

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Report No. 99990001/97-001
Docket No. 99990001
License No. General License
Licensee: GE Welding and Machining Services
302 Hansen Access Road
King of Prussia, PA 19406
Facility Name: GE Technical Service Center
Inspection At: 302 Hansen Access Road
King of Prussia, PA
Inspection Conducted: January 14, 1997

Inspector:

Duncan White
Duncan White
Senior Health Physicist

2/12/97
date

Approved By:

Jenny M. Johansen
Jenny M. Johansen, Chief
Nuclear Materials Safety Branch 3
Division of Nuclear Materials Safety

2/13/97
date

Inspection Summary: Special announced safety inspection conducted on January 14, 1997 (Inspection Report No. 99990001/97-001).

Areas Inspected: Organization and scope of activities; review of Peach Bottom contamination incident; independent measurements; and actions taken by licensee.

Results: No violations were identified. One drum containing welding cables was identified with elevated radiation levels. The licensee shipped this drum to their licensed facility in Memphis, Tennessee to identify the cause of the elevated radiation levels.

RETURN ORIGINAL TO
REGION I

DETAILS

1. Persons Contacted

- * Eric Tschantre - GE Facilities Manager for King of Prussia facility
- Joseph Plantz - GE Mission Manager for King of Prussia facility
- Joseph Livingstone - GE representative for Peach Bottom and Limerick
(by telephone)
- Hal Trimble - Radiation Protection Manager, Peach Bottom Atomic Power Station
(by telephone)

- * present at exit interview

2. Organization and Scope of Activities

The General Electric (GE) Technical Services facility in King of Prussia is the field services center for GE's welding and machining group. The facility dispatches approximately 30 welding systems and plus 20 to 30 other machining tools to client facilities around the world. The welding systems are primarily used in nuclear power plants due to the system's ability to be remotely operated and controlled with the aid of video cameras. The welding systems consist of three primary components: the power supply, cables and welding head.

The King of Prussia facility does not hold a license for radioactive materials. Equipment used at nuclear facilities are surveyed at the client's plant for release for unrestricted use. GE's facility in Memphis, Tennessee has an Agreement State licensee which permits radioactive contaminated equipment on-site. Welding units used outside the United States and units from domestic facilities that are not surveyed are first sent through the Memphis facility prior to shipment to King of Prussia.

The King of Prussia facility has utilized the health physics staff from GE's Nuclear Energy Production facility in Wilmington, North Carolina to perform two radiation surveys. These surveys of the King of Prussia facility were performed on March 29, 1996 and September 23, 1996. The results of these surveys are found in Attachment 1 and 2 of this report.

The surveys performed by GE's Wilmington staff and the diversion of equipment through their Memphis, Tennessee facility was in response to GE's concern that welding equipment with radiological contamination was found on their equipment from an overseas location and the GE's clients requiring that equipment bought into their facilities have *no* radiological contamination.

No safety concerns were identified.

3. Review of Peach Bottom Contamination Incident

On November 22, 1996, a GE technician was cleaning out the drawer of power supply unit in the King of Prussia facility that was previously used at PECO's Peach Bottom Nuclear Generating Station during September 1996. One of the items inside the drawer was a plastic bag marked as radioactive. The bag contained two gaskets for the welding head. GE contacted PECO and a health physics supervisor was dispatched to the King of Prussia facility. In addition to the contaminated gaskets, the PECO survey identified several tools in the drawer to be contaminated. Survey of personnel and other areas of the GE facility did not identify the presence of radiological contamination. The contaminated gaskets and tools were returned to Peach Bottom. A summary of the PECO survey is found as Attachment 3 to this report.

The GE representative stated that the power supply unit was located inside a contaminated zone while at Peach Bottom due to the limited floor space. The power supply for the welding head is normally maintained outside the contaminated zone with only the cables and the welding head located inside contaminated zone. According to PECO, the power supply were taken to the refueling floor but not used at Peach Bottom. The power supply was released from Peach Bottom on September 27, 1996.

The release of the power supply for the welding system from the contaminated area at Peach Bottom is still under review by PECO and Region I's Division of Reactor Safety. The inspector noted that the contaminated tools and bag were located in a drawer that according to the GE representative, is used as a work surface. The drawer, when opened, has a cover that hides the contents in the drawer from view and facilitates its use as a work surface. It is only when the cover is lifted, that the contents of the drawer can be seen.

No safety concerns were identified.

4. Independent Measurements

The inspector surveyed the work and storage areas of the Technical Center with a Ludlum Model 44-10 5 centimeter (cm) by 5 cm NaI(Tl) detector coupled to a Ludlum Model 2221 ratemeter/scaler (NRC Serial No. 054828) last calibrated on March 14, 1996. The detector used by the inspector is capable of detecting gamma photons with energies greater than 100 keV at or near environmental levels. The average background for this detector is 7,000 to 10,000 counts per minute (cpm).

Wipes of removable contamination were also taken at various locations around the facility. Each wipe covered an area of approximately 100 square centimeters. Each wipe was counted for 10 minutes on a Tennelec Model LB5100 low background alpha/beta counter at the Region I offices. The counter's efficiency for gross alpha and gross beta was 21.1% and 26.5%, respectively.

The radiation survey of the facility identified one drum with elevated gamma radiation levels. All other equipment, work and storage areas had background radiation levels. The drum with elevated radiation levels (marked as "CS-40-13") contained cables used to connect the power supply to the welding head. The inspector identified one spot on the drum with a maximum reading of 27,000 cpm. The elevated radiation levels were isolated to the one area of the drum.

All wipes taken at the facility did not indicate the presence of removable contamination. The results of the wipes are listed in the table below. Results are reported in units of disintegration per minute per 100 square centimeters (dpm/100 cm²) at an uncertainty of one sigma.

Location	Gross Alpha	Gross Beta
Drum No. CS-40-13; hotspot	1.4 ± 1.1	0 ± 3
Drum No. CS-40-13 180 degrees from hotspot	0 ± 1.7	0.4 ± 3
Drum No. CS-40-13; lid	1 ± 1	-0.4 ± 3
Drum No. CS-40-22	1.4 ± 1.1	-2 ± 3
Shipping Container No. 2	1.4 ± 1.0	0.4 ± 3
Shipping Container No. 3	2.8 ± 1.3	0.4 ± 3
Welding Power Supply Serial No. 1179	1 ± 1	4 ± 5
Welding Power Supply Serial No. 839	1.4 ± 1	-3 ± 3
Welding Power Supply Serial No. 1022	1 ± 1	1 ± 3
Loading dock ramp	1 ± 1	-1 ± 3
Shipping area floor	-5 ± 5	0 ± 3
Floor near CS-40-13	4 ± 1	-0.4 ± 3

5. Actions Taken by Licensee

As a result of the findings of this inspection and previous incidents, the general licensee has taken the following steps in response to the increase occurrences of radiological contamination on the welding and machining equipment.

- a. Welding units used outside the United States and units from domestic facilities that are not surveyed are first sent through the Memphis facility prior to shipment to King of Prussia.
- b. Bar codes affixed to the exterior of shipping containers to track the movement of equipment between client facilities.
- c. Two radiation and contamination surveys in 1996 of the King of Prussia facility by GE's health physics group from the Wilmington, North Carolina facility.
- d. Purchase of radiation survey equipment for use at the King of Prussia facility.
- e. Development of procedures and training of King of Prussia personnel to use survey equipment by GE's Wilmington health physics group.
- f. The drum identified during this inspection with elevated radiation levels was shipped by commercial carrier as a limited quantity package to GE's Memphis facility for evaluation. The evaluation identified fixed Cobalt 60 contamination on two of the cables in the drum. The results of the licensee's survey are found in Attachment 4 of this report.

The inspector reviewed the actions taken by the general licensee and determined that they would minimize the potential for the spread of radioactive materials and inadvertent exposure of personnel at the King of Prussia facility.

No safety concerns were identified.

6. Exit Interview

The inspection findings were discussed with the individual identified in Section 1 of this report.

ATTACHMENT 1

RADIOLOGICAL SURVEY PERFORMED BY GENERAL ELECTRIC ON MARCH 29, 1996



GE Nuclear Energy

NUCLEAR ENERGY PRODUCTION
General Electric Company, M/C H08
P. O. Box 780, Wilmington, NC 28402
910 675-5531

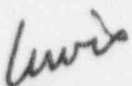
April 2, 1996

S. P. Murray, Manager
Nuclear Safety

Subject: King of Prussia TSC Health Physics Survey

Per your instructions, a survey of the KOP TSC was performed on 3/29/96 by R. G. Lewis. Using two GM survey instruments, a series of dose rate and contamination checks were performed in accordance with accepted GENE practices and action levels. All items surveyed displayed background activity levels. There was no hint of any radiation/contamination on any item checked. I've included attachments which specifically describe the surveys performed. Please note that 37 "product" containers were surveyed. Additionally, people, equipment, tools and a variety of other items were also checked. At the conclusion of my survey, I notified E. Tchantre that his Facility and items within were "clean" and released.

Additionally, I would like to thank Eric and his staff for the help and courtesy I received while at TSC.


R. G. Lewis
Nuclear Safety

Post-It® Fax Note	7671	Date	4/3/96	# of pages	3
To	Eric Tchantre	From	R. G. Lewis		
Co./Dept.		Co.			
Phone #		Phone #			
Fax #		Fax #			

SERVICES FACILITY

** SRM200/HP210
ASP-1/HP260
E-520/HP270

BKG=115 C/M - EFF = 13%
BKG = .02 mrh/h
BKG = .04 mr/hr
(= 2-300 cpm)

CAL DATE: 12/5/95
CAL DATE: 11/7/95
CAL DATE: 11/7/95

<u>CONTAINER #</u>	<u>MR/HR By CONTACT</u>	<u>CPM By CONTACT</u>	<u>CPM By SWIPE</u>
1	BKG	BKG	BKG
2	BKG	BKG	BKG
3	BKG	BKG	BKG
4	BKG	BKG	BKG
5	BKG	BKG	BKG
6	BKG	BKG	BKG
7	BKG	BKG	BKG
8	BKG	BKG	BKG
9	BKG	BKG	BKG
10	BKG	BKG	BKG
11	BKG	BKG	BKG
12	BKG	BKG	BKG
13	BKG	BKG	BKG
14	BKG	BKG	BKG
15	BKG	BKG	BKG
16	BKG	BKG	BKG
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19	BKG	BKG	BKG
20	BKG	BKG	BKG
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25	BKG	BKG	BKG
26	BKG	BKG	BKG
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34	BKG	BKG	BKG
35	BKG	BKG	BKG
36	BKG	BKG	BKG
37	BKG	BKG	BKG

