe cleaners and demin water.

1130 Post decon and final release survey of TN-RAM cask and trailer performed. All smears <1000 dpm/100cm2.

1432 TN-RAM shipment offsite on way to Barnwell, SC.

NOTE: Post decontamination surveys of the cask for 12/3,5,6/93 were faxed to Mr. Jimmy Still at Chem-Nuclear on 12/7/93 at 0840. The post decontamination surveys of the cask for 12/7,8/93 were faxed to Mr. Still on 12/8/93 at 1243.

RADIOLOGICAL SURVEY FORM
SSL-3(5)

Survey No. 934413

Building/Elevation : OUTSIDE / INTERIM RADWASTE BLDG Date: 12-3-93

System and Component: CASK Time: 0420-0800

Description: INCOMING CASK (EMPTY) Page: 1 of 6

Plant Status: (_) Shutdown (X) Operating at Power level: 90 %

Reason: (X) RWP No. 93-0299 (_) Surveillance ____ (_) Other ____

	CONTAMINATION		CONTAMINATION		CONTAMINATION		CONTAMINATION
1		31		61		91	
2		32		62		92	
3		33		63		93	
4		34		64		94	
5		35		65		95	
6		36		66		96	
7		37		67		97	
8		38		68		98	
9		39		69		99	
10		40		70		100	
11		41		71		101	
12		42		72	See	102	
13		43		73		103	
14		44		74		104	
15		45		75		105	
16		46		76	Attached	106	
17		47		77		107	
18		48		78		108	
19		49		79	Sheets	109	
20		50		80		110	
21		51		81		111	
22		52		82		112	
23		53		83		113	
24		54		84		114	
25		55		85		115	
26		56		86		116	
27		57		87		117	
28		58		88		118	
29		59		89		119	
30		60		90		120	

Contamination Survey Meter: MS-3 Serial No.: 430
MS-3 405
SAC-4 440

Surveyor: S. Smith (print/sign)

Surveyor: Daniel Akins (print/sign)

Reviewer: ROBERT W. GRABON (print/sign)

Exposure: 0 (mrem)

Exposure: 0 (mrem)

Date: 12/7/93

RADIOLOGICAL SURVEY FORM

Survey No. 93413 Page 2 of 6

REMARKS: Two Survey Sheets ATTACHED:

1) Incoming Cask with Tarp in Place – External Survey of Tarp & Trailer/Cab

2) Cask Survey only

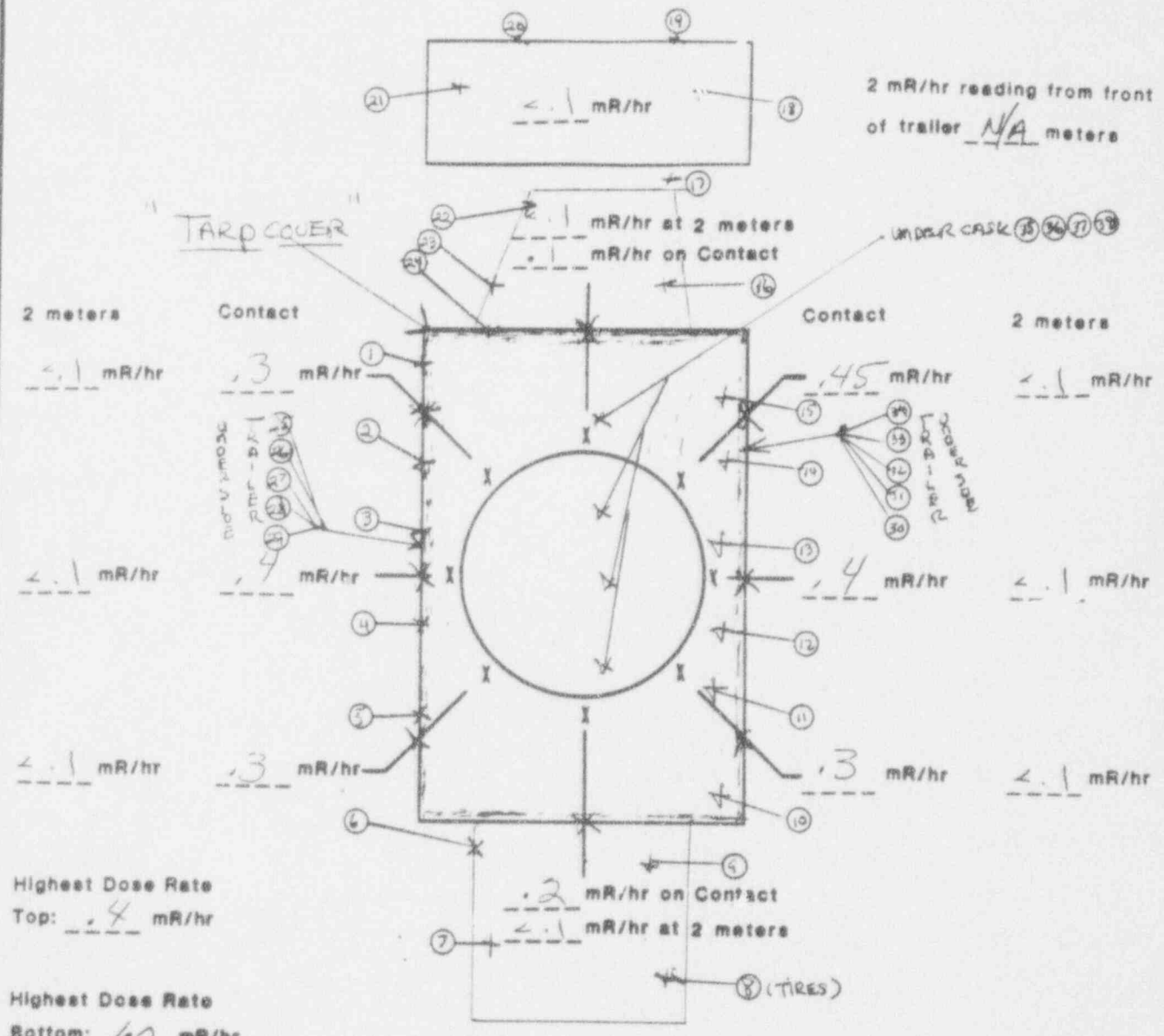
RES VEHICLE SURVEY LOG SHEET

FORM VSF-1 (CASK SHIPMENT)

NEW YORK POWER AUTHORITY
JAMES A. FITZPATRICK NUCLEAR POWER PLANT
P.O. BOX 41
LYCOMING, NEW YORK 13093

SURVEY NO. 93-1413
DATE 12/3/93
TIME 0420

INCOMING "TARPED" CASK



2 mR/hr reading from front of trailer N/A meters

Highest Dose Rate
Top: .4 mR/hr

Highest Dose Rate
Bottom: .2 mR/hr

Tractor Number: 130 Trailer Number: 1620

These readings are the maximum values on contact and at 2 meters from the vehicle in the areas designated by "X".

★ Location of highest dose rate.

SURVEYOR(S) _____ EXPOSURE 0 (mR) REVIEW _____
(SIGNATURE)(S) _____ (mR) (SIGNATURE)

REV 0

(SEE OTHER SIDE FOR SURVEY DATA AND REMARKS)

RADIATION SURVEY INSTRUMENT: TYPE E520 SERIAL NO. 161

CONTAMINATION SURVEY INSTRUMENT: TYPE MS-3 SERIAL NO. 430
MS-3 405
SAC-4 444

HIGHEST DOSE RATE CONTACT ON ~~CASK~~ TARP 1.0 mR/hr

HIGHEST DOSE RATE AT 2 METERS FROM ~~CASK~~ TARP <0.1 mR/hr

HIGHEST DOSE RATE IN CAB <0.1 mR/hr

HIGHEST CONTAMINATION ON TRUCK, TRAILER AND CASK <1000 dpm/100cm² $\beta^-\gamma$
<20 dpm/100cm² α (ALPHA)

REMARKS: SURVEY TAKEN WITH TARP IN PLACE
ALL EXTERNAL SMEARS (OUTSIDE OF TARP) WERE <1000 DPM/100cm², <20 DPM/100cm² ALPHA *
CONTACT READINGS WERE TAKEN ON TARP *

RADIOLOGICAL SURVEY FORM
SSL-1(6)

Survey No. 93443

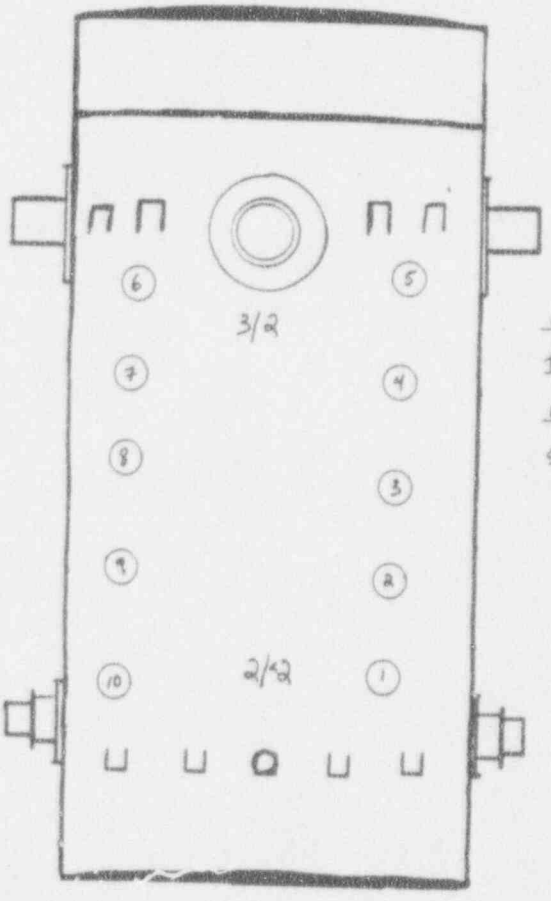
Building/Elevation : IRW-272' Date: 12/3/93

System and Component: _____ Time: 0900

Description: Rad Contamination Survey (UNDER TARP) Cask Only Page: 5 of 6

Plant Status: (_) Shutdown (✓) Operating at Power Level: 90%

Reason: (✓) RWP No. 93-0299 (_) Surveillance _____ (_) Other _____



All smears were taken 3/4 of the way up the side of the cask.

	Contamination (dpm/100cm² unless noted)
1	16 mRAD /<20α
2	64,000
3	16, mRAD
4	24 mRAD /<20α
5	300,000
6	215,000
7	24 mRAD /<20α
8	32 mRAD /<20α
9	24 mRAD
10	400,000 /<20α
11	N/A
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RADIOLOGICAL SURVEY FORM

Survey No. 934413

Radiation Survey Instrument: RO2A- Serial No.: 758

Contamination Survey Meter: MS-3/2 Serial No.: 405/429
SAC-4 440

Remarks

All readings in mrem/hr unless otherwise noted.

Surveyor: DANIEL ATKINS (print/sign)

Surveyor: _____ (print/sign)

Reviewer: ROBERT W GIBSON (print/sign)

Exposure: <2 (mrem)

Exposure: _____ (mrem)

Date: 12/5/93

Legend

0	Contamination survey location
X	General area dose rate
(C)	Contact dose rate
(30cm)	30 centimeter reading
(xx")	Dose rate at xx inches
(x')	Dose rate at x feet
Y	Gamma radiation in mrem/hr
β	Beta radiation in mrad/hr
N	Neutron radiation in mrem/hr
α	Alpha radiation and contamination
P#	Hot particle survey location
noβ	No beta detected

⊓⊓⊓	Breathing air header
⟹	Air flow direction
H	Head level
K	Knee level
⊕	110 VAC outlet
⌑	Floor or roof drain
ALARA	ALARA area
Δ	Air sample location
-x-	Radiological boundary
F	Direct frisk
NPD	No hot particle detected
#/#	Contact/30 centimeter

RADIOLOGICAL SURVEY FORM
SSL-1(E)

Survey No. 934420

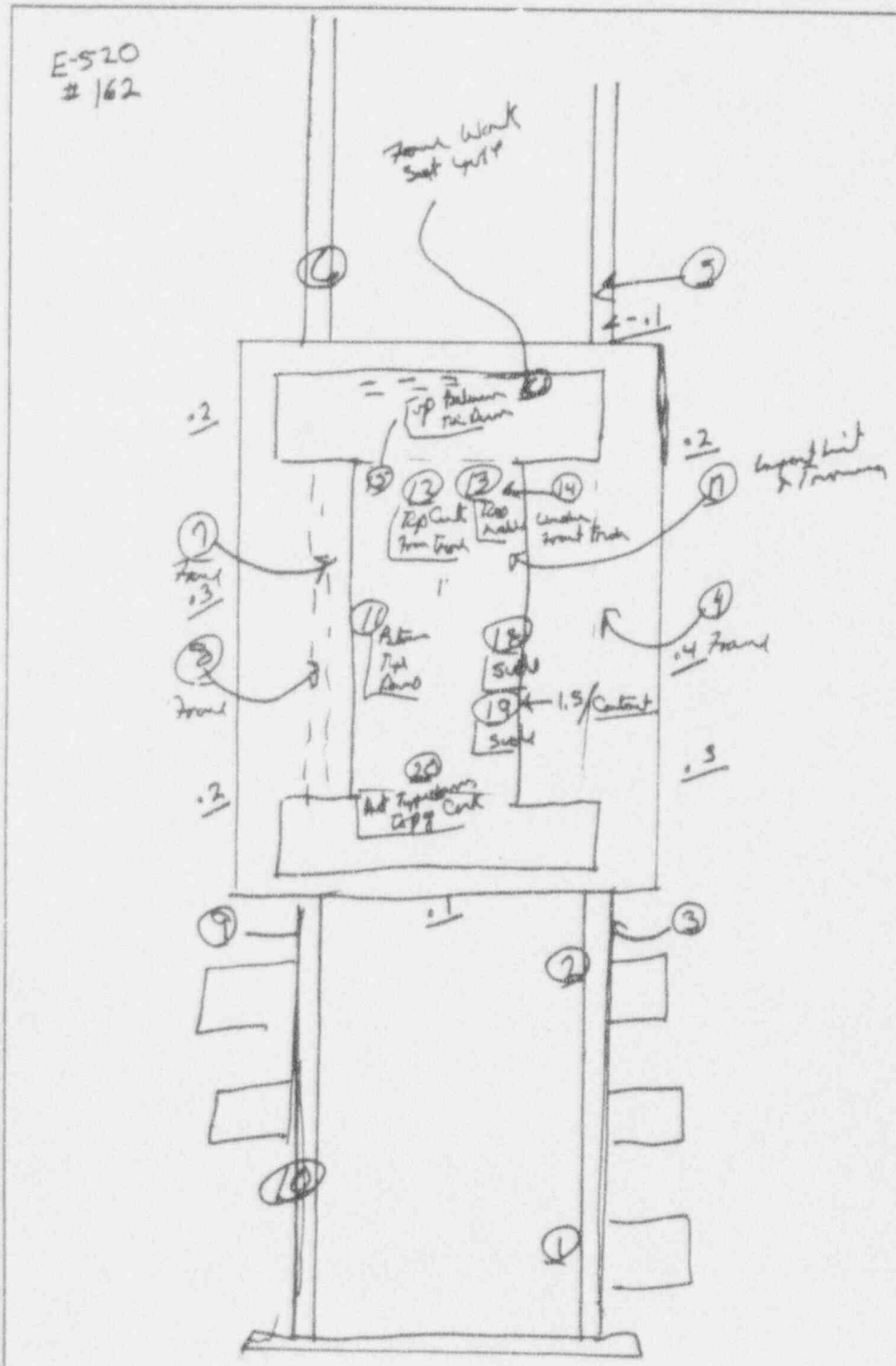
Building/Elevation : IRW-270 Date: 12-3-93

System and Component: TN-RAM CASK Time: 1000

Description: CONTAMINATION/RAM Survey Page: 1 of 11

Plant Status: (_) Shutdown (Y) Operating at Power Level: 7/9

Reason: (Y) RWP No. 93-0299 (_) Surveillance ____ (_) Other ____



	Contamination (dpm/100cm² unless noted)
1	<1000
2	<1000
3	<1000
4	<1000 (<500)
5	<1000
6	<1000
7	<1000
8	10900
9	<1000
10	<1000
11	51000
12	32 mRAD
13	20 mRAD
14	25000
15	12 mRAD
16	8000
17	19000
18	32 mRAD
19	20 mRAD
20	40 mRAD
21	N/A
22	
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RADIOLOGICAL SURVEY FORM

Survey No. 934420

Radiation Survey Instrument: RSO-50 Serial No.: 625
E-520 162

Contamination Survey Meter: MS-2/3 Serial No.: 405/430

Remarks

All readings in mrem/hr unless otherwise noted.

Surveyor: [signature] (print/sign)

Surveyor: _____ (print/sign)

Reviewer: [signature] (print/sign)

Exposure: 41 (mrem)

Exposure: _____ (mrem)

Date: 10/4/93

Legend

0	Contamination survey location
X	General area dose rate
(C)	Contact dose rate
(30cm)	30 centimeter reading
(xx")	Dose rate at xx inches
(x')	Dose rate at x feet
Y	Gamma radiation in mrem/hr
B	Beta radiation in mrad/hr
N	Neutron radiation in mrem/hr
α	Alpha radiation and contamination
P#	Hot particle survey location
noB	No beta detected

TTTT	Breathing air header
⇒	Air flow direction
H	Head level
K	Knee level
	110 VAC outlet
	Floor or roof drain
ALARA	ALARA area
Δ	Air sample location
-x-	Radiological boundary
F	Direct frisk
NPD	No hot particle detected
#/#	Contact/30 centimeter

GDR/HP P E A K S E A R C H R E S U L T S Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

TN-RAM CASK SMEAR #1 Analyzed by: wpitten
File ID: EXIT

Sampling Start Date:. . .12/03/93 09:56 Sampling Stop Date: . . 12/03/93 09:56
Sample Duration:. . . . .00 Hrs Sample Size : . . . . . 1.000E+00 smear
Yield:. . . . . 100.0000 % Current Date: 12/03/93 10:05

Counting Start Date:. . .12/03/93 09:56 Live/Clock Time:. . 300/ 300 sec
Decay time: . . . . . .00 Hrs Dead Time: . . . . . .000 %

Detector #: 3
Energy(keV)= 1.63E-01+ 1.00E+00*Ch+ 0.00E+00*Ch^2+ 0.00E+00*Ch^3 12/02/93 21:27

FWHM(kev) = 1.46E+00+-1.01E-02*En+ 8.59E-04*En^2+ 0.00E+00*En^3 06/08/93 14:46
(Where En=SQRT(Energy in keV))

PEAK SEARCH RESULTS

Peak Sensitivity:. . . . . 2.00 Search Start/End :. 0/2048

PK. #	ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	CH IN PEAK	FWHM (keV)	FLAG
1	366.70	366.35	12	42	77	655	10	.36	Net<CL
2	604.12	603.65	15	18	30	125	8	.39	Net<CL
3	661.72	661.23	8935	96	25	77	9	1.93	
4	795.50	794.94	32	11	16	35	8	2.22	
5	884.50	883.89	10	9	14	27	8	.91	Net<CL
6	1115.55	1114.83	239	16	6	5	9	2.14	
7	1173.32	1172.57	94	11	8	8	9	2.24	
8	1332.81	1331.98	93	10	4	2	10	2.26	

12/3 TN-RAM CASK SMEAR ANALYSIS

GDR/HP L I B R A R Y S E A R C H S U M M A R Y Version 2.1

TN-RAM CASK SMEAR #1 Reported by: wpitten
File ID: EXIT

Library File: . . . . . .RXWLIB.LIB (Reactor Water Library

LIBRARY SEARCH RESULTS

Library Match Resolution 2.00

PK. #	ENERGY (keV)	NET COUNTS	ISOTOPE	EXPECTED NET CNTS	% OF PKS. FOUND	% ABN. FOUND	SCORE	FLAG
1	366.70	12	Unknown	-	-	-	-	
2	604.12	15	Net<CL	-	-	-	-	Nt<CL
			CS-134	49	33.33	84.34	1.34	
3	661.72	8935	CS-137	-	-	-	1.50	
4	795.50	32	CS-134	0	16.67	39.36	.39	LOW
5	884.50	10	Net<CL	-	-	-	-	Nt<CL
			I-134	0	9.09	27.80	.78	
			AG-110M	0	16.67	48.11	.98	
6	1115.55	239	ZN-65	-	-	-	1.50	
7	1173.32	94	CO-60	106	100.00	100.00	2.00	
8	1332.81	93	CO-60	82	100.00	100.00	2.00	

12/3 CASK SMEAR ANALYSIS

GDR/HP N U C L I D E A N A L Y S I S S U M M A R Y Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

TN-RAM CASK SMEAR #1 Reported by: wpitten
File ID: EXIT

Library File: . . . . . .RXWLIB.LIB (Reactor Water Library

Detector #: 3
Efficiency File: . . . . . SGGGS1D03.EFF (Single Glass Fiber Particulate Filte

Eff.=1/(2.97E-02*En^-2.45E+00 + 1.77E+02*En^ 1.03E+00) 03/18/93 14:17
(Where En = Energy in MeV)

MEASURED or MDA CONCENTRATION

Nuclide	Group	Energy (keV)	Concentration (uCi/smear)			Less-Than Level	Conc	Peaks Found
CS-137		661.72	1.04E-01	+-	1.11E-03	-------		1 of 1
CS-134		795.50	4.79E-04	+-	1.58E-04	-------		1 of 6
ZN-65		1115.55	8.40E-03	+-	5.57E-04	-------		1 of 1
CO-60		1332.81	2.00E-03	+-	2.12E-04	-------		2 of 2
		1173.32			I.D.Only			
NP-239		106.13	< 1.02E-03		MDA	5.78E-04		0 of 4
CE-144		133.54	< 2.30E-03		MDA	1.11E-03		0 of 2
CE-141		145.44	< 5.26E-04		MDA	3.41E-04		0 of 1
CR-51		320.08	< 4.81E-03		MDA	2.34E-03		0 of 1
I-131		364.48	< 6.46E-04		MDA	6.81E-04		0 of 1
I-133		529.87	< 7.08E-04		MDA	3.22E-04		0 of 4
MO-99		739.58	< 2.42E-03		MDA	9.75E-04		0 of 4
I-132		772.61	< 4.30E-04		MDA	2.01E-04		0 of 6
CO-58		810.76	< 3.42E-04		MDA	1.41E-04		0 of 2
MN-54		834.83	< 3.82E-04		MDA	1.55E-04		0 of 1
I-134		884.09	< 6.63E-04		MDA	5.19E-04		0 of 11
FE-59		1099.22	< 6.32E-04		MDA	2.52E-04		0 of 2
I-135		1260.41	< 6.90E-04		MDA	2.77E-04		0 of 12

TOTAL MEAS. ACT. : 1.15E-01 +- 2.04E-03 uCi/smear

UNKNOWN,ESC or SUM PEAKS

ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG. COUNTS	CH IN PEAK	FLAG
366.70	366.35	12	42	77	655	10	Net<CL
604.12	603.65	15	18	30	125	8	Net<CL
884.10	883.89	10	9	14	27	8	Net<CL

12/3 TN-RAM CASK SMEAR ANALYSIS

GDR/HP P E A K S E A R C H R E S U L T S Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

TN-RAM CASK SMEAR #2 Analyzed by: wpitten
File ID: EXIT

Sampling Start Date:. . .12/03/93 09:54 Sampling Stop Date: . . 12/03/93 09:54
Sample Duration:. . . . . .00 Hrs Sample Size : . . . . . 1.000E+00 smear
Yield:. . . . . 100.0000 % Current Date: 12/03/93 10:02

Counting Start Date:. . .12/03/93 09:54 Live/Clock Time:. . 300/ 300 sec
Decay time: . . . . . .00 Hrs Dead Time: . . . . . .000 %

Detector #: 4
Energy(keV)= 2.51E-01+ 9.98E-01*Ch+ 2.49E-07*Ch^2+ 6.40E-10*Ch^3 12/02/93 20:33

FWHM(kev) = 1.18E+00+-6.76E-03*En+ 9.91E-04*En^2- 0.00E+00*En^3 06/10/93 20:23
(Where En=SQRT(Energy in keV))