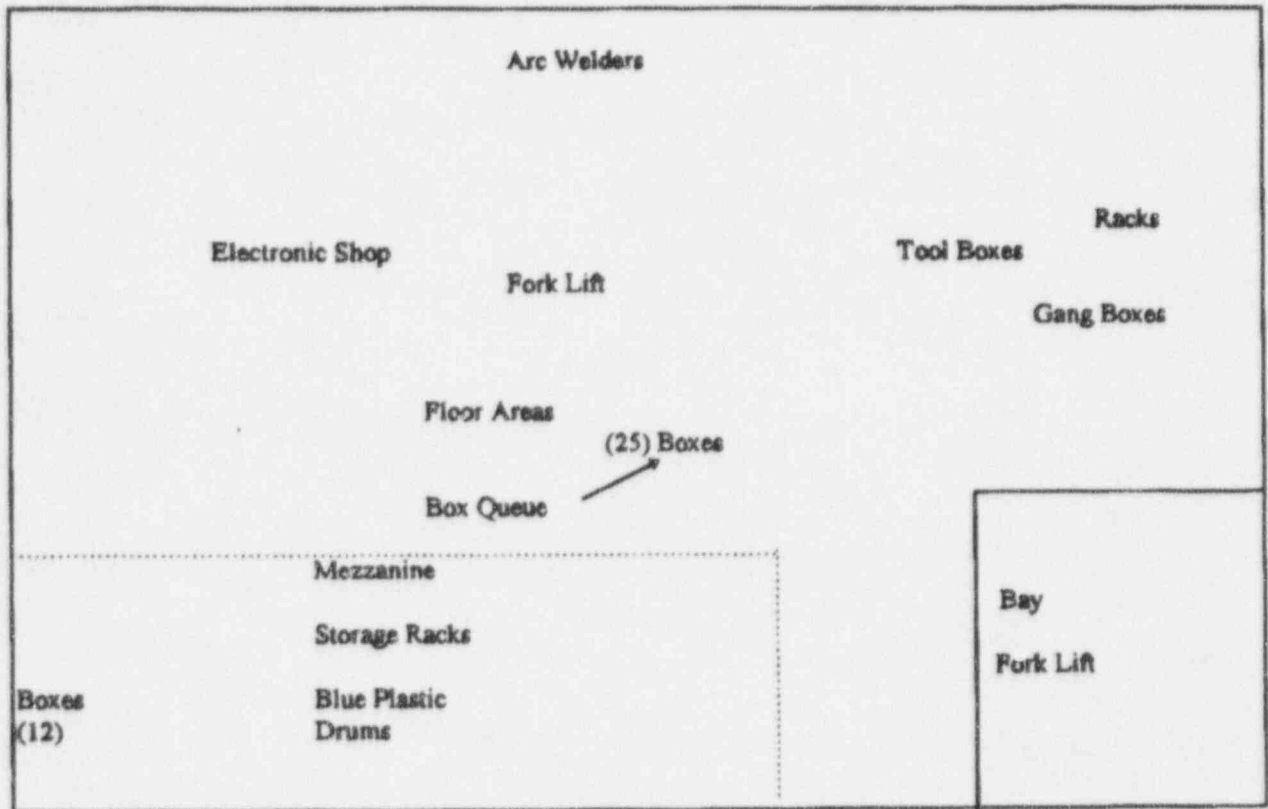
MISCELLANEOUS ITEMS SURVEYED

36" Guide Rings
2 Fork Lifts
Heliarc Welder
Mezzanine Floor Areas
"Blue" plastic drums
Shipping Bay
(1) Employee; Handling containers

Weld Head
Tool Boxes
Main Floor Areas
Gang Boxes/containers
Storage Racks - Upstairs & Downstairs
Electronic Shop

* All Swipes and Direct Readings = BKG
** Swipes rechecked at GE Wilmington

SERVICES FACILITY



ATTACHMENT 2

RADIOLOGICAL SURVEY PERFORMED BY GENERAL ELECTRIC
ON SEPTEMBER 23, 1996



GE Nuclear Energy

NUCLEAR ENERGY PRODUCTION
RADIATION PROTECTION M/C H96
P. O. Box 780, Wilmington, NC 28402

cc: B. Robinson
A. Mabry
J. Sependa
D. Barbour
E. Tschantre-KOP
E. Rouse

24 September 1996

L. Paulson
Acting Manager
Nuclear Safety

Subject: King of Prussia TSC Health Physic Survey

A survey of the KOP TSC was performed on 9/23/96 by R. G. Lewis and E. L. Rouse.

Using GM survey instruments, dose rate measurements were performed. Contamination swipes were also taken.

Items and areas surveyed included equipment, shipping containers, equipment in the containers, shop areas and personnel.

All items surveyed were within GENE criteria for "Unconditional Release". Attachments are included describing the specific surveys performed.

At the conclusion of the surveys, E. Tschantre was notified that his facility and items were "Clean and Released". All actions were reviewed with the Wilmington H. P. Staff.

R. G. Lewis
Nuclear Safety

KING OF PRUSSIA
SERVICES FACILITY

Scalar SRM200/RD14	BKG = 4.0 C/M - EFF = 29%	CAL DATE: 9/21/96
E-520/HP270 # 967	BKG = 0.05 to 0.06 mr/hr	CAL DATE: 6/6/96
E-520/HP270 #1196	BKG = .04 mr/hr	CAL DATE: 6/6/96
RM14/HP210 #1303	BKG = 60 cpm	CAL DATE: 8/7/96

ITEMS SURVEYED

RESULTS

	<u>By</u> <u>Contact</u>	<u>By</u> <u>Swipe</u>	<u>α Swipe</u>
* 3 Boxes and contents to Peachbottom	BKG	BKG	BKG
Fork Lift	BKG	BKG	BKG
Plastic Drums to Oyster Creek and Nine Mile Point	BKG	BKG	BKG
Personnel	BKG	BKG	BKG
4 Welders	BKG	BKG	BKG
Facility Floors	BKG	BKG	BKG
Mezzanine Areas	BKG	BKG	BKG
32 Drums/Rows of boxes on mezzanine	BKG	BKG	BKG
Shipping Bay	BKG	BKG	BKG
Forsmark Containers	BKG	BKG	BKG
Gang Boxes	BKG	BKG	BKG
Job Box from Hake	BKG	BKG	BKG
Electronics Shop	BKG	BKG	BKG
Miscellaneous Equipment	BKG	BKG	BKG

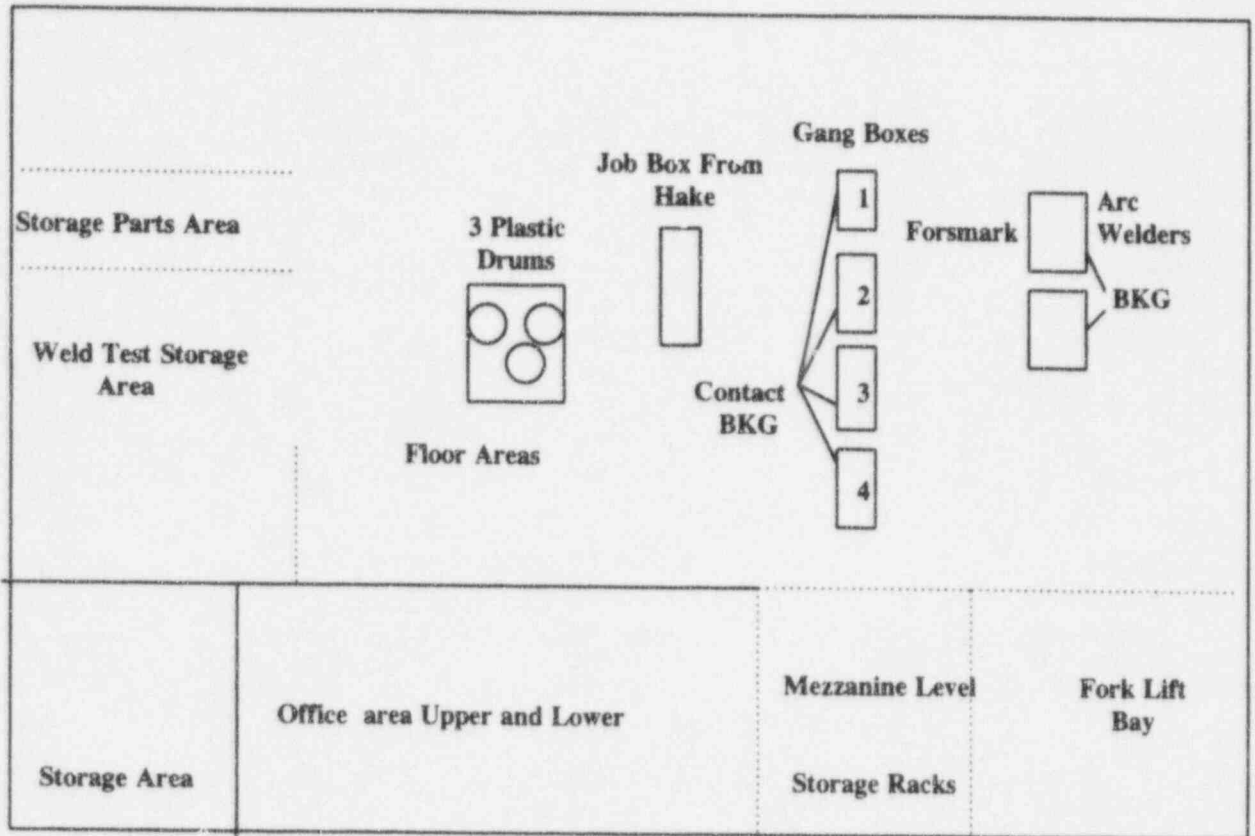
* Box #33 to Peachbottom had one reading of 0.12 mr/hr @ contact. Still within GENE guidelines for free release.

** The above surveys consist of hundreds of contact readings and swipes taken.

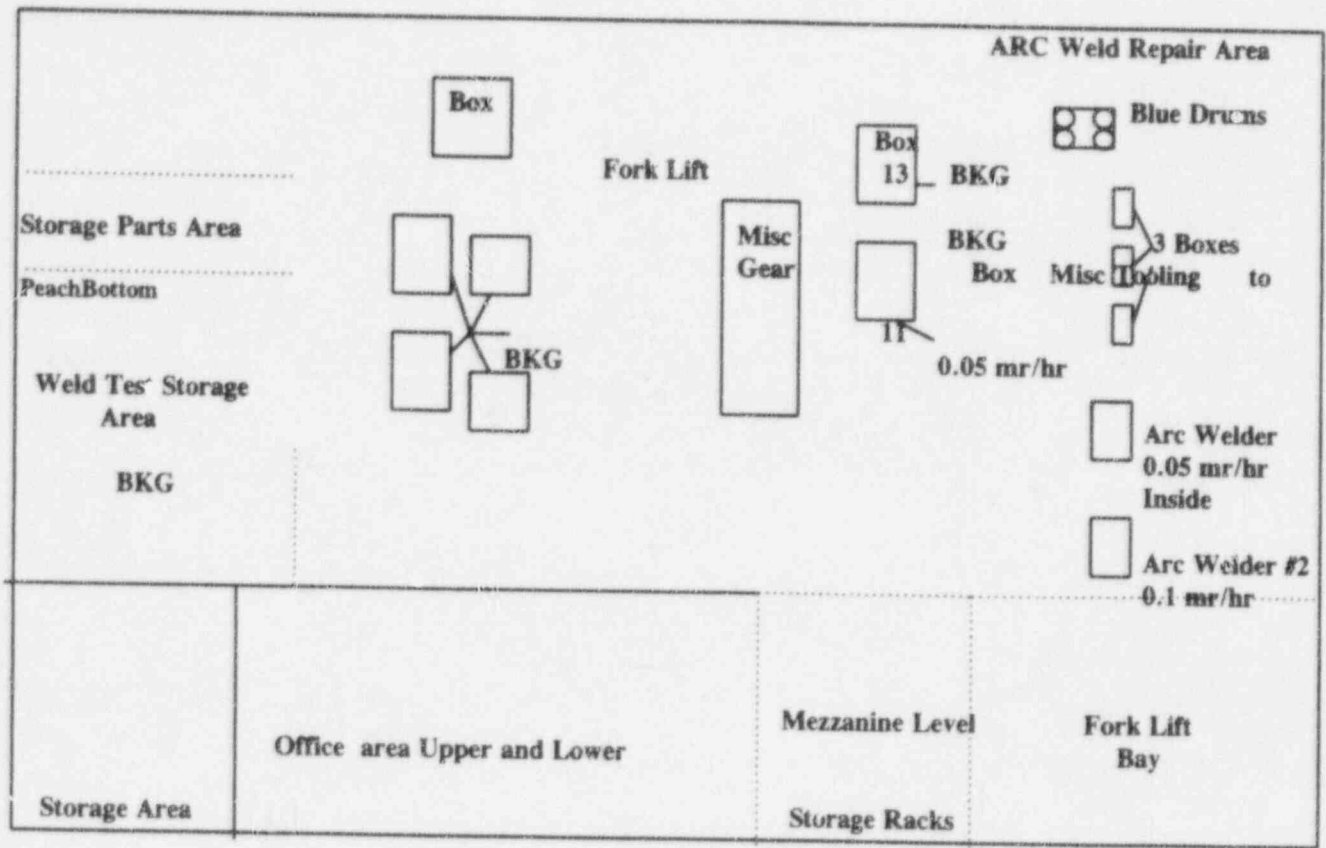
R. G. Lewis
Nuclear Safety

E. L. Rouse
Radiation Protection

AREA SURVEY
(Continued)



MAIN SHOP AREA



ATTACHMENT 3

RADIOLOGICAL SURVEY PERFORMED BY PECO ON NOVEMBER 22, 1996

PEAPS - ITEMIZED RADIATION - CONTAMINATION - SURVEY RECORD

RWP NO. NA SURVEY NO. _____ DATE 11/22/96 TIME 14:00 SURVEYOR Bill Downey
 UNIT 2 () UNIT 3 () RW () ELEV: _____ DESCRIPTION: _____ AREA #: _____
 REASON FOR SURVEY GE Tech Center - Tools ROUTINE () SPECIAL ☒ UPDATE ()

NO.	ITEM DESCRIPTION	MR/HR		MRAD/HR		CONTAMINATION	
		CONTACT	18"	CONTACT	18"	CPM	CPM/100CM ²
1	Gasket	2		8			<1000
2	Gasket					4000	<1000
3	Gasket					400	<1000
4	Wood File					300	<1000
5	Hex head screw driver					400	2000
6	Hex head screw driver					200	1400
7	RTV Sealant					200	<1000
8	Drase Components					220	<1000
9	SNIPS WITH TAPE					1400	<1000
10	Flash Light Magenta					140	<1000
11	Needle nose pliers					600	<1000
12	Vise grips					280	<1000
13	Current wrench					280	<1000
14	Tungsten Rods					400	<1000
15	Commonwealth Edison Pro					2100	<1000
16	GF PAPER					4100	<1000
17	Hex head screw drivers (9)					4100	<1000
18	Rolling knife Magenta					6100	<1000
19	Screw driver case					4100	<1000
20	Screw driver Magenta					4100	<1000
21	Screw driver					4100	<1000
22							
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40							

REMARKS: All Tools Returned To Peach Bottom.
Survey of Transport Box 4.5" x 5" x 12" Cont.
4100 CPM/100CM²

INST.	S.N.	CAL. DUE
	PB LGS	PB LGS
RM14	7872/2217	6/13/97 - 8-31-97
R02	3554	11-30-96

REVIEWED BY: _____ DATE: 1/1/97

Page 1 of 1

PBAPS - ITEMIZED RADIATION - CONTAMINATION - SURVEY RECORD

RWP NO. NA SURVEY NO. _____ DATE 11/22/96 TIME 16:00 SURVEYOR Bill Downey
 UNIT 2 () UNIT 3 () RW () ELEV: _____ DESCRIPTION: GE Tech Center AREA #: _____
 REASON FOR SURVEY AFTER Tools were bagged up and removed ROUTINE () SPECIAL (X) UPDATE ()

NO.	ITEM DESCRIPTION	MR/HR		MRAD/HR		CONTAMINATION	
		CONTACT	16"	CONTACT	16"	CONTACT	CPM
1	DRAPER holding Tools						<100
2	holding Machine						<100
3	Q Storage AREA						<100
4	Table						<100
5	FLOOR						<100
6	Work Shop Tools (2nd Box)						<100
7	TRASH						<100
8	TRASH CAN						<100
9	Shop FLOOR						<100
10	Shop Work Table						<100
11	Shop Floor						<100
12							
13							
14							
15							
16							
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REMARKS: _____

INST.	S.N.	CAL. DUE

REVIEWED BY: _____ DATE: 1/1/

PAGE 1 of 1

REPORTS FOR SPECTRUM 2496. 22-NOV-1996 19:58

 *
 * GAMMA SPECTRUM ANALYSIS *
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CANBERRA APOGEE V2.2

Canberra Industries, Inc.

22-NOV-96 19:58:09

ANALYSIS PARAMETERS

Spectrum file number	: 2496.0	Sample no.	: 2496.0
MCA unit number	: 1	ADC unit number	: 1.0
Detector number	: 1	Geometry number	: 1
Search threshold 1	: 3.0	Search threshold 2	: 3.0
Search FROM channel	: 100	Search TO channel	: 4095
Id energy tolerance	: 1.0	Order of background	: linear
Smoother factor	: 0	Random sum corr	: disabled
GRA parameter	: 1	Baseline channels	: disabled

Confidence levels LLD : 1.645 (95.0%) MDA : 1.645 (95.0%)

Analysis library : SPFF:LIBRARY:SPFANL.110 ✓
 Background subtract : disabled

Sample description : 3MEAR Analyzed by: BDM
 SCREWDRIVER G.E. TECH. TLR, ✓

Sample size : 1.000000E+00 EACH Conv. factor : 1.000
 Standard size : 1.000000E+00 EAC

Sample taken on : 22-NOV-96 at 19:47:35 ✓
 Collect started on : 22-NOV-96 at 19:47:35 ✓
 Decay time : 0.0 minutes

live time : 600.0 seconds real time : 600.0 seconds
 dead time : 0.00 %

Energy calibration used done on 12 / 15 / 1995
 Efficiency calibration used done on 12 / 21 / 1995

Grease found in screwdriver case

*** P E A K F I T R E P O R T *** 22-NOV-96 19:58:09

peak no.	nuclide(s)	centroid channel	energy keV	FWHM keV	net area counts	error %	gammas per second	erro %
1	GA-72 MN-54	1669.40	834.64	1.50	93.3	10.74	27.6	11.1
2	CO-60	2346.90	1173.34	1.60	57.6	13.81	23.8	14.0
3	CO-60	2665.25	1332.49	1.97	47.0	15.26	21.8	15.5

1

*** R A D I O N U C L I D E R E P O R T *** 22-NOV-96 19:58:09

Sample description

:SMEAR

Analyzed by

:BDM

number	nuclide	conf.value	-----	Activity (uCi/EACH)	-----
			measured		decay corrected	

1. Fission gases

	total	-----		total	-----
	0.0000E+00			0.0000E+00	

2. Iodines

	total	-----		total	-----
	0.0000E+00			0.0000E+00	

3. Particulates

1	MN-54	0.9943	7.4667E-04	+/-1.83E+01%	7.4667E-04	+/-1.83E+01%
2	CO-60	0.9975	6.1667E-04	+/-1.72E+01%	6.1667E-04	+/-1.72E+01%
	total		1.3633E-03		total	1.3633E-03

Errors quoted at 1.650 sigma (90.1%)

REPORTS FOR SPECTRUM 2497. 22-NOV-1996 20:03

 *
 * GAMMA SPECTRUM ANALYSIS *
 *

CANBERRA APOGEE V2.2

Canberra Industries, Inc.

22-NOV-96 20:02:53

ANALYSIS PARAMETERS

Spectrum file number	: 2497.0	Sample no.	: 2497.0
MCA unit number	: 1	ADC unit number	: 2.0
Detector number	: 2 ✓	Geometry number	: 1 ✓
Search threshold 1	: 2.0 ✓	Search threshold 2	: 3.0 ✓
Search FROM channel	: 100	Search TO channel	: 4095
Id energy tolerance	: 1.0	Order of background	: linear
Smoothing factor	: 0	Random sum corr	: disabled
GRA parameter	: 1	Baseline channels	: disabled

Confidence levels LLD : 1.645 (95.0%) MDA : 1.645 (95.0%)

Analysis library : SPFLIBRARY:SPFANL.110 ✓
 Background subtract : disabled ✓

Sample description : SMEAR ✓ Analyzed by: BDM ✓
 SCREWDRIVER CASE G.E. TLR. ✓

Sample size : 1.000000E+00 EACH ✓ Conv. factor : 1.000
 Standard size : 1.000000E+00 EAC

Sample taken on : 22-NOV-96 at 19:52:18 ✓
 Collect started on : 22-NOV-96 at 19:52:18 ✓
 Decay time : 0.0 minutes

live time : 600.0 seconds real time : 600.0 seconds
 dead time : 0.00 % ✓

Energy calibration used done on 1 / 2 / 1996
 Efficiency calibration used done on 1 / 11 / 1996

Garner

*** P E A K F I T R E P O R T *** 22-NOV-96 20:02:53

peak no.	nuclide(s)	centroid channel	energy keV	FWHM keV	net area counts	error %	gammas per second	error %
1	KR-88 MN-54	1670.02	835.08	1.67	237.3	6.62	44.0	7.2
2	CO-60	2347.25	1173.71	1.94	88.6	11.16	22.8	11.4
3	CO-60	2665.40	1332.78	2.05	82.4	11.49	24.0	11.8

1

*** R A D I O N U C L I D E R E P O R T *** 22-NOV-96 20:02:53

Sample description

:SMEAR

Analyzed by

:BDM

number	nuclide	conf.value	Activity (uCi/EACH)	
			measured	decay corrected

1. Fission gases

total	0.0000E+00	total	0.0000E+00
-------	------------	-------	------------

2. Iodines

total	0.0000E+00	total	0.0000E+00
-------	------------	-------	------------

3. Particulates

1	MN-54	0.9899	1.1901E-03	+/-1.19E+01%	1.1901E-03	+/-1.19E+01%
2	CO-60	0.9491	6.3121E-04	+/-1.36E+01%	6.3121E-04	+/-1.36E+01%
total			1.8213E-03		1.8213E-03	

Errors quoted at 1.650 sigma (90.1%)

REPORTS FOR SPECTRUM 2506. 22-NOV-1996 21:49

 *
 * GAMMA SPECTRUM ANALYSIS *
 *

CANBERRA APOGEE V2.2

Canberra Industries, Inc.

22-NOV-96 21:49:21

ANALYSIS PARAMETERS

Spectrum file number	: 2506.0	Sample no.	: 2506.0
MCA unit number	: 1	ADC unit number	: 2.0
Detector number	: 2 ✓	Geometry number	: 1 ✓
Search threshold 1	: 2.0 ✓	Search threshold 2	: 3.0 ✓
Search FROM channel	: 100	Search TO channel	: 4095
Id energy tolerance	: 1.0	Order of background	: linear
Smoothing factor	: 0	Random sum corr	: disabled
GRA parameter	: 1	Baseline channels	: disabled

Confidence levels LLD : 1.645 (95.0%) MDA : 1.645 (95.0%)

Analysis library : SPF\$LIBRARY:SPFANL.110 ✓
 Background subtract : disabled

Sample description : SMEAR ✓ Analyzed by: BDM
 20000 CPM ✓ *Gasket*

Sample size : 1.000000E+00 EACH ✓ Conv. factor : 1.000
 Standard size : 1.000000E+00 EAC

Sample taken on : 22-NOV-96 at 21:15:00 ✓
 Collect started on : 22-NOV-96 at 21:38:35 ✓
 Decay time : 23.6 minutes ✓

live time : 600.0 seconds real time : 607.0 seconds
 dead time : 1.15 % ✓

Energy calibration used done on 1 / 2 / 1996
 Efficiency calibration used done on 1 / 11 / 1996

*Thin Gasket
 MATBORINE*

*** P E A K F I T R E P O R T *** 22-NOV-96 21:49:21

peak no.	nuclide(s)	centroid channel	energy keV	FWHM keV	net area counts	error %	gammas per second	error %
1	BA-140	847.97	424.00	0.81	61.3	47.51	5.9	47.6
2	W-187	960.78	480.42	0.91	71.8	42.05	7.7	42.2
3	I-132	1013.08	506.57	0.76	9.43	30.67	1.13	30.6
4		1145.63	572.85	1.29	134.0	26.87	17.2	27.1
5	AG110M RE-89	1316.37	658.23	1.28	178.8	18.24	26.2	18.5
6		1503.96	752.04	1.17	16.51	32.18	2.81	32.2
7	CO-58	1621.84	810.99	1.46	193.1	13.15	34.8	13.4
8	GA-72 KR-88 MN-54	1669.96	835.05	1.56	45059.4	0.48	8351.0	2.8
9	I-134 AG110M	1769.48	884.81	1.67	151.6	15.60	39.7	15.8
10		1810.04	905.09	1.39	42.7	51.09	8.6	51.1
11		2060.97	1030.56	1.39	45.1	41.77	10.3	41.8
12	FE-59	2199.22	1099.69	1.79	99.5	20.78	24.1	20.9
13	ZH-65	2231.44	1115.80	1.72	916.2	3.92	225.0	4.6
14	CO-60	2346.78	1173.47	1.79	9616.9	1.04	2478.3	2.8
15	FE-59	2583.43	1291.80	2.06	71.0	14.31	20.0	14.5
16	CO-60	2665.47	1332.81	1.93	8704.8	1.08	2530.3	3.0

1

21:49:21

: SMEAR

= E(LPI)

ected

+

1. Fission gases

0.0000E+00

2. Iodines

0.0000E+00

3. Particulates

$$\mu = 2.03E \pm 0.1\%$$

3.0868E-01

These peaks were not identified

peak intensity (cps)

+

1.0264E+01 +- 69.05%

1.650 sigma (90.1%)

REPORTS FOR SPECTRUM 2507. 22-NOV-1996 21:50

 *
 * GAMMA SPECTRUM ANALYSIS *
 *

CANBEKRA APOGEE V2.2

Canberra Industries, Inc.