PEAK SEARCH RESULTS

Peak Sensitivity:. . . . . 2.00 Search Start/End :. 0/2048

PK. #	ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	CH IN PEAK	FWHM (keV)	FLAG
1	55.15	55.01	13	40	67	716	7	.35	Net<CL
2	604.31	605.11	74	22	36	164	9	1.96	
3	661.62	662.47	12306	112	32	125	9	2.07	
4	795.59	796.54	41	10	14	30	7	1.50	
5	1115.44	1116.34	243	16	9	9	9	2.30	
6	1173.20	1174.05	74	9	7	6	9	2.14	
7	1332.32	1332.93	83	9	3	2	9	2.16	

12/3 CASK SMEAR ANALYSIS

GDR/HP L I B R A R Y S E A R C H S U M M A R Y Version 2.1

TN-RAM CASK SMEAR #2 Reported by: wpitten
File ID: EXIT

Library File: . . . . . .RXWLIB.LIB (Reactor Water Library

LIBRARY SEARCH RESULTS

Library Match Resolution 2.00

PK. #	ENERGY (keV)	NET COUNTS	ISOTOPE	EXPECTED NET CNTS	% OF PKS. FOUND	% ABN. FOUND	SCORE	FLAG
1	55.15	13	Unknown	-	-	-	-	
2	604.31	74	CS-134	62	33.33	84.34	1.84	
3	661.62	12306	CS-137	-	-	-	1.50	
4	795.59	41	CS-134	49	33.33	84.34	1.84	
5	1115.44	243	ZN-65	-	-	-	1.50	
6	1173.20	74	CO-60	94	100.00	100.00	2.00	
7	1332.32	83	CO-60	65	100.00	100.00	2.00	

12/3 TN-RAM CASK SMEAR ANALYSIS

GDR/HP N U C L I D E A N A L Y S I S S U M M A R Y Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

TN-RAM CASK SMEAR #2 Reported by: wpitten
File ID: EXIT

Library File: . . . . . .RXWLIB.LIB (Reactor Water Library

Detector #: 4
Efficiency File: . . . . . SGGGS1D04.EFF (Single Glass Fiber Particulate Filte

Eff.=1/(6.59E-02*En^-2.15E+00 + 1.69E+02*En^ 1.03E+00) 03/15/93 15:50
(Where En = Energy in MeV)

MEASURED or MDA CONCENTRATION

Nuclide	Group	Energy (keV)	Concentration (uCi/smear)			Less-Than Level Conc	Peaks Found
CS-134		795.59	5.74E-04	+-	1.46E-04	-------	2 of 6
		604.31			I.D.Only		
CS-137		661.62	1.36E-01	+-	1.25E-03	-------	1 of 1
ZN-65		1115.44	8.14E-03	+-	5.46E-04	-------	1 of 1
CO-60		1332.32	1.68E-03	+-	1.90E-04	-------	2 of 2
		1173.20			I.D.Only		
NP-239		106.13	< 9.91E-04		MDA	4.90E-04	0 of 4
CE-144		133.54	< 2.08E-03		MDA	2.23E-03	0 of 2
CE-141		145.44	< 5.17E-04		MDA	2.62E-04	0 of 1
CR-51		320.08	< 4.49E-03		MDA	2.26E-03	0 of 1
I-131		364.48	< 6.01E-04		MDA	5.23E-04	0 of 1
I-133		529.87	< 6.59E-04		MDA	6.72E-04	0 of 4
MO-99		739.58	< 1.95E-03		MDA	1.30E-03	0 of 4
I-132		772.61	< 4.00E-04		MDA	1.63E-04	0 of 6
CO-58		810.76	< 3.41E-04		MDA	1.82E-04	0 of 2
MN-54		834.83	< 3.17E-04		MDA	1.25E-04	0 of 1
I-134		884.09	< 6.10E-04		MDA	3.88E-04	0 of 11
FE-59		1099.22	< 6.01E-04		MDA	2.35E-04	0 of 2
I-135		1260.41	< 1.84E-04		MDA	1.79E-04	0 of 12

TOTAL MEAS. ACT. : 1.47E-01 +- 2.13E-03 uCi/smear

UNKNOWN,ESC or SUM PEAKS

ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG. COUNTS	CH IN PEAK	FLAG
55.15	55.01	13	40	67	716	7	Net<CL

12/3 CASK SMEAR ANALYSIS

GDR/HP P E A K S E A R C H R E S U L T S Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

TN-RAM CASK #3 Analyzed by: wpitten
File ID: EXIT

Sampling Start Date:. . .12/03/93 10:04 Sampling Stop Date: . . 12/03/93 10:04
Sample Duration:. . . . . .00 Hrs Sample Size : . . . . . 1.000E+00 smear
Yield:. . . . . 100.0000 % Current Date: 12/03/93 10:09

Counting Start Date:. . .12/03/93 10:04 Live/Clock Time:. . 300/ 300 sec
Decay time: . . . . . .00 Hrs Dead Time: . . . . . .000 %

Detector #: 4
Energy(keV)= 2.51E-01+ 9.98E-01*Ch+ 2.49E-07*Ch^2+ 6.40E-10*Ch^3 12/02/93 20:33

FWHM(kev) = 1.18E+00+-6.76E-03*En+ 9.91E-04*En^2+ 0.00E+00*En^3 06/10/93 20:23
(Where En=SQRT(Energy in keV))

PEAK SEARCH RESULTS

Peak Sensitivity:. . . . . 2.00 Search Start/End :. 0/2048

PK. #	ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	CH IN PEAK	FWHM (keV)	FLAG
1	76.20	76.10	27	36	62	602	7	.81	Net<CL
2	348.62	349.04	-3	34	59	544	7	.11	Net<CL
3	603.98	604.77	52	19	30	125	8	1.76	
4	661.61	662.46	11124	107	29	107	9	2.09	
5	795.84	796.79	54	12	16	33	9	1.79	
6	1115.38	1116.28	192	15	8	8	9	2.33	
7	1173.12	1173.97	99	10	5	3	9	2.23	
8	1332.27	1332.88	61	8	6	5	9	2.91	

12/3 CASK SMEAR ANALYSIS

GDR/HP L I B R A R Y S E A R C H S U M M A R Y Version 2.1

TN-RAM CASK #3 Reported by: wpitten
File ID: EXIT

Library File: . . . . . .RXWLIB.LIB (Reactor Water Library

LIBRARY SEARCH RESULTS

Library Match Resolution 2.00

PK. #	ENERGY (keV)	NET COUNTS	ISOTOPE	EXPECTED NET CNTS	% OF PKS. FOUND	% ABN. FOUND	SCORE	FLAG
1	76.20	27	Unknown	-	-	-	-	
3	603.98	52	CS-134	82	33.33	84.34	1.84	
4	661.61	11124	CS-137	-	-	-	1.50	
5	795.84	54	CS-134	34	33.33	84.34	1.84	
6	1115.38	192	ZN-65	-	-	-	1.50	
7	1173.12	99	CO-60	69	100.00	100.00	1.50	
8	1332.27	61	CO-60	87	100.00	100.00	1.50	

12/3 CASK SMEAR ANALYSIS

GDR/HP N U C L I D E A N A L Y S I S S U M M A R Y Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

TN-RAM CASK #3 Reported by: wpitten
File ID: EXIT

Library File: . . . . . .RXWLIB.LIB (Reactor Water Library

Detector #: 4
Efficiency File: . . . . . SGGGS1D04.EFF (Single Glass Fiber Particulate Filte

Eff.=1/(6.59E-02*En^-2.15E+00 + 1.69E+02*En^ 1.03E+00) 03/15/93 15:50
(Where En = Energy in MeV)

MEASURED or MDA CONCENTRATION

Nuclide	Group	Energy (keV)	Concentration (uCi/smear)			Less-Than Level	Conc	Peaks Found
CS-134		795.84	7.62E-04	+-	1.65E-04	-------		2 of 6
		603.98			I.D.Only			
CS-137		661.61	1.23E-01	+-	1.18E-03	-------		1 of 1
ZN-65		1115.38	6.42E-03	+-	4.86E-04	-------		1 of 1
CO-60		1332.27	1.24E-03	+-	1.73E-04	-------		2 of 2
		1173.12			I.D.Only			
NP-239		106.13	< 9.42E-04		MDA	4.69E-04		0 of 4
CE-144		133.54	< 2.10E-03		MDA	1.06E-03		0 of 2
CE-141		145.44	< 4.84E-04		MDA	2.40E-04		0 of 1
CR-51		320.08	< 4.11E-03		MDA	2.54E-03		0 of 1
I-131		364.48	< 5.93E-04		MDA	3.01E-04		0 of 1
I-133		529.87	< 6.58E-04		MDA	3.13E-04		0 of 4
MO-99		739.58	< 2.46E-03		MDA	1.06E-03		0 of 4
I-132		772.61	< 3.22E-04		MDA	3.15E-04		0 of 6
CO-58		810.76	< 2.75E-04		MDA	1.16E-04		0 of 2
MN-54		834.83	< 3.41E-04		MDA	1.57E-04		0 of 1
I-134		884.09	< 5.33E-04		MDA	7.52E-04		0 of 11
FE-59		1099.22	< 6.01E-04		MDA	2.40E-04		0 of 2
I-135		1260.41	< 1.84E-04		MDA	1.79E-04		0 of 12

TOTAL MEAS. ACT. : 1.32E-01 +- 2.01E-03 uCi/smear

UNKNOWN,ESC or SUM PEAKS

ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG. COUNTS	CH IN PEAK	FLAG
76.20	76.10	27	36	62	602	7	Net<CL
348.62	349.04	-3	34	59	544	7	Net<CL

12/3 TN-RAM CASK SMEAR ANALYSIS

RADIOLOGICAL SURVEY FORM
SSL-2(6)

Survey No. 93-434

Building/Elevation: FRW Date: 12-7-93

System and Component: TN-RAM CASK, VELOC. LOG. + TRAILOR Time: 0700 -

Description: DECON Page: 1 of 2

Plant Status: (_) Shutdown (✓) Operating at Power level: 100%

Reason: (✓) RWP No. 93-0299 (_) Surveillance ____ (_) Other ____

0700 COMPLETED PRE-DECON SURVEY OF TN-RAM CASK.
5,000 - 9,000 dpm/100 cm² ON 8 SMEARS.

0850 COMPLETED POST-DECON SURVEY OF TN-RAM CASK
2,000 - 5,000 dpm/100 cm² ON (8) SMEARS.

0915 TN-RAM CASK LOADED IN PLASTIC + TRANSPORTED TO RB TRUCK BAY.

1025 TN RAM CASK UNLOADED FROM TRAILOR. TRAILOR OUT OF RB, BACK TO FRW

1600 CASK TRAILER <1000 dpm/100cm² except for Driverside Front Trunnion trailer 2000 dpm/100cm² ©

RADIOLOGICAL SURVEY FORM

Survey No. 93431

Radiation Survey Instrument: _____ Serial No.: _____

Contamination Survey Meter: HS-3 Serial No.: 729

Remarks

All readings in mrem/hr unless otherwise noted.