22-NOV-96 21:50:16

ANALYSIS PARAMETERS

Spectrum file number	: 2507.0	Sample no.	: 2507.0
MCA unit number	: 1	ADC unit number	: 1.0
Detector number	: 1 ✓	Geometry number	: 1 ✓
Search threshold 1	: 2.0 ✓	Search threshold 2	: 3.0 ✓
Search FROM channel	: 100	Search TO channel	: 4095
Id energy tolerance	: 1.0	Order of background	: linear
Smoothing factor	: 0	Random sum corr	: disabled
GRA parameter	: 1	Baseline channels	: disabled

Confidence levels LLD : 1.645 (95.0%) MDA : 1.645 (95.0%)

Analysis library : SPE\$LIBRARY:SPEANL.110
 Background subtract : disabled

Sample description : SMEAR Analyzed by: BSM
 4000 CPM *Gasket*

Sample size : 1.000000E+00 EACH Conv. factor : 1.000
 Standard size : 1.000000E+00 EAC

Sample taken on : 22-NOV-96 at 21:15:00
 Collect started on : 22-NOV-96 at 21:39:26
 Decay time : 24.4 minutes

live time : 600.0 seconds real time : 607.0 seconds
 dead time : 1.15 %

Energy calibration used done on 12 / 15 / 1995
 Efficiency calibration used done on 12 / 21 / 1995

*** P E A K F I T R E P O R T *** 22-NOV-96 21:50:16

peak no.	nuclide(s)	centroid channel	energy keV	FWHM keV	net area counts	error %	gammas per second	erro %
1	BA-139 CE-139	331.00	165.49	0.64	36.7	80.75	2.3	80.8
2		900.82	450.38	0.84	75.5	40.53	12.1	40.6
3	CO-58	1622.08	810.98	1.63	141.6	15.78	40.7	16.0
4	GA-72 KR-88 MN-54	1669.73	834.80	1.44	42745.6	0.49	12646.9	2.8
5		2016.15	1008.00	1.28	32.5	54.45	11.6	54.5
6	FE-59	2198.95	1099.38	1.86	102.2	18.94	39.6	19.1
7	ZN-65	2231.16	1115.48	1.70	315.9	7.90	124.0	8.3
8	CO-60	2346.47	1173.13	1.67	5029.8	1.14	3308.9	2.8
9	FE-59	2583.59	1291.67	1.70	53.5	16.63	24.1	16.8
10	CO-60	2665.14	1332.44	1.74	7224.5	1.18	3338.0	3.0

1

*** R A D I O N U C L I D E R E P O R T *** 22-NOV-96 21:50:16

Sample description
Analyzed by:SMEAR
:BDM

number	nuclide	conf.value	Activity (uCi/EACH)	
			measured	decay corrected

+

1. Fission gases

total	0.0000E+00	total	0.0000E+00
-------	------------	-------	------------

2. Iodines

total	0.0000E+00	total	0.0000E+00
-------	------------	-------	------------

3. Particulates

1	MN-54	0.9999	3.4225E-01	+/-4.76E+00%	3.4226E-01	+/-4.76E+00%
2	CO-58	0.9919	1.1071E-03	+/-2.65E+01%	1.1073E-03	+/-2.65E+01%
3	FE-59	0.9303	1.6377E-03	+/-2.10E+01%	1.6381E-03	+/-2.10E+01%
4	CO-60	0.9984	9.0044E-02	+/-3.47E+00%	9.0044E-02	+/-3.47E+00%
5	ZN-65	0.9998	6.6111E-03	+/-1.37E+01%	6.6114E-03	+/-1.37E+01%
total			4.4165E-01		total	4.4166E-01

27%
1025%
102%

These peaks were not identified

number	channel	energy	peak intensity (cps)
--------	---------	--------	----------------------

+

1	331.0	165.49	2.3108E+00 +/- 133.39% BA-139 CE-139
2	900.8	450.38	1.2114E+01 +/- 67.10%
5	2016.2	1008.00	1.1565E+01 +/- 89.93%

Errors quoted at 1.650 sigma (90.1%)

Contaminated Items Found at General Electric

October 1, 1996

ITEMS DIRECT FRISKED

<u>Item Description</u>	<u>Contamination Level (dpm)</u>	<u>Conversion Factor</u>	<u>Activity (uCi)</u>
Channel Lock Vise Grips	2800	4.51E-07	1.26E-03
Needle Nose Pliers	6000	4.51E-07	2.70E-03
Flashlight (Magenta)	1400	4.51E-07	6.31E-04
Snips with Tape	14000	4.51E-07	6.31E-03
Brass Components	2200	4.51E-07	9.91E-04
RTV Sealant	2000	4.51E-07	9.01E-04
Crescent Wrench	2800	4.51E-07	1.26E-03
Hex Head	4000	4.51E-07	1.80E-03
Wood File	3000	4.51E-07	1.35E-03
TOTAL			1.72E-02

SMEARS

<u>Smear Number</u>	<u>Item Smeared</u>	<u>Activity (uCi)</u>
1	Screwdriver	1.36E-03
2	Screwdriver Case	1.82E-03
3	Gasket	3.09E-01
4	Gasket	4.42E-01
TOTAL		7.54E-01

Total Activity - Tools and Smears

7.71E-01

ISOTOPIC ANALYSIS OF SMEARS AT GENERAL ELECTRIC

October 1, 1996

SMEAR 1 - SCREWDRIVER

<u>ISOTOPE</u>	<u>Activity (uCi)</u>	<u>10 CFR 20 LIMIT (uCi)</u>	<u>% OF LIMIT</u>
MN-54	7.47E-04	1.00E+02	7.47E-04
CO-60	6.17E-04	1.00E+00	6.17E-02
TOTAL	1.36E-03		6.24E-02

SMEAR 2 - SCREWDRIVER CASE

<u>ISOTOPE</u>	<u>Activity (uCi)</u>	<u>10 CFR 20 LIMIT (uCi)</u>	<u>% OF LIMIT</u>
MN-54	1.19E-03	1.00E+02	1.19E-03
CO-60	6.31E-04	1.00E+00	6.31E-02
TOTAL	1.82E-03		6.43E-02

SMEAR 3 - GASKET

<u>ISOTOPE</u>	<u>Activity (uCi)</u>	<u>10 CFR 20 LIMIT (uCi)</u>	<u>% OF LIMIT</u>
MN-54	2.26E-01	1.00E+02	2.26E-01
CO-58	9.46E-04	1.00E+02	9.46E-04
FE-59	1.22E-03	1.00E+01	1.22E-02
CO-60	6.76E-02	1.00E+00	6.76E+00
ZN-65	1.20E-02	1.00E+01	1.20E-01
AG-110	8.89E-04	1.00E+01	8.89E-03
TOTAL	3.09E-01		7.13E+00

SMEAR 4 - GASKET

<u>ISOTOPE</u>	<u>Activity (uCi)</u>	<u>10 CFR 20 LIMIT (uCi)</u>	<u>% OF LIMIT</u>
MN-54	3.42E-01	1.00E+02	3.42E-01
CO-58	1.11E-03	1.00E+02	1.11E-03
FE-59	1.64E-03	1.00E+01	1.64E-02
CO-60	9.00E-02	1.00E+00	9.00E+00
ZN-65	6.61E-03	1.00E+01	6.61E-02
TOTAL	4.42E-01		9.43E+00

ATTACHMENT 4

RADIOLOGICAL EVALUATION OF DRUM PERFORMED BY GENERAL ELECTRIC

GE-NUCLEAR ENERGY
1790 DOCK STREET
MEMPHIS, TN 38113

Rich Jones - 901)774-1922 Dial Comm: 8*964-4003
Joe Davidson - 901)774-1415 Dial Comm: 8*964-4005
Larry Hawkins - 901)774-1238 Dial Comm: 8*964-4004
Bobby Newell - 901)774-9322 Dial Comm: 8*964-4001
Cassandra Ferby - 901)774-9328 Dial Comm: 8*964-4002
Bob Langford - 901)774-9370 Dial Comm: 8*964-4000

Fax #: 901)774-9517
Dial Comm: 8*964-4200

FAX COVER SHEET

Date: 2/10/97

Number of Pages (including cover sheet) 2

TO: ERIC TSCHMUTZ @ K.O.P.

FROM: KEVIN K. BLOCK

COMMENTS: HERE IS THE GAMMA SPEC. RESULTS
OF THE MATERIAL I/A THE BLUE POLY DEWM. THERE WERE
3 CRACKS IN THE DEWM. ONE WAS CLEAN, THE OTHER
A HAD FIXED CONTAMINATION. APPROX. 2K-8K DIRECT
FRISK. IF YOU NEED MORE INFO CONTACT MYSELF @
(901) 942-1366 OR MARTY BOURQUIN @ (901) 942-2206.

Aptec PCMCIA/WIN Spectrum
Feb/10/1997 11:22:59AM

HEADER INFORMATION in H1658.S0 WELDING MATERIALS (GE)

Identification		Acquisition	
User	: Zhu	Started	: Feb/10/1997 10:24:48AM
MCArd	: 1	Stopped	: Feb/10/1997 10:41:28AM
Detector	: HP Ge	True	: 1000.802 sec
Geometry	: 0.5 L Poly Jar	Live	: 1000.000 sec
Sample	: H1658	Dead	: 0.080 %
Channels	: 8192	Gross Count	: 17125 counts
		Gross Rate	: 17.125 cps

Sample

Sampled Feb/10/1997 10:24:48AM
Sample Quantity 1 ± 0

Energy Calibration Feb/10/1997 10:24:08AM 9608030.S0
Efficiency Calibration Dec/4/1996 9:14:55AM RD96121.S0
Isotope Library isotope.lib

Name	Energy keV	Activity Flag dpm	Error dpm	MDA dpm	Error dpm
Co-60	1173.23	1.862e+004	± 1569	509.9	± 30.21
Co-60	1332.51	1.708e+004	± 1704	317.3	± 25.81
Weighted Average		1.785e+004	± 1643		
Grand Total		1.785e+004	± 3282		

Activity (dpm) at Feb/10/1997 10:24:48AM
Divided by Sample Quantity 1 ± 0
Errors Quoted at 2 Sigma
MDA's Quoted at 1.645 Sigma

Flags Meaning

b	Background Subtracted
s	Fitted Singlet
m	Fitted Multiplet
+	Forced MDA from identification
<	MDA value
?	Activity shown is less than MDA value
>	Activity overflow (too many half lives elapsed)



UNITED STATES
NUCLEAR REGULATORY COMMISSION
REGION I
475 ALLENDALE ROAD
KING OF PRUSSIA, PENNSYLVANIA 19406-1415

FEB 18 1997

Docket No. 99990001

General License

Eric Tschantre
Facilities Manager
GE Welding & Machining Services
302 Hansen Access Road
King of Prussia, Pennsylvania 19406

SUBJECT: INSPECTION NO. 99990001/97-001

Dear Mr. Tschantre:

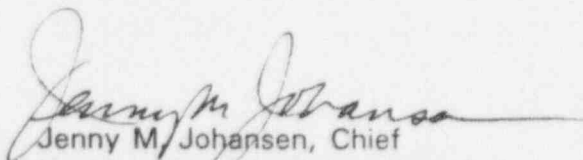
On January 14, 1997, Duncan White of this office conducted a safety inspection at the above address of activities authorized by the NRC license listed above. The inspection was limited to the November 1996 incident involving the discovery of contaminated equipment at your facility. The findings of the inspection were discussed with you at the conclusion of the inspection. This also refers to the telephone conversations on February 5 and 12, 1997 between you and Duncan White of this office. A copy of the NRC inspection report is enclosed

Within the scope of this inspection, no violations were identified.

In accordance with Section 2.790 of the NRC's "Rules of Practice," Part 2, Title 10, Code of Federal Regulations, a copy of this letter will be placed in the Public Document Room. No reply to this letter is required.

Your cooperation with us is appreciated.

Sincerely,


Jenny M. Johansen, Chief
Nuclear Materials Safety Branch 3
Division of Nuclear Materials Safety

Enclosure:
Inspection Report No. 99990001/97-001

cc:
Commonwealth of Pennsylvania

E. Tachantre
GE Welding & Machining Services

-2-

Attachments:

1. Radiological Survey Performed by
General Electric on March 29, 1996
2. Radiological Survey Performed by
General Electric on September 23, 1996
3. Radiological Survey Performed by
PECO on November 22, 1996
4. Radiological Evaluation of Drum Performed by
General Electric

U.S. NUCLEAR REGULATORY COMMISSION
REGION I

INSPECTION REPORT

Report No. 99990001/97-001
Docket No. 99990001
License No. General License
Licensee: GE Welding and Machining Services
302 Hansen Access Road
King of Prussia, PA 19406
Facility Name: GE Technical Service Center
Inspection At: 302 Hansen Access Road
King of Prussia, PA
Inspection Conducted: January 14, 1997

Inspector: Duncan White 2/12/97
Duncan White
Senior Health Physicist
date

Approved By: Jenny M. Johansen 2/13/97
Jenny M. Johansen, Chief
Nuclear Materials Safety Branch 3
Division of Nuclear Materials Safety
date

Inspection Summary: Special announced safety inspection conducted on January 14, 1997 (Inspection Report No. 99990001/97-001).

Areas Inspected: Organization and scope of activities; review of Peach Bottom contamination incident; independent measurements; and actions taken by licensee.

Results: No violations were identified. One drum containing welding cables was identified with elevated radiation levels. The licensee shipped this drum to their licensed facility in Memphis, Tennessee to identify the cause of the elevated radiation levels.

DETAILS

1. Persons Contacted

- * Eric Tschantre - GE Facilities Manager for King of Prussia facility
- Joseph Plantz - GE Mission Manager for King of Prussia facility
- Joseph Livingstone - GE representative for Peach Bottom and Limerick
(by telephone)
- Hal Trimble - Radiation Protection Manager, Peach Bottom Atomic Power Station
(by telephone)

* present at exit interview

2. Organization and Scope of Activities

The General Electric (GE) Technical Services facility in King of Prussia is the field services center for GE's welding and machining group. The facility dispatches approximately 30 welding systems and plus 20 to 30 other machining tools to client facilities around the world. The welding systems are primarily used in nuclear power plants due to the system's ability to be remotely operated and controlled with the aid of video cameras. The welding systems consist of three primary components: the power supply, cables and welding head.

The King of Prussia facility does not hold a license for radioactive materials. Equipment used at nuclear facilities are surveyed at the client's plant for release for unrestricted use. GE's facility in Memphis, Tennessee has an Agreement State licensee which permits radioactive contaminated equipment on-site. Welding units used outside the United States and units from domestic facilities that are not surveyed are first sent through the Memphis facility prior to shipment to King of Prussia.

The King of Prussia facility has utilized the health physics staff from GE's Nuclear Energy Production facility in Wilmington, North Carolina to perform two radiation surveys. These surveys of the King of Prussia facility were performed on March 29, 1996 and September 23, 1996. The results of these surveys are found in Attachment 1 and 2 of this report.

The surveys performed by GE's Wilmington staff and the diversion of equipment through their Memphis, Tennessee facility was in response to GE's concern that welding equipment with radiological contamination was found on their equipment from an overseas location and the GE's clients requiring that equipment bought into their facilities have *no* radiological contamination.

No safety concerns were identified.

3. Review of Peach Bottom Contamination Incident

On November 22, 1996, a GE technician was cleaning out the drawer of power supply unit in the King of Prussia facility that was previously used at PECO's Peach Bottom Nuclear Generating Station during September 1996. One of the items inside the drawer was a plastic bag marked as radioactive. The bag contained two gaskets for the welding head. GE contacted PECO and a health physics supervisor was dispatched to the King of Prussia facility. In addition to the contaminated gaskets, the PECO survey identified several tools in the drawer to be contaminated. Survey of personnel and other areas of the GE facility did not identify the presence of radiological contamination. The contaminated gaskets and tools were returned to Peach Bottom. A summary of the PECO survey is found as Attachment 3 to this report.

The GE representative stated that the power supply unit was located inside a contaminated zone while at Peach Bottom due to the limited floor space. The power supply for the welding head is normally maintained outside the contaminated zone with only the cables and the welding head located inside contaminated zone. According to PECO, the power supply were taken to the refueling floor but not used at Peach Bottom. The power supply was released from Peach Bottom on September 27, 1996.

The release of the power supply for the welding system from the contaminated area at Peach Bottom is still under review by PECO and Region I's Division of Reactor Safety. The inspector noted that the contaminated tools and bag were located in a drawer that according to the GE representative, is used as a work surface. The drawer, when opened, has a cover that hides the contents in the drawer from view and facilitates its use as a work surface. It is only when the cover is lifted, that the contents of the drawer can be seen.

No safety concerns were identified.

4. Independent Measurements

The inspector surveyed the work and storage areas of the Technical Center with a Ludlum Model 44-10 5 centimeter (cm) by 5 cm NaI(Tl) detector coupled to a Ludlum Model 2221 ratemeter/scaler (NRC Serial No. 054828) last calibrated on March 14, 1996. The detector used by the inspector is capable of detecting gamma photons with energies greater than 100 keV at or near environmental levels. The average background for this detector is 7,000 to 10,000 counts per minute (cpm).

Wipes of removable contamination were also taken at various locations around the facility. Each wipe covered an area of approximately 100 square centimeters. Each wipe was counted for 10 minutes on a Tennelec Model LB5100 low background alpha/beta counter at the Region I offices. The counter's efficiency for gross alpha and gross beta was 21.1% and 26.5%, respectively.

The radiation survey of the facility identified one drum with elevated gamma radiation levels. All other equipment, work and storage areas had background radiation levels. The drum with elevated radiation levels (marked as "CS-40-13") contained cables used to connect the power supply to the welding head. The inspector identified one spot on the drum with a maximum reading of 27,000 cpm. The elevated radiation levels were isolated to the one area of the drum.

All wipes taken at the facility did not indicate the presence of removable contamination. The results of the wipes are listed in the table below. Results are reported in units of disintegration per minute per 100 square centimeters (dpm/100 cm²) at an uncertainty of one sigma.

Location	Gross Alpha	Gross Beta
Drum No. CS-40-13; hotspot	1.4 ± 1.1	0 ± 3
Drum No. CS-40-13 180 degrees from hotspot	0 ± 1.7	0.4 ± 3
Drum No. CS-40-13; lid	1 ± 1	-0.4 ± 3
Drum No. CS-40-22	1.4 ± 1.1	-2 ± 3
Shipping Container No. 2	1.4 ± 1.0	0.4 ± 3
Shipping Container No. 3	2.8 ± 1.3	0.4 ± 3
Welding Power Supply Serial No. 1179	1 ± 1	4 ± 5
Welding Power Supply Serial No. 839	1.4 ± 1	-3 ± 3
Welding Power Supply Serial No. 1022	1 ± 1	1 ± 3
Loading dock ramp	1 ± 1	-1 ± 3
Shipping area floor	-5 ± 5	0 ± 3
Floor near CS-40-13	4 ± 1	-0.4 ± 3

5. Actions Taken by Licensee

As a result of the findings of this inspection and previous incidents, the general licensee has taken the following steps in response to the increase occurrences of radiological contamination on the welding and machining equipment.

- a. Welding units used outside the United States and units from domestic facilities that are not surveyed are first sent through the Memphis facility prior to shipment to King of Prussia.
- b. Bar codes affixed to the exterior of shipping containers to track the movement of equipment between client facilities.
- c. Two radiation and contamination surveys in 1996 of the King of Prussia facility by GE's health physics group from the Wilmington, North Carolina facility.
- d. Purchase of radiation survey equipment for use at the King of Prussia facility.
- e. Development of procedures and training of King of Prussia personnel to use survey equipment by GE's Wilmington health physics group.
- f. The drum identified during this inspection with elevated radiation levels was shipped by commercial carrier as a limited quantity package to GE's Memphis facility for evaluation. The evaluation identified fixed Cobalt 60 contamination on two of the cables in the drum. The results of the licensee's survey are found in Attachment 4 of this report.

The inspector reviewed the actions taken by the general licensee and determined that they would minimize the potential for the spread of radioactive materials and inadvertent exposure of personnel at the King of Prussia facility.

No safety concerns were identified.

6. Exit Interview

The inspection findings were discussed with the individual identified in Section 1 of this report.

ATTACHMENT 1

RADIOLOGICAL SURVEY PERFORMED BY GENERAL ELECTRIC ON MARCH 29, 1996



GE Nuclear Energy

NUCLEAR ENERGY PRODUCTION
General Electric Company, M/C H96
P. O. Box 780, Wilmington, NC 28402
910 675-5531

April 2, 1996

S. P. Murray, Manager
Nuclear Safety

Subject: King of Prussia TSC Health Physics Survey

Per your instructions, a survey of the KOP TSC was performed on 3/29/96 by R. G. Lewis. Using two GM survey instruments, a series of dose rate and contamination checks were performed in accordance with accepted GENE practices and action levels. All items surveyed displayed background activity levels. There was no hint of any radiation/contamination on any item checked. I've included attachments which specifically describe the surveys performed. Please note that 37 "product" containers were surveyed. Additionally, people, equipment, tools and a variety of other items were also checked. At the conclusion of my survey, I notified E. Tschantre that his Facility and items within were "clean" and released.

Additionally, I would like to thank Eric and his staff for the help and courtesy I received while at TSC.

Lewis
R. G. Lewis
Nuclear Safety

Post-It® Fax Note	7671	Date	4/3/96	# of pages	3
To	Eric Tschantre		From	R.G. Lewis	
Co./Dept.			Co.		
Phone #			Phone #		
Fax #			Fax #		

SERVICES FACILITY

** SRM200/HP210
ASP-1/HP260
E-520/HP270

BKG=115 C/M - EFF = 13%
BKG = .02 mrh/h
BKG = .04 mr/hr
(= 2-300 cpm)

CAL DATE: 12/5/95
CAL DATE: 11/7/95
CAL DATE: 11/7/95

<u>CONTAINER #</u>	<u>MR/HR By CONTACT</u>	<u>CPM By CONTACT</u>	<u>CPM By SWIPE</u>
1	BKG	BKG	BKG
2	BKG	BKG	BKG
3	BKG	BKG	BKG
4	BKG	BKG	BKG
5	BKG	BKG	BKG
6	BKG	BKG	BKG
7	BKG	BKG	BKG
8	BKG	BKG	BKG
9	BKG	BKG	BKG
10	BKG	BKG	BKG
11	BKG	BKG	BKG
12	BKG	BKG	BKG
13	BKG	BKG	BKG
14	BKG	BKG	BKG
15	BKG	BKG	BKG
16	BKG	BKG	BKG
17	BKG	BKG	BKG
18	BKG	BKG	BKG
19	BKG	BKG	BKG
20	BKG	BKG	BKG
21	BKG	BKG	BKG
22	BKG	BKG	BKG
23	BKG	BKG	BKG
24	BKG	BKG	BKG
25	BKG	BKG	BKG
26	BKG	BKG	BKG
27	BKG	BKG	BKG
28	BKG	BKG	BKG
29	BKG	BKG	BKG
30	BKG	BKG	BKG
31	BKG	BKG	BKG
32	BKG	BKG	BKG
33	BKG	BKG	BKG
34	BKG	BKG	BKG
35	BKG	BKG	BKG
36	BKG	BKG	BKG
37	BKG	BKG	BKG