Surveyor: _____ (print/sign)

Surveyor: _____ (print/sign)

Reviewer: _____ (print/sign)

Exposure: 42 (mrem)

Exposure: _____ (mrem)

Date: 12/4/93

Legend

0	Contamination survey location
X	General area dose rate
(C)	Contact dose rate
(30cm)	30 centimeter reading
(xx")	Dose rate at xx inches
(x')	Dose rate at x feet
γ	Gamma radiation in mrem/hr
β	Beta radiation in mrad/hr
N	Neutron radiation in mrem/hr
α	Alpha radiation and contamination
P#	Hot particle survey location
noβ	No beta detected

⊓⊓⊓	Breathing air header
⟹	Air flow direction
H	Head level
K	Knee level
⊕	110 VAC outlet
⌑	Floor or roof drain
ALARA	ALARA area
Δ	Air sample location
-x-	Radiological boundary
F	Direct frisk
NPD	No hot particle detected
#/#	Contact/30 centimeter

SSL-3(5)

Survey No. 93-4436

Building/Elevation : IRW

Date: 12-5-93

System and Component: IN-SAN TRAILER

Time: 1030

Description: SCAN SURVEY

Page: 1 of 4

Plant Status: (_) Shutdown (✓) Operating at Power level: 100%

Reason: (✓) RWP No. 93-0299 (_) Surveillance ____ (_) Other ____

	CONTAMINATION			CONTAMINATION			CONTAMINATION			CONTAMINATION		
1	< 1000	S	31	< 1000	S	61	< 1000	S	91	NA		
2	<	S	32	<	S	62	<	S	92			
3	<	S	33	<	S	63	<	S	93			
4	<		34	<	S	64	<	S	94			
5	<		35	<	S	65	<	S	95			
6	<		36	3,700	S	66	<	S	96			
7	<		37	1,700	S	67	<	S	97			
8	<		38	< 1000	S	68	NA		98			
9	<		39	<	S	69			99			
10	<		40	<	S	70			100			
11	<		41	<	S	71			101			
12	1,800		42	<	S	72			102			
13	< 1000		43	<	S	73			103			
14	<		44	<	S	74			104			
15	<		45	<	S	75			105			
16	<		46	<	S	76			106			
17	<		47	2100	S	77			107			
18	3,500		48	6,200	S	78			108			
19	< 1000		49	1,200	S	79			109			
20	<		50	< 1000	S	80			110			
21	<		51	<	S	81			111			
22	<		52	<	S	82			112			
23	<		53	<	S	83			113			
24	<		54	<	S	84			114			
25	<		55	<	S	85			115			
26	<		56	<	S	86			116			
27	<		57	1,200	S	87			117			
28	<		58	< 1000	S	88			118			
29	<		59	<	S	89			119			
30	<		60	<	S	90			120			

Contamination Survey Meter: MS-2 Serial No.: 405

MS-3 430

Surveyor: Mark S. Utz (print/sign)

Exposure: 42 (mrem)

Surveyor: ____ (print/sign)

Exposure: ____ (mrem)

Reviewer: C Sherman (print/sign)

Date: 12/6/93

Survey No. 93436

Page 2 of 4

REMARKS:

All smear results in dpm/100 cm²

RADIOLOGICAL SURVEY FORM
SSL-2(6)

Survey No. 93-4-36

Building/Elevation : IRW

Date: 12.5.93

System and Component: IN-RAN TRAILOR

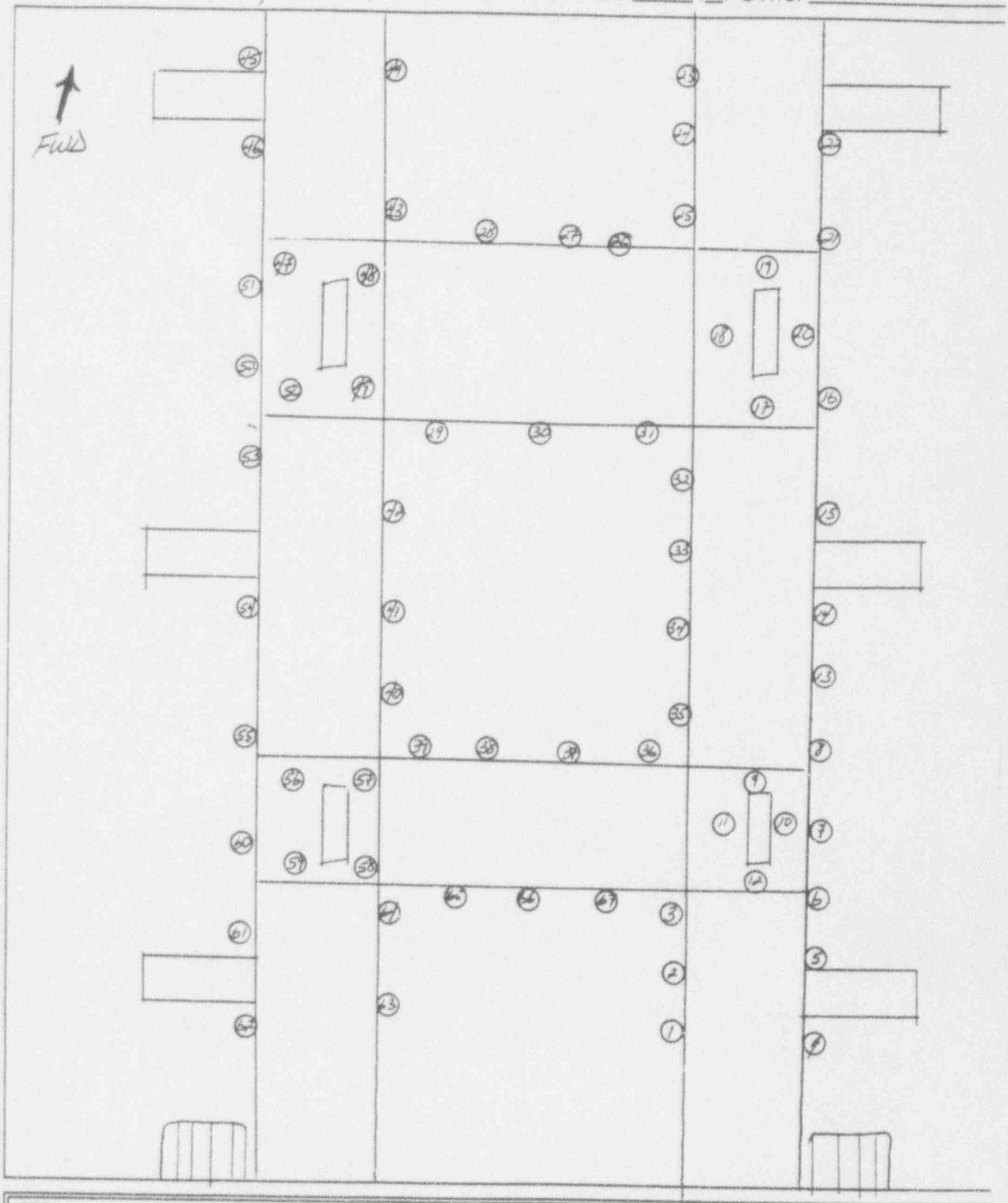
Time: 1030

Description: DECON SURVEY

Page: 3 of 4

Plant Status: (_) Shutdown (X) Operating at Power Level: 100%

Reason: (X) RWP No. 93-0299 (_) Surveillance ____ (_) Other ____



Survey No. 534436 Page 4 of 4

Radiation Survey Instrument: _____ Serial No.: _____

Contamination Survey Meter: MS-2 Serial No.: 705
MS-3 450

Remarks

All readings in mrem/hr unless otherwise noted.

- SEE ATTACHED SSL-3 FOR SWIPE RESULTS

Surveyor: Mark S. Utz for SSH (print/sign) Exposure: 42 (mrem)

Surveyor: _____ (print/sign) Exposure: _____ (mrem)

Reviewer: C. SHERMAN C Sherman (print/sign) Date: 12/6/93

Legend

0	Contamination survey location	⊓⊓⊓	Breathing air header
X	General area dose rate	⇒	Air flow direction
(C)	Contact dose rate	H	Head level
(30cm)	30 centimeter reading	K	Knee level
(xx")	Dose rate at xx inches	⊕	110 VAC outlet
(x')	Dose rate at x feet	⌑	Floor or roof drain
γ	Gamma radiation in mrem/hr	ALARA	ALARA area
β	Beta radiation in mrad/hr	Δ	Air sample location
N	Neutron radiation in mrem/hr	-x-	Radiological boundary
α	Alpha radiation and contamination	F	Direct frisk
P#	Hot particle survey location	NPD	No hot particle detected
noβ	No beta detected	#/#	Contact/30 centimeter

RADIOLOGICAL SURVEY FORM
SSL-3(5)

Survey No. 934438

Building/Elevation : Rx 365' REFUEL FLR Date: 12/3/93

System and Component: Refuel Floor Time: 1031

Description: DAILY UPDATE TO LCRD/FREP TN-RAM Page: 1 of 34 (61)

Plant Status: (_) Shutdown (X) Operating at Power level: 2/100 %

Reason: (X) RWP No. 93877 (_) Surveillance ____ (_) Other ____

CONTAMINATION			CONTAMINATION			CONTAMINATION			CONTAMINATION		
1			31			61			91		
2			32			62			92		
3			33			63			93		
4			34			64			94		
5			35			65			95		
6			36			66			96		
7			37			67			97		
8			38			68			98		
9			39			69			99		
10			40			70			100		
11			41			71			101		
12			42			72			102		
13			43			73			103		
14			44			74			104		
15			45			75			105		
16			46			76			106		
17			47			77			107		
18			48			78			108		
19			49			79			109		
20			50	SEE ATTACHED		80			110		
21			51			81			111		
22			52			82			112		
23			53			83			113		
24			54			84			114		
25			55			85			115		
26			56			86			116		
27			57			87			117		
28			58			88			118		
29			59			89			119		
30			60			90			120		

Contamination Survey Meter: MS-3 Serial No.: 428

RADIATION SURVEY METERS RSO-50 621/623

TELETECTOR* 843

Surveyor: G. MOTEN (print/sign)

Exposure: 5 (mrem)

Surveyor: ____ (print/sign)

Exposure: ____ (mrem)

Reviewer: C. SHERMAN / C. Sherman (print/sign)

Date: 12/7/93

RADIOLOGICAL SURVEY FORM

Survey No. 934438

REMARKS:

0851 - Cask placed on pool flr
0857 - Hot part. survey of work area - none found
1015 - Cask loaded - being moved from pool
Contact dose rate on cask 4-12 mR/HR γ.
Radiation survey of bottom protective disk revealed a 1.5 R/HR piece of imbedded debris - removed and disposed of Radiation levels after debris removal 12 mR/HR γ, 116 mRAD/HR β Contamination levels 1000 - 16000.

1045 - Pre-decon contamination survey of Cask: 4000 - 16000 DPM/100cm²
1100 - Post decon contamination levels in bolt-pin 4000 - 10,000 DPM/100cm²
Radiation survey of vent and drain flanges & Drain 4 mR/HR γ, 20 MRAD/HR β.
Vent 10 mR/HR γ, 20 mRAD/HR β.

Post decon survey of cask: (Contamination levels in DPM/100 cm²)

SIDE -	N	15000
	S	2100
	E	9000
	W	13000
BOTTOM		16000
TRUNNIONS		1000 - 25000
I.L HOLDDNS		19000 - 30,000

1650 - Cask Decined
Dose Rate Top - 4 mr/hr
Sides - 8 - 12 mr/hr
B/A 5 - 8 mr/hr

RADIOLOGICAL SURVEY FORM
SSL-3(5)

Survey No. 934446

Building/Elevation : RB-369 Date: 12-6-93

System and Component: ~~Spent Fuel~~ Pool / floor Time: 1800

Description: Exposure / Contamination Surveys Page: 1 of 9

Plant Status: (_) Shutdown (✓) Operating at Power level: ~100%

Reason: (✓) RWP No. 930299 (_) Surveillance (_) Other

	CONTAMINATION		CONTAMINATION		CONTAMINATION		CONTAMINATION	
1		31		61		91		
2		32		62		92		
3		33		63		93		
4		34		64		94		
5		35		65		95		
6		36		66		96		
7		37		67		97		
8		38		68		98		
9		39		69		99		
10		40		70		100		
11		41		71		101		
12		42		72		102		
13		43		73		103		
14		44		74		104		
15		45		75		105		
16		46		76		106		
17		47		77		107		
18		48		78		108		
19		49		79		109		
20		50		80		110		
21		51		81		111		
22		52		82		112		
23		53		83		113		
24		54		84		114		
25		55		85		115		
26		56		86		116		
27		57		87		117		
28		58		88		118		
29		59		89		119		
30		60		90		120		

Contamination Survey Meter: AS-428 2/3 Serial No.: 428/434

LWO-177 372

Surveyor: Conrad AC/G
(print/sign)

Surveyor: _____
(print/sign)

Reviewer: C SHERMAN / C Sherman
(print/sign)

Exposure: 5 (mrem)

Exposure: _____ (mrem)

Date: 12/7/93

RADIOLOGICAL SURVEY FORM

Survey No. 934446

REMARKS:

0930 Removed 2 stainless steel brackets from SFP.
[illegible] contact on each bracket.

Contamination Survey of East Side Handrails
2000 - [illegible] DPM/100cm²

Decon of TN-RAM Completed at 1430. Survey as follows:

6 trunnions - 8,000 to 65,000 dpm/100cm²
Hold down brackets - 5000 to 25,000 dpm/100cm²
Port top Cover - 11000 to 72000 dpm/100cm²
West bottom - 8,000 to 11000 dpm/100cm²
east bottom - 3000 to 9000 dpm/100cm²
#6 trunnion after another decon: 20,000 dpm/100cm²
North top lip - 6000 to 10,000 dpm/100cm²
Lid bolts - <1000 to 3500 dpm/100cm²
(#1 bolts 3500 dpm/100cm², #7 bolt 1500 dpm/100cm²)
South under bottom trunnion 5000 dpm/100cm²
Bottom info label 3800 dpm/100cm²
Top info label 6000 dpm/100cm²
Near lid lip 7000 dpm/100cm²

RADIOLOGICAL SURVEY FORM
SSL-1(6)

Survey No. 934446

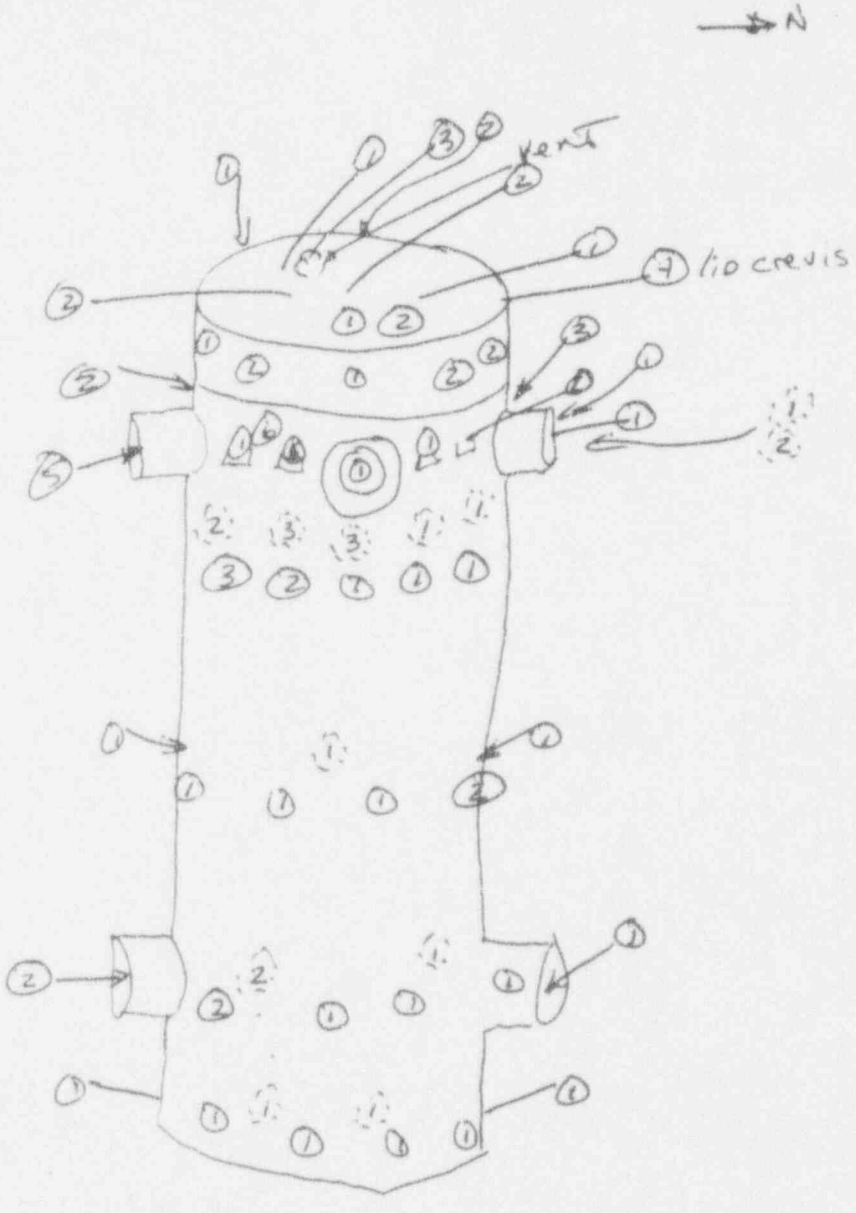
Building/Elevation : RB-369 Date: 12-6-93

System and Component: TN-RAM CASK Time: 1630

Description: Contamination Survey Page: 3 of 11

Plant Status: (_) Shutdown (_) Operating at Power level: ~100%

Reason: (✓) RWP No. 930299 (_) Surveillance ____ (_) Other ____



BOLTS - <1000 - 8000 dpm/100cm²

	Contamination (dpm/100cm² unless noted)
1	<1000
2	2000
3	3000
4	30000
5	8000
6	18000
7	NA
8	
9	
10	
11	
12	
13	
14	
15	
16	
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18	
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RADIOLOGICAL SURVEY FORM

Survey No. 934446 Page 4 of 11

Radiation Survey Instrument: _____ Serial No.: _____

Contamination Survey Meter: LUD-177 Serial No.: 372
AMS-3 428

Remarks

All readings in mrem/hr unless otherwise noted.

Surveyor: [signature] (print/sign)

Surveyor: _____ (print/sign)

Reviewer: C HUCK KEEMAN C Sherm (print/sign)

Exposure: 5 (mrem)

Exposure: _____ (mrem)

Date: 12/7/93

Legend

0	Contamination survey location
X	General area dose rate
(C)	Contact dose rate
(30cm)	30 centimeter reading
(xx")	Dose rate at xx inches
(x')	Dose rate at x feet
γ	Gamma radiation in mrem/hr
β	Beta radiation in mrad/hr
N	Neutron radiation in mrem/hr
α	Alpha radiation and contamination
P#	Hot particle survey location
noβ	No beta detected
...	Denotes smears behind object

TTT	Breathing air header
⇒	Air flow direction
H	Head level
K	Knee level
⌀	110 VAC outlet
⌅	Floor or roof drain
ALARA	ALARA area
Δ	Air sample location
-x-	Radiological boundary
F	Direct frisk
NPD	No hot particle detected
#/#	Contact/30 centimeter

RADIOLOGICAL SURVEY FORM

Survey No. 934446

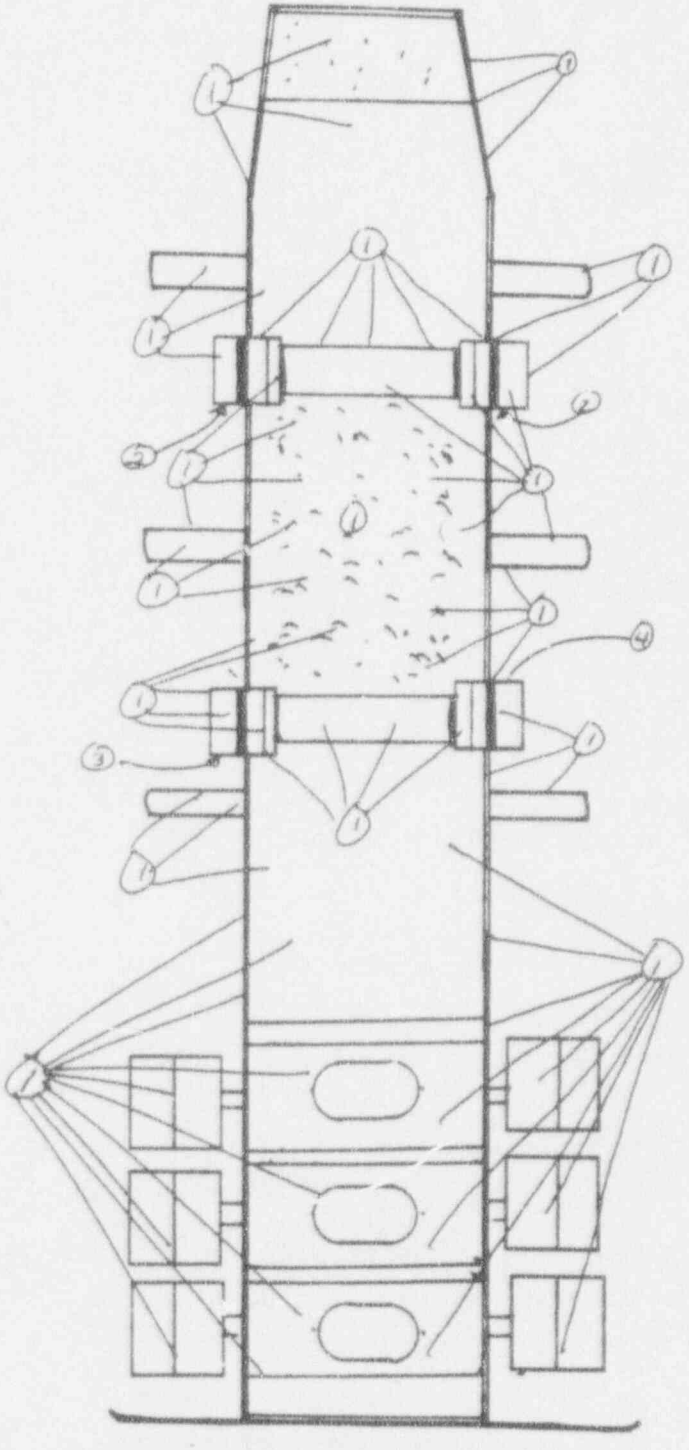
Building/Elevation : OUTSIDE BLDG 272', INTERIM RAD WASTE IRW 272-2(5) Date: 12-6-93

System and Component: TRAILER 1620 Time: 0830

Description: CONTAMINATION Survey Page: 5 of 14

Plant Status: (_) Shutdown (✓) Operating at Power level: ~100%

Reason: (✓) RWP No. 930299 (_) Surveillance ____ (_) Other ____



	Contamination (dpm/100cm² unless noted)
1	<1000
2 (INSIDE)	1200
3 (INSIDE)	1500
4 (INSIDE)	2200
5	NA
6	
7	
8	
9	
10	
11	
12	
13	
14	
15	
16	
17	
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RADIOLOGICAL SURVEY FORM

Survey No. 934446 Page 6 of 8

Radiation Survey Instrument: _____ Serial No.: _____

Contamination Survey Meter: LUD-177 Serial No.: 357
M5-3 434/430

Remarks

All readings in mrem/hr unless otherwise noted.

Surveyor: GROTEN (print/sign)

Surveyor: _____ (print/sign)

Reviewer: F CLARK (print/sign)

Exposure: <1 (mrem)

Exposure: _____ (mrem)

Date: 12/6/93

Legend

0	Contamination survey location	⊓⊓⊓	Breathing air header
X	General area dose rate	⟹	Air flow direction
(C)	Contact dose rate	H	Head level
(30cm)	30 centimeter reading	K	Knee level
(xx")	Dose rate at xx inches	⏚	110 VAC outlet
(x')	Dose rate at x feet	⌅	Floor or roof drain
γ	Gamma radiation in mrem/hr	ALARA	ALARA area
β	Beta radiation in mrad/hr	Δ	Air sample location
N	Neutron radiation in mrem/hr	-x-	Radiological boundary
α	Alpha radiation and contamination	F	Direct frisk
P#	Hot particle survey location	NPD	No hot particle detected
noβ	No beta detected	#/#	Contact/30 centimeter

RADIOLOGICAL SURVEY FORM
SSL-1(6)

Survey No. 934452

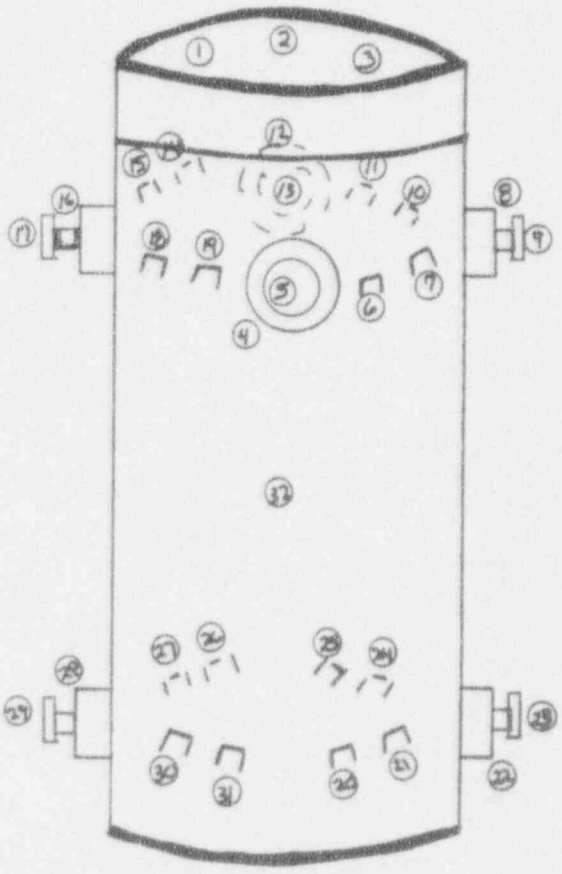
Building/Elevation : Reactor Bldg 272 Date: 12-7-93

System and Component: TN-RAM Time: 0830

Description: Post Decon Survey Training & Tie Downs Page: 3 of 12

Plant Status: (_) Shutdown (✓) Operating at Power level: 100%

Reason: (✓) RWP No. 93-299 (_) Surveillance (_) Other



	Contamination (dpm/100cm² unless noted)
1	<1000
2	↓
3	
4	1000
5	<1000
6	3,400
7	<1000
8	
9	↓
10	5,230
11	4,510
12	<1000
13	<1000
14	2,160
15	<1000
16	1,000
17	<1000
18	760
19	<1000
20	1,100
21	2,230
22	1,000
23	<1000
24	<1000
25	1,490
26	<1000
27	<1000
28	1,100
29	<1000
30	1,000
31	<1000
32	<1000
33	n/a
34	
35	
36	
37	
38	
39	
40	
41	
42	
43	
44	
45	↓

RADIOLOGICAL SURVEY FORM

Survey No. 934452 Page 4 of 12

Radiation Survey Instrument: _____ Serial No.: _____

Contamination Survey Meter: MS Serial No.: 405/424

Remarks

All readings in mrem/hr unless otherwise noted.

Smears # 9, 9, 13, 17, 23 & 29 on inside of furnace

Surveyor: Carswell / Carswell (print/sign)

Surveyor: _____ (print/sign)

Reviewer: C. SHERMAN / C. Sherman (print/sign)

Exposure: <1 (mrem)

Exposure: _____ (mrem)

Date: 12/7/93

Legend

0	Contamination survey location
X	General area dose rate
(C)	Contact dose rate
(30cm)	30 centimeter reading
(xx")	Dose rate at xx inches
(x')	Dose rate at x feet
γ	Gamma radiation in mrem/hr
β	Beta radiation in mrad/hr
N	Neutron radiation in mrem/hr
α	Alpha radiation and contamination
P#	Hot particle survey location
noβ	No beta detected

TTT	Breathing air header
⇒	Air flow direction
H	Head level
K	Knee level
⌀	110 VAC outlet
⌑	Floor or roof drain
ALARA	ALARA area
Δ	Air sample location
-x-	Radiological boundary
F	Direct frisk
NPD	No hot particle detected
#/#	Contact/30 centimeter

RADIOLOGICAL SURVEY FORM
SSL-1(6)

Survey No. 934452

Building/Elevation : IRW

System and Component: IN-RAM SHIPPING CONTAINER

Description: POST DECON CONTAMINATION SURVEY FOR SHIPMENT

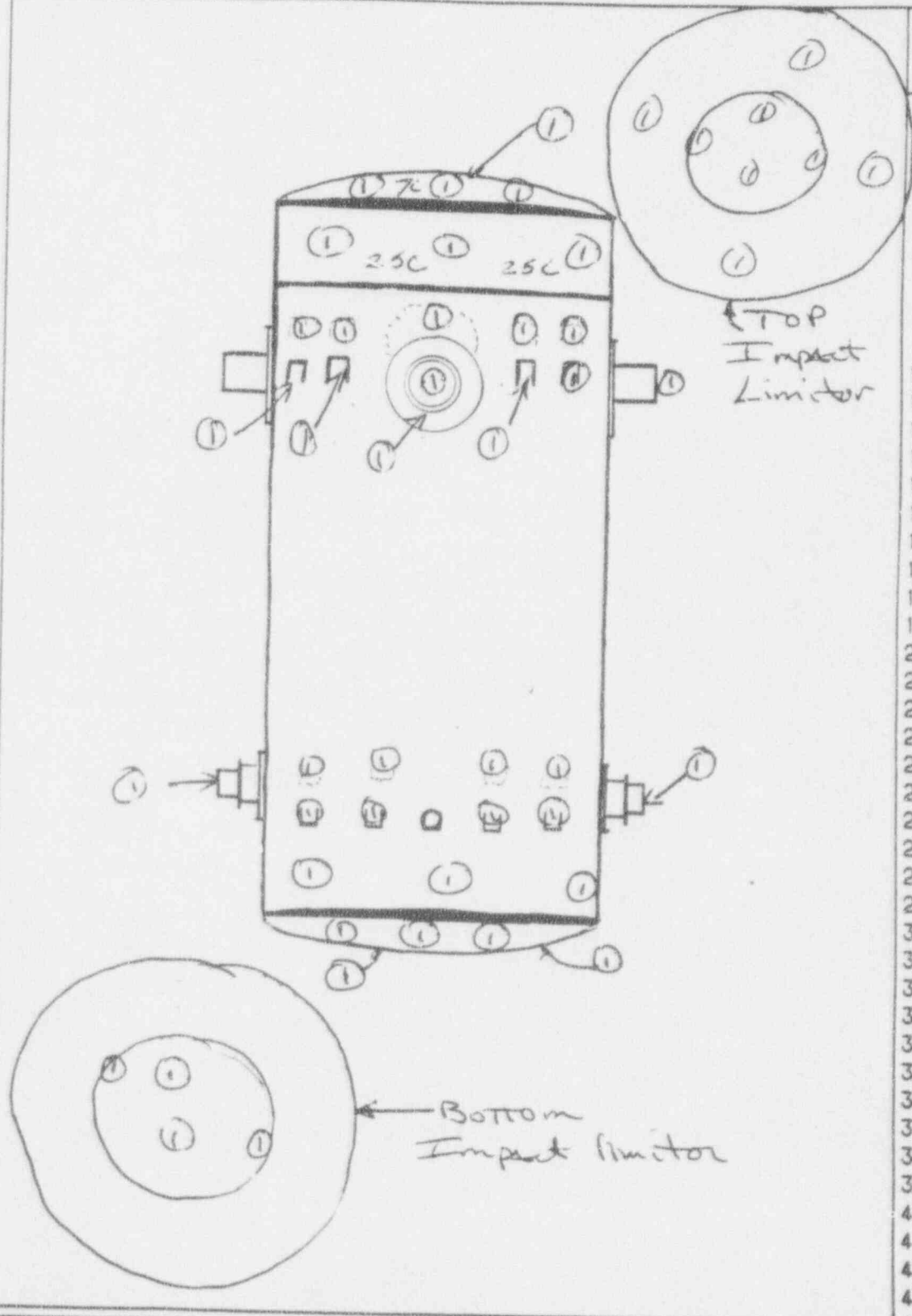
Date: 12/7/93

Time: 1503

Page: 5 of 12

Plant Status: (_) Shutdown (X) Operating at Power level: ≈100%

Reason: (X) RWP No. 230299 (_) Surveillance ____ (_) Other ____



	Contamination (dpm/100cm² unless noted)
1	<1000
2	
3	
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12	
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RADIOLOGICAL SURVEY FORM

Survey No. 934452 Page 6 of 12

Radiation Survey Instrument: N/A Serial No.:

Contamination Survey Meter: MS-3 Serial No.: 4257

Remarks

All readings in mrem/hr unless otherwise noted.

ALL "WEEP" HOLES DECONNED ONE TIME TO <1000-4000DPM/100CM²

Surveyor: FRANK CIARLO (print/sign)

Surveyor: (print/sign)

Reviewer: (print/sign)

Exposure: <1 (mrem)

Exposure: (mrem)

Date: 11/8/93

Legend

0	Contamination survey location
X	General area dose rate
(C)	Contact dose rate
(30cm)	30 centimeter reading
(xx")	Dose rate at xx inches
(x')	Dose rate at x feet
γ	Gamma radiation in mrem/hr
β	Beta radiation in mrad/hr
N	Neutron radiation in mrem/hr
α	Alpha radiation and contamination
P#	Hot particle survey location
noβ	No beta detected

TTT	Breathing air header
⇒	Air flow direction
H	Head level
K	Knee level
⌀	110 VAC outlet
⌑	Floor or roof drain
ALARA	ALARA area
Δ	Air sample location
-x-	Radiological boundary
F	Direct frisk
NPD	No hot particle detected
#/#	Contact/30 centimeter

RADIOLOGICAL SURVEY FORM

Survey No. 934452

Building/Elevation : OUTSIDE BLDG 272', INTERIM RAD WASTE IRW 272-2(5)

Date: 12/8/93

System and Component: N/A

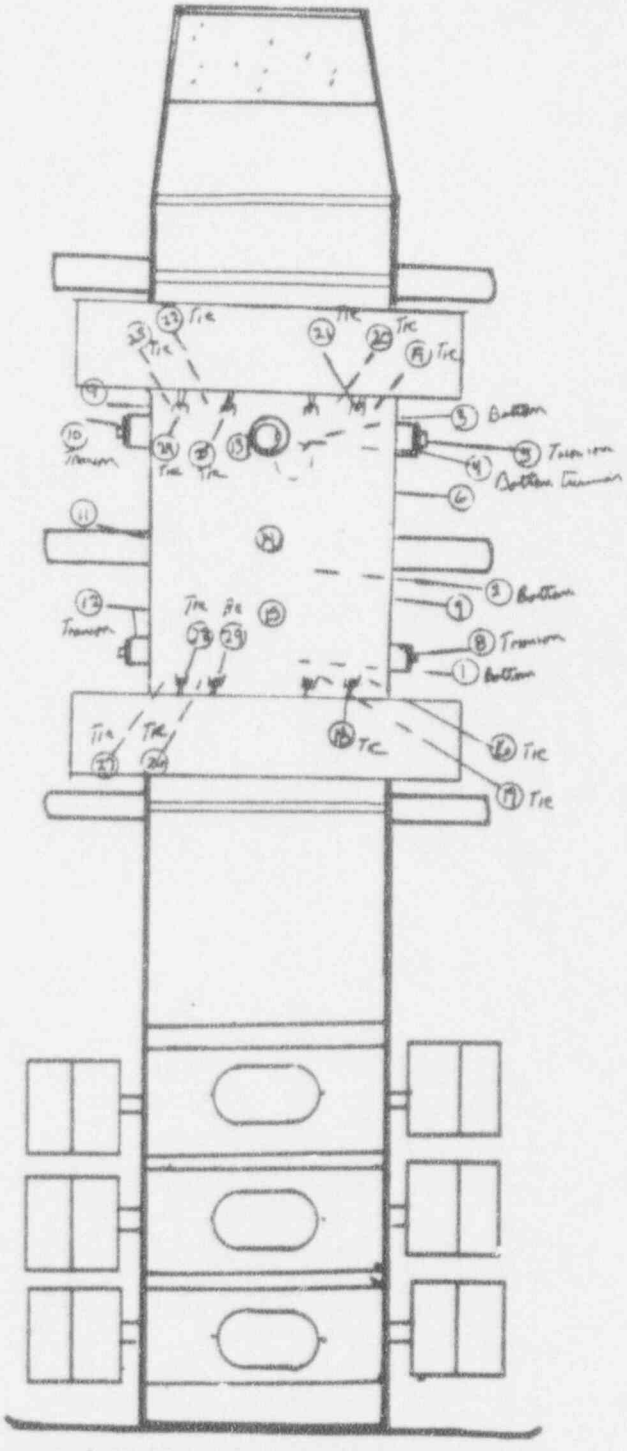
Time: 0830

Description: TRU-RAM Cask

Page: 7 of 17

Plant Status: (_) Shutdown (✓) Operating at Power Level: 100 %

Reason: (✓) RWP No. 93-0299 (_) Surveillance ____ (_) Other ____



	Contamination (dpm/100cm² unless noted)
1	<1000
2	↓
3	
4	
5	
6	1900
7	<1000
8	3800
9	3300
10	4500
11	3100
12	2100
13	6100
14	7200
15	6200
16	<1000
17	<1000
18	2000
19	<1000
20	↓
21	
22	
23	
24	
25	
26	
27	
28	1100
29	1200
30	N/A
31	↓
32	
33	
34	
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41	
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43	
44	
45	

RADIOLOGICAL SURVEY FORM

Survey No. 934452

Radiation Survey Instrument: ______ Serial No.: ______

Contamination Survey Meter: MS Serial No.: 405/421

Remarks

All readings in mrem/hr unless otherwise noted.