MISCELLANEOUS ITEMS SURVEYED

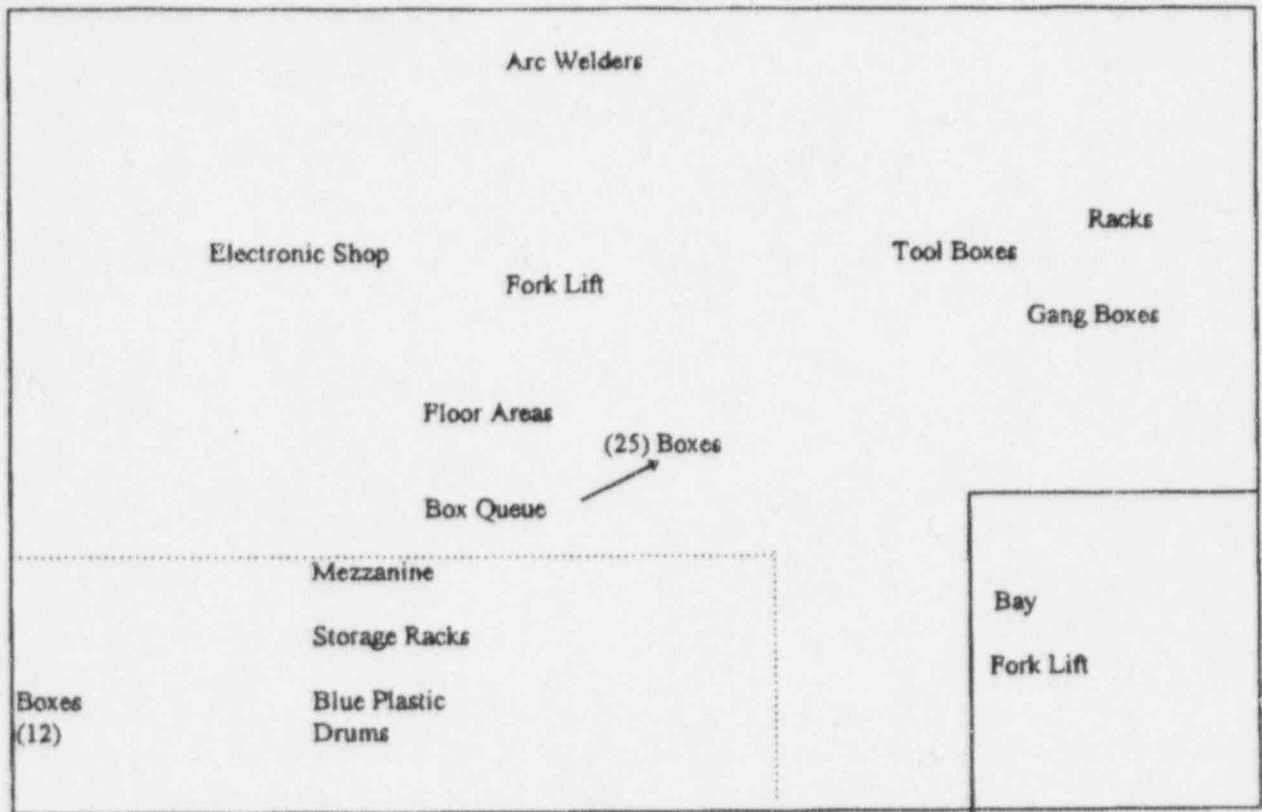
36" Guide Rings
2 Fork Lifts
Heliarc Welder
Mezzanine Floor Areas
"Blue" plastic drums
Shipping Bay
(1) Employee; Handling containers

Weld Head
Tool Boxes
Main Floor Areas
Gang Boxes/containers
Storage Racks - Upstairs & Downstairs
Electronic Shop

* All Swipes and Direct Readings = BKG

** Swipes rechecked at GE Wilmington

SERVICES FACILITY



ATTACHMENT 2

RADIOLOGICAL SURVEY PERFORMED BY GENERAL ELECTRIC
ON SEPTEMBER 23, 1996



GE Nuclear Energy

NUCLEAR ENERGY PRODUCTION
RADIATION PROTECTION M/C H96
P. O. Box 780, Wilmington, NC 28402

cc: B. Robinson
A. Mabry
J. Sependa
D. Barbour
E. Tschantre-KOP
E. Rouse

24 September 1996

L. Paulson
Acting Manager
Nuclear Safety

Subject: King of Prussia TSC Health Physic Survey

A survey of the KOP TSC was performed on 9/23/96 by R. G. Lewis and E. L. Rouse.

Using GM survey instruments, dose rate measurements were performed. Contamination swipes were also taken.

Items and areas surveyed included equipment, shipping containers, equipment in the containers, shop areas and personnel.

All items surveyed were within GENE criteria for "Unconditional Release". Attachments are included describing the specific surveys performed.

At the conclusion of the surveys, E. Tschantre was notified that his facility and items were "Clean and Released". All actions were reviewed with the Wilmington H. P. Staff.

R. G. Lewis
Nuclear Safety

KING OF PRUSSIA
SERVICES FACILITY

Scalar SRM200/RD14	BKG = 4.0 C/M - EFF = 29%	CAL DATE: 9/21/96
E-520/HP270 # 967	BKG = 0.05 to 0.06 mr/hr	CAL DATE: 6/6/96
E-520/HP270 #1196	BKG = .04 mr/hr	CAL DATE: 6/6/96
RM14/HP210 #1303	BKG = 60 cpm	CAL DATE: 8/7/96

ITEMS SURVEYED

RESULTS

	<u>By</u> <u>Contact</u>	<u>By</u> <u>Swipe</u>	<u>α Swipe</u>
* 3 Boxes and contents to Peachbottom	BKG	BKG	BKG
Fork Lift	BKG	BKG	BKG
Plastic Drums to Oyster Creek and Nine Mile Point	BKG	BKG	BKG
Personnel	BKG	BKG	BKG
4 Welders	BKG	BKG	BKG
Facility Floors	BKG	BKG	BKG
Mezzanine Areas	BKG	BKG	BKG
32 Drums/Rows of boxes on mezzanine	BKG	BKG	BKG
Shipping Bay	BKG	BKG	BKG
Forsmark Containers	BKG	BKG	BKG
Gang Boxes	BKG	BKG	BKG
Job Box from Hake	BKG	BKG	BKG
Electronics Shop	BKG	BKG	BKG
Miscellaneous Equipment	BKG	BKG	BKG

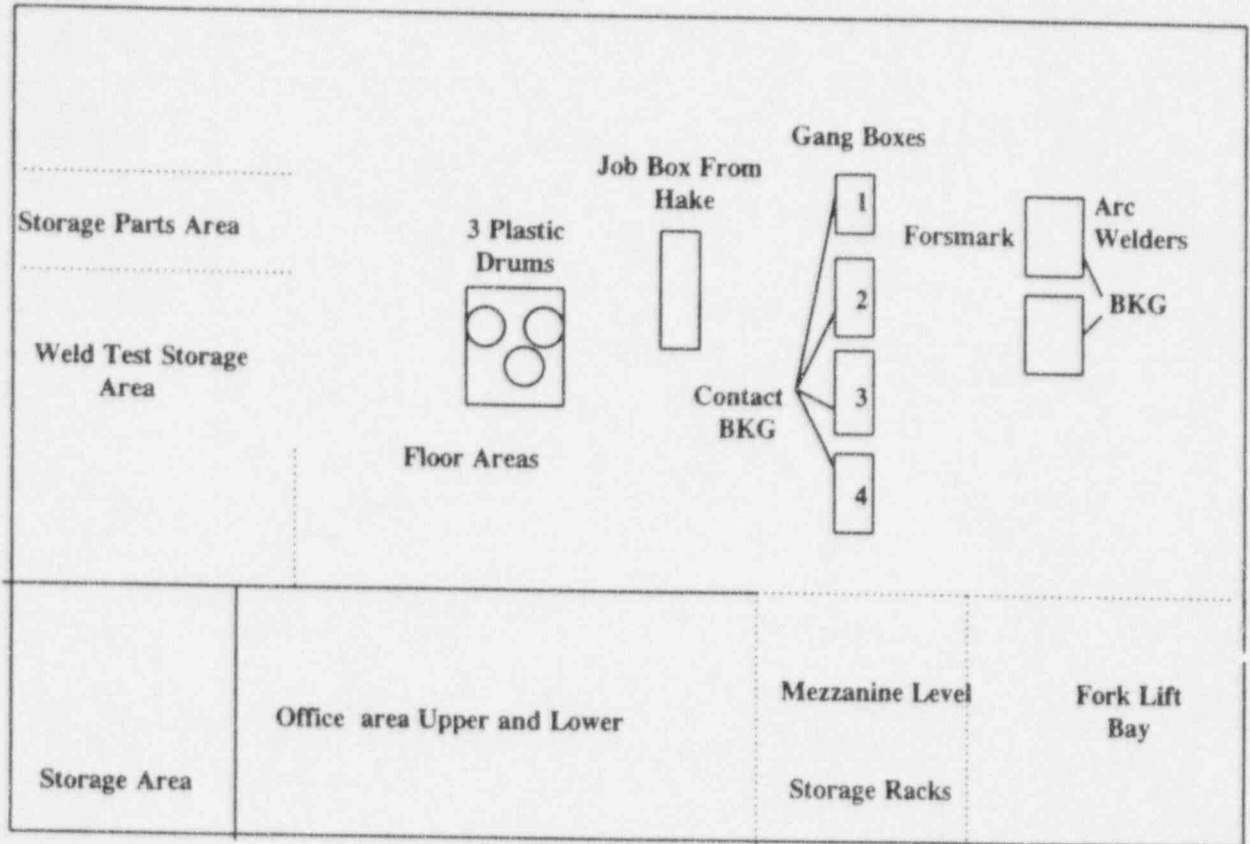
* Box #33 to Peachbottom had one reading of 0.12 mr/hr @ contact. Still within GENE guidelines for free release.

** The above surveys consist of hundreds of contact readings and swipes taken.

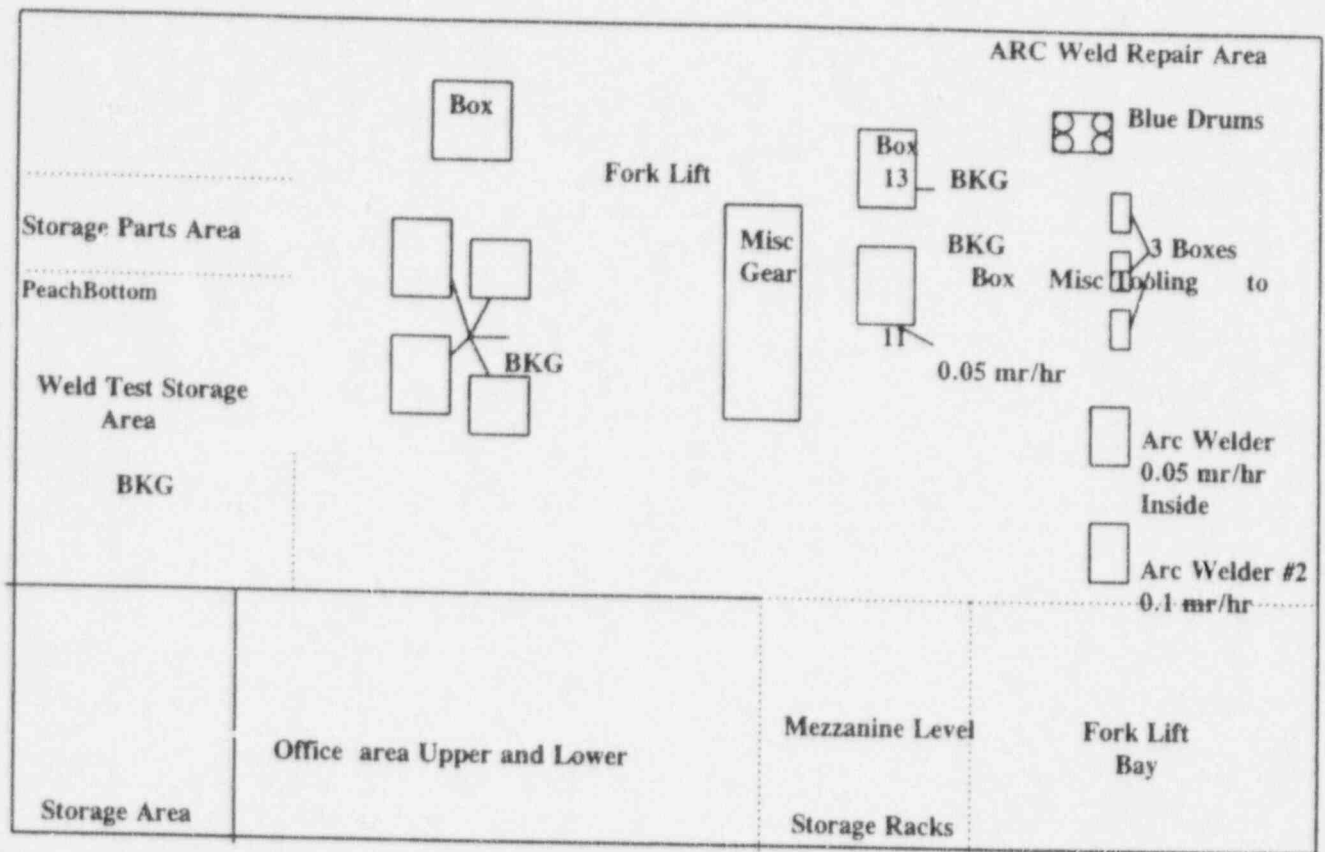
R. G. Lewis
Nuclear Safety

E. L. Rouse
Radiation Protection

AREA SURVEY (Continued)