Smears taken on TN-RAM Tn by <1000 DPM/100cm²

Surveyor: Carswell / T. Carswell (print/sign) Exposure: <1 (mrem)

Surveyor: Westerbeck / [signature] (print/sign) Exposure: <1 (mrem)

Reviewer: F. CLARK / F Clark (print/sign) Date: 12/8/93

Legend

O	Contamination survey location	⊓⊓⊓	Breathing air header
X	General area dose rate	⇒	Air flow direction
(C)	Contact dose rate	H	Head level
(30cm)	30 centimeter reading	K	Knee level
(xx")	Dose rate at xx inches	⚲	110 VAC outlet
(x')	Dose rate at x feet	⌧	Floor or roof drain
γ	Gamma radiation in mrem/hr	ALARA	ALARA area
β	Beta radiation in mrad/hr	Δ	Air sample location
N	Neutron radiation in mrem/hr	-x-	Radiological boundary
α	Alpha radiation and contamination	F	Direct frisk
P#	Hot particle survey location	NPD	No hot particle detected
noβ	No beta detected	#/#	Contact/30 centimeter

RADIOLOGICAL SURVEY FORM

Survey No. 934452

Building/Elevation : OUTSIDE BLDG 272', INTERIM RAD WASTE IRW 272-2(5)

Date: 4-8-93

System and Component:

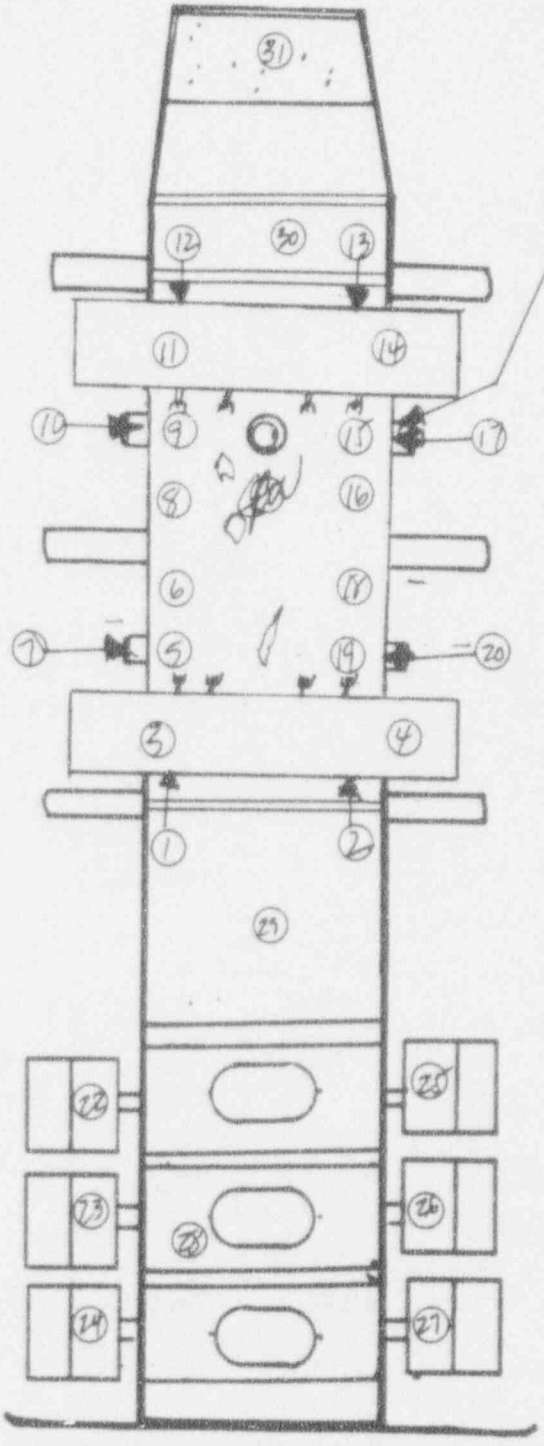
Time: 1130

Description: final release of Cask / Truck

Page: 9 of 12

Plant Status: (_) Shutdown (X) Operating at Power Level: ≈100%

Reason: (X) RWP No. 930299 (_) Surveillance (_) Other



	Contamination (dpm/100cm² unless noted)
1	< 1000
2	< 1000
3	< 1000
4	< 1000
5	< 1000
6	< 1000
7	< 1000
8	< 1000
9	< 1000
10	< 1000
11	< 1000
12	< 1000
13	< 1000
14	< 1000
15	< 1000
16	< 1000
17	< 1000
18	< 1000
19	< 1000
20	< 1000
21	< 1000
22	< 1000
23	< 1000
24	< 1000
25	< 1000
26	< 1000
27	< 1000
28	< 1000
29	< 1000
30	< 1000
31	< 1000
32	N/A
33	
34	
35	
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RADIOLOGICAL SURVEY FORM

Survey No. 934452 Page 10 of 12

Radiation Survey Instrument: N/A Serial No.:

Contamination Survey Meter: MS-3 Serial No.: 428
MS-2 401

Remarks

All readings in mrem/hr unless otherwise noted.

Surveyor: Wojtarowicz/ (print/sign)

Surveyor: (print/sign)

Reviewer: F. CLARK/ (print/sign)

Exposure: <1 (mrem)

Exposure: (mrem)

Date: 12/8/93

Legend

⊙	Contamination survey location
X	General area dose rate
(C)	Contact dose rate
(30cm)	30 centimeter reading
(xx")	Dose rate at xx inches
(x')	Dose rate at x feet
γ	Gamma radiation in mrem/hr
β	Beta radiation in mrad/hr
N	Neutron radiation in mrem/hr
α	Alpha radiation and contamination
Pⓞ	Hot particle survey location
noβ	No beta detected
⊓⊓⊓	Breathing air header
⟹	Air flow direction
H	Head level
K	Knee level
ⓞ	110 VAC outlet
⌻	Floor or roof drain
ALARA	ALARA area
Δ	Air sample location
-x-	Radiological boundary
F	Direct frisk
NPD	No hot particle detected
#/#	Contact/30 centimeter

GDR/HP P E A K S E A R C H R E S U L T S Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

SFP INLET 12/4/93 1000 Analyzed by: jschult
File ID: 932583

Sampling Start Date:. . .12/04/93 10:00 Sampling Stop Date: . . 12/04/93 10:0
Sample Duration:. . . . . .00 Hrs Sample Size : . . . . . 5.000E+02 m
Yield:. . . . . 100.0000 % Current Date: 12/04/93 10:3

Counting Start Date:. . .12/04/93 10:13 Live/Clock Time:. . 600/ 600 se
Decay time: . . . . . .22 Hrs Dead Time: 000

Detector #: 3
Energy(keV)= 1.49E-01+ 1.00E+00*Ch+ 0.00E+00*Ch^2+ 0.00E+00*Ch^3 12/03/93 21:2

FWHM(kev) = 1.46E+00+-1.01E-02*En+ 8.59E-04*En^2+ 0.00E+00*En^3 06/08/93 14:4
(Where En=SQRT(Energy in keV))

PEAK SEARCH RESULTS

Peak Sensitivity:. . . . . 2.00 Search Start/End :. 0/2048

PK. #	ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	CH IN PEAK	FWHM (keV)	FLAG
	274.52	274.32	-6	21	38	160	10	.44	Net<Cl
2	502.21	501.97	1	12	21	63	8	.12	Net<Cl
3	661.61	661.35	104	16	22	62	9	1.98	
4	795.59	795.30	9	14	25	78	9	.63	Net<Cl
5	834.23	833.94	26	13	22	67	8	1.49	
6	1173.26	1172.90	650	27	16	33	9	2.12	
7	1332.64	1332.26	546	24	6	4	11	2.18	

12/4/93 SPENT FUEL POOL ACTIVITY

GDR/HP L I B R A R Y S E A R C H S U M M A R Y Version 2.1

SFP INLET 12/4/93 1000 Reported by: jschult
File ID: 932583

Library File: . . . . . .LWJLIB.LIB (Liq. Filter & Filtrate Isotopic Lib

LIBRARY SEARCH RESULTS

Library Match Resolution 2.00

PK. #	ENERGY (keV)	NET COUNTS	ISOTOPE	EXPECTED NET CNTS	% OF PKS. FOUND	% ABN. FOUND	SCORE	FLAG
2	502.21	1	Unknown	-	-	-	-	
3	661.61	104	CS-137	-	-	-	1.50	
4	795.59	9	Net<CL	-	-	-	-	Nt<Cl
			CS-134	0	16.67	39.36	1.39	
5	834.23	26	MN-54	-	-	-	1.50	
6	1173.26	650	CO-60	609	100.00	100.00	2.00	
7	1332.64	546	CO-60	583	100.00	100.00	2.00	

12/4 SFP ACTIVITY

GDR/HP N U C L I D E A N A L Y S I S S U M M A R Y Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

SFP INLET 12/4/93 1000 Reported by: jschult
File ID: 932583

Library File: . . . . . .LWJLIB.LIB (Liq. Filter & Filtrate Isotopic Lib
MPC/LLD File: . . . . . .LQSLLD.MPC (Soluble Liquid Filtrate Samples

Detector #: 3
Efficiency File: . . . . . 500BS1D03.EFF (500ml Poly Bottle

Eff.=1/(1.25E-01*En^-2.65E+00 + 8.47E+02*En^ 8.49E-01) 03/16/93 19:20
(Where En = Energy in MeV)

MEASURED or MDA CONCENTRATION

Nuclide	Group	Energy (keV)	Concentration (uCi/ml)		Less-Than Level	Conc	Peaks Found	LLD REQUIRED	LL ME
CS-137		661.61	6.18E-06 +- 9.58E-07		-------		1 of 1	------	---
MN-54		834.23	1.72E-06 +- 8.83E-07		-------		1 of 1	------	---
CO-60		1332.64	5.32E-05 +- 2.30E-06		-------		2 of 2	------	---
		1173.26	I.D.Only						
CE-144		133.54	< 8.54E-06	MDA	3.92E-06		0 of 1	5.0E-05	Yes
CE-141		145.44	< 1.75E-06	MDA	1.67E-06		0 of 1	5.0E-05	Yes
[illegible]-131		364.48	< 1.45E-06	MDA	7.59E-07		0 of 1	1.0E-06	NO
[illegible]-99		739.58	< 1.97E-05	MDA	8.43E-06		0 of 3	5.0E-05	Yes
CS-134		795.85	< 2.79E-06	MDA	3.38E-06		0 of 6	5.0E-07	NO
CO-58		810.76	< 2.59E-06	MDA	1.11E-06		0 of 2	5.0E-07	NO
FE-59		1099.22	< 6.14E-06	MDA	3.26E-06		0 of 2	5.0E-07	NO
ZN-65		1115.52	< 7.07E-06	MDA	4.16E-06		0 of 1	5.0E-07	NO

TOTAL MEAS. ACT. : 6.11E-05 +- 4.14E-06 uCi/ml

UNKNOWN,ESC or SUM PEAKS

ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG. COUNTS	CH IN PEAK	FLAG
274.52	274.32	-6	21	38	160	10	Net<CL
502.21	501.97	1	12	21	63	8	Net<CL
795.59	795.30	9	14	25	78	9	Net<CL

12/4 SFP ACTIVITY

****

M P C C H E C K
MPC FILE: LQSLLD.MPC

****

Nuclide	uCi/ml	MPC	% MPC
CS-137	6.18E-06	2.E-05	3.09E+01
MN-54	1.72E-06	1.E-04	1.72E+00
CO-60	5.32E-05	5.E-05	1.06E+02
TOTAL:	6.11E-05		1.39E+02

SPECTRAL DATA STORED ON: 932583

ANALYSIS RESULTS STORED ON: 932583

12/4 SFP ACTIVITY

GDR/HP P E A K S E A R C H R E S U L T S Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

SFP INLET 12/5/93 0830 Analyzed by: hpace
File ID: 932584

Sampling Start Date:. . .12/05/93 08:30 Sampling Stop Date: . . 12/05/93 08:3(
Sample Duration:. . . . . .00 Hrs Sample Size : . . . . . 5.000E+02 ml
Yield:. . . . . 100.0000 % Current Date: 12/05/93 09:34

Counting Start Date:. . .12/05/93 08:36 Live/Clock Time:. . 600/ 600 sec
Decay time: . . . . . .10 Hrs Dead Time: . . . . . .000 %

Detector #: 3
Energy(keV)= 1.28E-01+ 1.00E+00*Ch+ 0.00E+00*Ch^2+ 0.00E+00*Ch^3 12/04/93 22:2?

FWHM(kev) = 1.46E+00+-1.01E-02*En+ 8.59E-04*En^2+ 0.00E+00*En^3 06/08/93 14:4(
(Where En=SQRT(Energy in keV))

PEAK SEARCH RESULTS

Peak Sensitivity:. . . . . 2.00 Search Start/End :. 0/2048

PK. #	ENERGY (keV)	CENTROID CHANNEL	NET COUNTS	UN-CERTAINTY	C.L. COUNTS	BKG COUNTS	CH IN PEAK	FWHM (keV)	FLAG
1	603.46	603.23	34	13	20	63	7	1.53	
2	661.31	661.07	152	17	22	60	9	2.29	
3	834.65	834.37	57	14	21	54	9	1.99	
4	1173.14	1172.80	657	27	12	20	8	1.98	
5	1332.39	1332.02	608	25	7	5	10	2.24	

12/5/93 SPENT FUEL POOL ACTIVITY

GDR/HP L I B R A R Y S E A R C H S U M M A R Y Version 2.1

SFP INLET 12/5/93 0830 Reported by: hpace
File ID: 932584

Library File: . . . . . .LWJLIB.LIB (Liq. Filter & Filtrate Isotopic Lib

LIBRARY SEARCH RESULTS

Library Match Resolution 2.00

PK. #	ENERGY (keV)	NET COUNTS	ISOTOPE	EXPECTED NET CNTS	% OF PKS. FOUND	% ABN. FOUND	SCORE	FLAG
1	603.46	34	CS-134	0	16.67	44.98	.45	LOW
2	661.31	152	CS-137	-	-	-	1.50	
3	834.65	57	MN-54	-	-	-	1.50	
4	1173.14	657	CO-60	677	100.00	100.00	2.00	
5	1332.39	608	CO-60	590	100.00	100.00	2.00	

12/5 SFP ACTIVITY

GDR/HP N U C L I D E A N A L Y S I S S U M M A R Y Version 2.1

New York Power Authority
J. A. FitzPatrick Nuclear Plant

SFP INLET 12/5/93 0830 Reported by: hpace
File ID: 932584

Library File: . . . . . .LWJLIB.LIB (Liq. Filter & Filtrate Isotopic Lib
MPC/LLD File: . . . . . .LQSLLD.MPC (Soluble Liquid Filtrate Samples

Detector #: 3
Efficiency File: . . . . . 500BS1D03.EFF (500ml Poly Bottle

Eff.=1/(1.25E-01*En^-2.65E+00 + 8.47E+02*En^ 8.49E-01) 03/16/93 19:20
(Where En = Energy in MeV)

Nuclide	Group	Energy (keV)	MEASURED or MDA CONCENTRATION Concentration (uCi/ml)	Less-Than Level Conc	Peaks Found	LLD REQUIRED	LL MF
CS-134		795.85	< 3.05E-06 MDA	1.37E-06	1 of 6	5.0E-07	NO
		603.46	I.D.Only				
CS-137		661.31	9.08E-06 +- 1.04E-06	-------	1 of 1	------	---
MN-54		834.65	3.73E-06 +- 9.07E-07	-------	1 of 1	------	---
CO-60		1332.39	5.92E-05 +- 2.43E-06	-------	2 of 2	------	---
		1173.14	I.D.Only				
-144		133.54	< 7.76E-06 MDA	6.51E-06	0 of 1	5.0E-05	Yes
-141		145.44	< 1.84E-06 MDA	9.48E-07	0 of 1	5.0E-05	Yes
I-131		364.48	< 1.52E-06 MDA	8.77E-07	0 of 1	1.0E-06	NO
MO-99		739.58	< 1.86E-05 MDA	8.24E-06	0 of 3	5.0E-05	Yes
CO-58		810.76	< 2.32E-06 MDA	2.12E-06	0 of 2	5.0E-07	NO
FE-59		1099.22	< 5.69E-06 MDA	4.47E-06	0 of 2	5.0E-07	NO
ZN-65		1115.52	< 6.49E-06 MDA	7.31E-06	0 of 1	5.0E-07	NO

TOTAL MEAS. ACT. : 7.20E-05 +- 4.37E-06 uCi/ml

SPECTRAL DATA STORED ON: 932584

ANALYSIS RESULTS STORED ON: 932584

12/5 SFP ACTIVITY

SynTech Products Corporation
520 E. Woodruff Avenue
Toledo, Ohio 43624
(419) 241-1215
24 Hour - Call INFOTRAC 1-800-535-5053

Material Safety Data Sheet

Section I - Product Identification

Product Name: Touch It Up De-Contaminant*
Effective Date: 1-93
* Do NOT use this product as a skin de-contaminant.

Section II - Material or Component

Chemical Name	CAS#	WT%	PEL	TLV	STEL	CARCIG
2 Butoxy Ethanol	111-76-2	1% +	50ppm	50 Skin contact	None	No
Sodium Metasilicate	6834-92-0	1% +	None	None	None	No
Octylphenol Polyethoxyiate	9002-93-1	1% +	None	None	None	No
Trisodium Phosphate	7601-54-9	1% +	None	None	None	No
Hydrocarbon Propellant	68476-86-8	6-10%	1000ppm	1000ppm	None	No

Section III - Physical Data

Boiling Range of Concentrate: N.D.
Vapor Pressure (puig) in Can @ 75°F: 65
Vapor Density: N.D.
Solubility in Water of Concentrate: Complete
Specific Gravity of Concentrate: 1.036
% Volatile by Volume in Can: 85
Flash Point of Spray: None to 150°F, Tag Open Cup
Appearance and Odor of Spray: White foam, perfume odor

Section IV - Fire and Explosion Hazard Data

Flammability as per CPSC Flame Extension Test: Non-Flammable
Flammable Limits: LEL: N/A UEL: N/A
Extinguishing Media: Foam, dry chemical, carbon dioxide.
Special Fire Fighting Procedures: Keep containers cool. Use equipment or shielding required to protect personnel against bursting, rupturing, or venting containers.
Unusual Fire and Explosion Hazards: At temperatures above 120°F, containers may vent, rupture, or burst.

Section V - Reactivity Data

Chemical Stability: Stable
Conditions to Avoid: Do not expose to temperatures above 120°F.
Incompatibility (Materials to Avoid): Strong oxidizing agents, strong acids or bases, selected amines.
Hazardous Decomposition By-Products: Thermal decomposition may produce carbon monoxide and/or carbon dioxide.
Hazardous Polymerization: Will NOT occur

Section VI - Health Hazard Data

OSHS Premissible Exposure Limit: N.D.
Threshold limit value: See Section II

Effects of Overexposure

Eyes: Minor irritation
Skin: No evidence of adverse effect from available information
Ingestion: Can cause gastrointestinal irritation, vomiting, and diarrhea.
Inhalation: Product exists as foam. Inhalation of the foam could cause asphyxiation.

Emergency and First Aid Procedures

Eyes: Flush with water for at least 15 minutes.
Skin: Wash exposed area with water and soap.
Ingestion: Do not induce vomiting. Get medical attention.
Inhalation: Treat for asphyxiation.

Section VII - Spill or Leak Procedures

Steps to be taken in case container is punctured and material is released:
Clean up area by mopping or with absorbent materials and place in closed containers for disposal. Consult federal, state, or local disposal authorities for approved disposal procedures.

Waste Disposal Method:
When used properly aerosol products do not generate hazardous waste. Empty de-pressurized containers can not be reused and should be wrapped an put in trash collection. Cans which are pressurized or contain liquid must be disposed of in a permitted waste management facility. Consult federal, state, and local disposal authorities for approved procedures.

Section VIII - Special Protection Information

Specific Personal Protective Equipment

Respiratory Protection: Under normal conditions no respiratory protection is required.
Ventilation: Normal venitlation adequate.
Protective Gloves: None required, protective gloves may be worn.
Eye Protection: None required, chemical splash goggles may be worn.

Section IX - Special Precautions

Precautions to be taken in handling and storing:
Do not store at temperatures above 120°F.

Special precautionary statements:
Please read and follow the directions on the product label. They are you best guide to using this product in the most effective way, and give the necessary safety precautions to protect your health.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition. We make no warranties, express or implied, and assume no liability in connection with any use of the information.

Prepared by J. Rose
MSDS -Touch It Up

Signature James Rose

Utility Technical Services
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August 3, 1993

Mr. David Moore
SPQA Coordinator
SynTech Products Corporation
520 E. Woodruff Avenue
Toledo, Ohio 43624

Subject: Chemical Analysis of One Sample of Touch It Up, Lot# A050-235, Received on SynTech Purchase Order No. 10784

Technical and Engineering Services Report No. 93A89-40

The results of the chemical analysis are as follows:

Element	Results	Element	Results
Arsenic	< 10ppm	Silver	< 10ppm
Calcium	< 10ppm	Cadmium	< 10ppm
Cobalt	< 10ppm	Chromium	< 10ppm
Copper	< 10ppm	Iron	< 10ppm
Mercury	< 10ppm	Magnesium	< 10ppm
Manganese	< 10ppm	Nickel	< 10ppm
Lead	< 10ppm	Selenium	< 10ppm
Tin	< 10ppm	Zinc	< 10ppm
Indium	< 100ppm	Gallium	< 100ppm
Bismuth	< 100ppm	Antimony	< 10ppm

Chloride	< 100ppm	Fluoride	< 100ppm
Sulfur	< 100ppm	Nitrate	< 100ppm
Nitrite	<10ppm		

All work was performed in accordance with the Technical and Engineering Services Quality Assurance Program. QA Traveler No. 2400.

Written by: _____
Dr. P. M. Beckwith

Approved by: J. P. Cross
J. P. Cross
Supervisor

Approved by: _____
Quality Assurance

NOTES FROM THE MEETING HELD ON MONDAY, DECEMBER 13, 1993

Attendees:

Virgil Autry (DHEC-South Carolina) 803-734-4632
Jimmy Still (Chem-Nuclear) 803-259-1781
Michael House (Chem-Nuclear)
Robert Williams (WasteChem) 713-520-9030
Joseph Sipp (New York Power Authority) 315-349-6701

A meeting was held on December 13, 1993 at 0900 at the DHEC office in Columbia, SC to discuss the TN-RAM cask shipment received at the Barnwell burial facility on Friday, December 10, 1993. Mr. Autry was concerned that the cask appeared to be leaching radioactive material and wanted the Transnuclear Company (owner of the cask) to look for some type of coating or other type of method to prevent leaching out of Cesium 137 from this type of cask. Mr. Sipp expressed his concern, since the cask left the FitzPatrick Plant <1000 dpm/100cm2 yet arrived at Barnwell less than 48 hours later above DOT contamination limits. The surveys for receipt of the cask, decontaminations that were performed and the final release of the cask were all reviewed. The spent fuel pool gamma spectral analysis results were also reviewed. Mr. Sipp also discussed the decontamination process which included a decontamination agent (SynTech), cotton towels, demin water, pipe cleaners, and scotch brite pads. Mr. Autry was very satisfied with the process used for both the decontamination and surveys.

The meeting lasted approximately 40 minutes and Mr. Autry was provided with copies of the surveys. Mr. Autry stated that they would permit the unloading of the cask and allow FitzPatrick to continue shipping to Barnwell. No decision was made on the type of violation that would be issued. Mr. Williams (WasteChem) stated that they would work with Chem-Nuclear to prepare the cask for shipment to Transnuclear in Aiken, SC for resolution of the problem.