MAIN SHOP AREA



ATTACHMENT 3

RADIOLOGICAL SURVEY PERFORMED BY PECO ON NOVEMBER 22, 1996

PEAPS - ITEMIZED RADIATION - CONTAMINATION - SURVEY RECORD

RWP NO. NA SURVEY NO. _____ DATE 11/22/96 TIME 14:00 SURVEYOR Bill Downey
 UNIT 2 () UNIT 3 () RW () ELEV: _____ DESCRIPTION: _____ AREA #: _____
 REASON FOR SURVEY GE Tech Center - Tools ROUTINE () SPECIAL ☒ UPDATE ()

NO.	ITEM DESCRIPTION	DR/HR		MRAD/HR		CONTAMINATION	
		CONTACT	18"	CONTACT	18"	CONTACT CPM	cpm/100cm ²
1	Gasket	2		8			<1000
2	Gasket					4000	<1000
3	Gasket					<100	<1000
4	Wood File					300	<1000
5	Hex head screw driver					400	2000
6	Hex head screw driver					200	1400
7	RTV Sealant					200	<1000
8	Base Components					220	<1000
9	SNIPS WITH TAPE					1400	<1000
10	Flash light Magnets					140	<1000
11	Needle Nose Pliers					600	<1000
12	Vise Grips					380	<1000
13	CURRENT Wrench					280	<1000
14	Zingster Rods					400	<1000
15	Continental Edison Pro					<100	<1000
16	G/F PAPER					<100	<1000
17	Hex head screw drivers (9)					<100	<1000
18	Rolling Knife Magnets					<100	<1000
19	SCREW DRIVER CASE					<100	<1000
20	SCREW DRIVER Magnets					<100	<1000
21	SCREW DRIVER					<100	<1000
22							
23							
24							
25							
26							
27							
28							
29							
30							
31							
32							
33							
34							
35							
36							
37							
38							
39							
40							

REMARKS: All tools returned To TechBottom.Survey of Transport Box 4.5 mS Cont.<1000 CPM/100cm²

INST.	S.N.	CAL. DUE
	FB LGS	FB LGS
RM14	1872/2217	6/13/97 - 8-31-97
R02	3554	11-30-96

REVIEWED BY: _____ DATE: 1 / 1

PAGE: _____

PBAPS - ITEMIZED RADIATION - CONTAMINATION - SURVEY RECORD

RWP NO. NA SURVEY NO. _____ DATE 11/22/96 TIME 16:00 SURVEYOR Bill Downey
 UNIT 2 () UNIT 3 () RW () ELEV: _____ DESCRIPTION: GF Tool Center AREA #: _____
 REASON FOR SURVEY AFTER Tools were bagged up and returned ROUTINE () SPECIAL (X) UPDATE ()

NO.	ITEM DESCRIPTION	DR/HR		RAD/HR		CONTAMINATION	
		CONTACT	18"	CONTACT	18"	CONTACT	don/100cm ²
1	DRAPER Holding Tools					<100	<1000
2	Welding Machine					<100	
3	Q. Storage AREA					<100	
4	Table					<100	
5	FLOOR					<100	
6	Wash Shop Tools (2nd Box)					<100	
7	TRASH					<100	
8	TRASH CAN					<100	
9	Shop FLOOR					<100	
10	Shop Wash Table					<100	
11	Shop Floor					<100	V 5/100/LAS
12							
13							
14							
15							
16							
17							
18							
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36							
37							
38							
39							
40							

REMARKS:

INST.	S.N.	CAL. DUE

REVIEWED BY: _____ DATE: 1/1

PAGE 1 of 1

REPORTS FOR SPECTRUM 2496. 22-NOV-1996 19:58

*
* GAMMA SPECTRUM ANALYSIS *
*

CANBERRA APDGBE V2.2

Canberra Industries, Inc.

22-NOV-96 19:58:09

ANALYSIS PARAMETERS

Spectrum file number	: 2496.0	Sample no.	: 2496.0
MCA unit number	: 1	ADC unit number	: 1.0
Detector number	: 1✓	Geometry number	: 1✓
Search threshold 1	: 2.0✓	Search threshold 2	: 3.0✓
Search FROM channel	: 100	Search TO channel	: 4095
Id energy tolerance	: 1.0	Order of background	: linear
Smoothing factor	: 0	Random sum corr	: disabled
GRA parameter	: 1	Baseline channels	: disabled

Confidence levels LLD : 1.645 (95.0%) MDA : 1.645 (95.0%)

Analysis library : SPFFLIBRARY:SPFPANL.110 ✓
Background subtract : disabledSample description : 3MEAR Analyzed by: BDM ✓
SCREWDRIIVER G.E. TECH. TLR. ✓Sample size : 1.000000E+00 EACH Conv. factor : 1.000
Standard size : 1.000000E+00 EACSample taken on : 22-NOV-96 at 19:47:35 ✓
Collect started on : 22-NOV-96 at 19:47:35 ✓
Decay time : 0.0 minuteslive time : 600.0 seconds real time : 600.0 seconds
dead time : 0.00 % ✓Energy calibration used done on 12 / 15 / 199.
Efficiency calibration used done on 12 / 21 / 1995

GREASE found in screwdriver case

*** P E A K F I T R E P O R T *** 22-NOV-96 19:59:09

peak no.	nuclide(s)	centroid channel	energy keV	FWHM keV	net area counts	error %	gammas per second	error %
1	GA-72 MN-54	1669.40	834.64	1.50	93.3	10.74	27.6	11.1
2	CO-60	2346.90	1173.34	1.60	57.6	13.81	33.8	14.0
3	CO-60	2665.25	1332.49	1.97	47.0	15.26	21.8	15.5

1

*** R A D I O N U C L I D E R E P O R T *** 22-NOV-96 19:58:09

Sample description :SMEAR
Analyzed by :EDM

number	nuclide	conf.value	-----	Activity (uCi/EACH)	-----
		measured		decay corrected	

1. Fission gases

```
total      0.00000E+00      total      0.00000E+00
```

2. Iodines

```
total    0.00000E+00      total    0.00000E+00
```

3. Particulates

1	MN-54	0.9943	7.4667E-04	+ -1.83E+01%	7.4667E-04	+ -1.83E+01%
2	CO-60	0.9975	6.1667E-04	+ -1.72E+01%	6.1667E-04	+ -1.72E+01%
			-----		-----	
		total	1.3633E-03		total	1.3633E-03

Errors quoted at 1.650 sigma (90.1%)

REPORTS FOR SPECTRUM 2497. 22-NOV-1996 20:03

 *
 * GAMMA SPECTRUM ANALYSIS *
 *

CANBERRA APOGEE V2.2

Canberra Industries, Inc.

22-NOV-96 20:02:53

ANALYSIS PARAMETERS

Spectrum file number	: 2497.0	Sample no.	: 2497.0
MCA unit number	: 1	ADC unit number	: 2.0
Detector number	: 2 ✓	Geometry number	: 1 ✓
Search threshold 1	: 2.0 ✓	Search threshold 2	: 3.0 ✓
Search FROM channel	: 100	Search TO channel	: 4095
Id energy tolerance	: 1.0	Order of background	: linear
Smoothing factor	: 0	Random sum corr	: disabled
GRA parameter	: 1	Baseline channels	: disabled

Confidence levels LLD : 1.645 (95.0%) MDA : 1.645 (95.0%)

Analysis library : SPFH\$LIBRARY:SPFANL.110 ✓
 Background subtract : disabled ✓

Sample description : SMEAR ✓ Analyzed by: EDM ✓
 SCREWDRIVER CASE G.E. TLR. ✓

Sample size : 1.000000E+00 EACH ✓ Conv. factor : 1.000
 Standard size : 1.000000E+00 EAC

Sample taken on : 22-NOV-96 at 19:52:18 ✓
 Collect started on : 22-NOV-96 at 19:52:18 ✓
 Decay time : 0.0 minutes ✓

live time : 600.0 seconds real time : 600.0 seconds
 dead time : 0.00 % ✓

Energy calibration used done on 1 / 2 / 1996
 Efficiency calibration used done on 1 / 11 / 1996

George

*** P E A K F I T R E P O R T *** 22-NOV-96 20:02:53

peak no.	nuclide(s)	centroid channel	energy keV	FWHM keV	net area counts	error %	gammas per second	error %
1	KR-88 MN-54	1670.02	935.08	1.67	237.3	6.62	44.0	7.2
2	CO-60	2347.25	1173.71	1.94	88.6	11.16	22.8	11.4
3	CO-60	2665.40	1332.78	2.05	82.4	11.49	24.0	11.8

*** RADIO NUCLIDE REPORT *** 22-NOV-96 20:02:53

Sample description :SMEAR
 Analyzed by :BDM

number	nuclide	conf.value	measured	Activity (uCi/EACH)	decay corrected
--------	---------	------------	----------	-----------------------	-----------------

1. Fission gases

total	0.0000E+00	total	0.0000E+00
-------	------------	-------	------------

2. Iodines

total	0.0000E+00	total	0.0000E+00
-------	------------	-------	------------

3. Particulates

1	MN-54	0.9899	1.1901E-03	+/-1.19E+01%	1.1901E-03	+/-1.19E+01%
2	CO-60	0.9491	6.3121E-04	+/-1.36E+01%	6.3121E-04	+/-1.36E+01%
total			1.8213E-03		total	1.8213E-03

Errors quoted at 1.650 sigma (90.1%)

REPORTS FOR SPECTRUM 2506. 22-NOV-1996 21:49

 *
 * GAMMA SPECTRUM ANALYSIS *
 *

CANBERRA APOSEE V2.2

Canberra Industries, Inc.

22-NOV-96 21:49:21

ANALYSIS PARAMETERS

Spectrum file number	: 2506.0	Sample no.	: 2506.0
MCA unit number	: 1	ADC unit number	: 2.0
Detector number	: 2 ✓	Geometry number	: 1 ✓
Search threshold 1	: 2.0 ✓	Search threshold 2	: 3.0 ✓
Search FROM channel	: 100	Search TO channel	: 4095
Id energy tolerance	: 1.0	Order of background	: linear
Smoothing factor	: 0	Random sum corr	: disabled
GRA parameter	: 1	Baseline channels	: disabled

Confidence levels LLD : 1.645 (95.0%) MDA : 1.645 (95.0%)

Analysis library : SPF4LIBRARY:SPFANL.110 ✓
 Background subtract : disabled

Sample description : SMEAR ✓ Analyzed by: EDM
 20000 CPM ✓ *(gasket)*

Sample size : 1.000000E+00 EACH ✓ Conv. factor : 1.000
 Standard size : 1.000000E+00 EAC

Sample taken on : 22-NOV-96 at 21:15:00 ✓
 Collect started on : 22-NOV-96 at 21:38:35 ✓
 Decay time : 23.6 minutes ✓

live time : 600.0 seconds real time : 607.0 seconds
 dead time : 1.15 % ✓

Energy calibration used done on 1 / 2 / 1996
 Efficiency calibration used done on 1 / 11 / 1996

*Thin Gasket
 MATHSON*

*** P E A K F I T R E P O R T *** 22-NOV-96 21:49:21

peak no.	nuclide(s)	centroid channel	energy keV	FWHM keV	net area counts	error %	gammas per second	error %
1	BA-140	847.97	424.00	0.81	61.3	47.51	5.9	47.6
2	W-187	960.78	480.42	0.91	71.8	42.05	7.7	42.2
3	I-132	1013.08	506.57	0.76	9.43	30.67	1.13	30.6
4		1145.63	572.85	1.29	134.0	26.87	17.2	27.1
5	AG110M R8-89	1316.37	658.23	1.28	178.8	18.24	26.3	18.5
6		1503.96	752.04	1.17	18.51	132.18	2.81	132.2
7	CO-58	1621.84	810.99	1.46	193.1	13.15	34.8	13.4
8	GA-72 KR-88 HN-54	1669.96	835.05	1.56	45059.4	0.48	8351.0	2.2
9	I-124 AG110M	1769.48	884.81	1.67	151.6	15.60	39.7	15.8
10		1810.04	905.09	1.39	42.7	51.09	8.6	51.1
11		2060.97	1030.56	1.39	45.1	41.77	10.3	41.8
12	FE-59	2199.32	1099.69	1.79	99.5	20.78	24.1	20.9
13	ZH-65	2231.44	1115.80	1.72	916.2	3.92	225.0	4.6
14	CO-60	2346.78	1173.47	1.79	9516.9	1.04	2478.3	2.8
15	FE-59	2583.43	1291.80	2.06	71.0	14.31	20.0	14.5
16	CO-60	2665.47	1332.81	1.93	8704.8	1.08	2530.3	3.0

*** R A D I O N U C L I D E R E P O R T *** 22-NOV-96 21:49:21

Sample description :SMEAR
Analyzed by :BDM

number	nuclide	conf.value	-----	Activity (uCi/EACH)	-----
			measured		decay corrected	

+

1. Fission gases

total	0.0000E+00	total	0.0000E+00
-------	------------	-------	------------

2. Iodines

total	0.0000E+00	total	0.0000E+00
-------	------------	-------	------------

3. Particulates

1	MN-54	0.9923	2.2599E-01	+ -4.75E+00%	2.2600E-01	+ -4.75E+00%
2	CO-58	0.9917	9.4540E-04	+ -2.32E+01%	9.4555E-04	+ -2.32E+01%
3	FE-59	0.8933	1.2169E-03	+ -1.98E+01%	1.2172E-03	+ -1.98E+01%
4	CO-60	0.9725	6.7628E-02	+ -3.41E+00%	6.7628E-02	+ -3.41E+00%
5	ZN-65	0.9872	1.1993E-02	+ -7.73E+00%	1.1993E-02	+ -7.73E+00%
6	AG-110M	0.1999	8.8915E-04	+ -2.03E+01%	8.8919E-04	+ -2.03E+01%
	total		3.0867E-01		total	3.0868E-01

These peaks were not identified

number	channel	energy	peak intensity (cps)
--------	---------	--------	----------------------

+

1	848.0	424.00	5.8565E+00 +- 78.56% BA-140
2	960.8	480.42	7.7376E+00 +- 69.62% W-187
3	1013.1	506.57	1.0629E+00 +- 545.64% I-132
4	1143.6	572.85	1.7150E+01 +- 44.76%
6	1504.0	752.04	2.7514E+00 +- 218.15%
10	1810.0	905.09	8.3590E+00 +- 84.40%
11	2061.0	1030.56	1.0264E+01 +- 69.05%

Errors quoted at 1.650 sigma (90.1%)

REPORTS FOR SPECTRUM 2507. 22-NOV-1996 21:50

 *
 * GAMMA SPECTRUM ANALYSIS *
 *

CANBERRA APOGEE V2.2

Canberra Industries, Inc.

22-NOV-96 21:50:16

ANALYSIS PARAMETERS

Spectrum file number	: 2507.0	Sample no.	: 2507.0
MCA unit number	: 1	ADC unit number	: 1.0
Detector number	: 1 ✓	Geometry number	: 1 ✓
Search threshold 1	: 2.0 ✓	Search threshold 2	: 3.0 ✓
Search FROM channel	: 100	Search TO channel	: 4095
Id energy tolerance	: 1.0	Order of background	: linear
Smoothing factor	: 0	Random sum corr	: disabled
GRA parameter	: 1	Baseline channels	: disabled

Confidence levels LLD : 1.645 (95.0%) MDA : 1.645 (95.0%)

Analysis library : SPE\$LIBRARY:SPEANL.110
 Background subtract : disabled

Sample description : SMEAR Analyzed by: BDM
 4000 CPM *Casket*

Sample size : 1.000000E+00 EACH Conv. factor : 1.000
 Standard size : 1.000000E+00 EAC

Sample taken on : 22-NOV-96 at 21:15:00
 Collect started on : 22-NOV-96 at 21:39:26
 Decay time : 24.4 minutes

live time : 600.0 seconds real time : 607.0 seconds
 dead time : 1.15 %

Energy calibration used done on 12 / 15 / 1995
 Efficiency calibration used done on 12 / 21 / 1995

*** P E A K F I T R E P O R T *** 22-NOV-96 21:50:16

peak no.	nuclide(s)	centroid channel	energy keV	FWHM keV	net area counts	error %	gammas per second	error %
1	RA-139 CE-139	331.00	165.49	0.64	36.7	80.75	2.3	80.8
2		909.82	450.38	0.84	75.5	40.53	12.1	40.6
3	CO-58	1622.08	810.98	1.63	141.6	15.78	40.7	16.0
4	GA-72 KR-88 MN-54	1669.73	834.80	1.44	42745.6	0.49	12646.9	3.8
5		2016.15	1008.00	1.28	32.5	54.45	11.6	54.5
6	FE-59	2198.95	1099.38	1.86	102.2	18.94	39.6	19.1
7	ZN-65	2231.16	1115.48	1.70	315.9	7.90	124.0	8.3
8	CO-60	2346.47	1173.13	1.67	8029.8	1.14	3308.9	2.8
9	FE-59	2583.59	1291.67	1.70	53.5	16.68	24.1	16.8
10	CO-60	2665.14	1332.44	1.74	7224.5	1.18	3358.0	3.0

Errors quoted at 1.650 sigma (90.1%)

Contaminated Items Found at General Electric

October 1, 1996

ITEMS DIRECT FRISKED

<u>Item Description</u>	<u>Contamination Level (dpm)</u>	<u>Conversion Factor</u>	<u>Activity (uCi)</u>
Channel Lock Vise Grips	2800	4.51E-07	1.26E-03
Needle Nose Pliers	6000	4.51E-07	2.70E-03
Flashlight (Magenta)	1400	4.51E-07	6.31E-04
Snips with Tape	14000	4.51E-07	6.31E-03
Brass Components	2200	4.51E-07	9.91E-04
RTV Sealant	2000	4.51E-07	9.01E-04
Crescent Wrench	2800	4.51E-07	1.26E-03
Hex Head	4000	4.51E-07	1.80E-03
Wood File	3000	4.51E-07	1.35E-03
TOTAL			1.72E-02

SMEARS

<u>Smear Number</u>	<u>Item Smearred</u>	<u>Activity (uCi)</u>
1	Screwdriver	1.36E-03
2	Screwdriver Case	1.82E-03
3	Gasket	3.09E-01
4	Gasket	4.42E-01
TOTAL		7.54E-01

Total Activity - Tools and Smears

7.71E-01

ISOTOPIC ANALYSIS OF SMEARS AT GENERAL ELECTRIC

October 1, 1996

SMEAR 1 - SCREWDRIVER

<u>ISOTOPE</u>	<u>Activity (uCi)</u>	<u>10 CFR 20 LIMIT (uCi)</u>	<u>% OF LIMIT</u>
MN-54	7.47E-04	1.00E+02	7.47E-04
CO-60	6.17E-04	1.00E+00	6.17E-02
TOTAL	1.36E-03		6.24E-02

SMEAR 2 - SCREWDRIVER CASE

<u>ISOTOPE</u>	<u>Activity (uCi)</u>	<u>10 CFR 20 LIMIT (uCi)</u>	<u>% OF LIMIT</u>
MN-54	1.19E-03	1.00E+02	1.19E-03
CO-60	6.31E-04	1.00E+00	6.31E-02
TOTAL	1.82E-03		6.43E-02

SMEAR 3 - GASKET

<u>ISOTOPE</u>	<u>Activity (uCi)</u>	<u>10 CFR 20 LIMIT (uCi)</u>	<u>% OF LIMIT</u>
MN-54	2.26E-01	1.00E+02	2.26E-01
CO-58	9.46E-04	1.00E+02	9.46E-04
FE-59	1.22E-03	1.00E+01	1.22E-02
CO-60	6.76E-02	1.00E+00	6.76E+00
ZN-65	1.20E-02	1.00E+01	1.20E-01
AG-110	8.89E-04	1.00E+01	8.89E-03
TOTAL	3.09E-01		7.13E+00

SMEAR 4 - GASKET

<u>ISOTOPE</u>	<u>Activity (uCi)</u>	<u>10 CFR 20 LIMIT (uCi)</u>	<u>% OF LIMIT</u>
MN-54	3.42E-01	1.00E+02	3.42E-01
CO-58	1.11E-03	1.00E+02	1.11E-03
FE-59	1.64E-03	1.00E+01	1.64E-02
CO-60	9.00E-02	1.00E+00	9.00E+00
ZN-65	6.61E-03	1.00E+01	6.61E-02
TOTAL	4.42E-01		9.43E+00

ATTACHMENT 4

RADIOLOGICAL EVALUATION OF DRUM PERFORMED BY GENERAL ELECTRIC

GE-NUCLEAR ENERGY
1790 DOCK STREET
MEMPHIS, TN 38113

Rich Jones - 901)774-1922 Dial Comm: 8*964-4003
Joe Davidson - 901)774-1415 Dial Comm: 8*964-4005
Larry Hawkins - 901)774-1238 Dial Comm: 8*964-4004
Bobby Newell - 901)774-9322 Dial Comm: 8*964-4001
Cassandra Ferby - 901)774-9328 Dial Comm: 8*964-4002
Bob Langford - 901)774-9370 Dial Comm: 8*964-4000

Fax #: 901)774-9517
Dial Comm: 8*964-4200

FAX COVER SHEET

Date: 2/10/97

Number of Pages (including cover sheet) 2

TO: ERIC TSCHMUTRE @ K.O.P.

FROM: KEVIN K. BLACK

COMMENTS: HERE IS THE GAMMA SPEC. RESULTS
OF THE MATERIAL F/A THE BLUE POLY DRUM. THERE WERE
3 DRUMS IN THE DRUM. ONE WAS CLEAN, THE OTHER
A HAD FIXED CONTAMINATION, APPROX 2K-3K DIRECT
FRISK. IF YOU NEED MORE INFO CONTACT MYSELF @
(901) 942-9366 OR MARTY BOURQUIN @ (901) 942-3224.

Aptec PCMCIA/WIN Spectrum
Feb/10/1997 11:22:59AM

HEADER INFORMATION in H1656.S0 WELDING MATERIALS (GE)

Identification

User : Zhu
MCARD : 1
Detector : HP Ge
Geometry : 0.5 L Poly Jar
Sample : H1656
Channels : 8192

Acquisition

Started : Feb/10/1997 10:24:48AM
Stopped : Feb/10/1997 10:41:28AM
True : 1000.802 sec
Live : 1000.000 sec
Dead : 0.080 %
Gross Count : 17125 counts
Gross Rate : 17.125 cps

Sample

Sampled Feb/10/1997 10:24:48AM
Sample Quantity 1 ± 0

Energy Calibration Feb/10/1997 10:24:08AM 9608030.S0
Efficiency Calibration Dec/4/1996 9:14:55AM RD96121.S0
Isotope Library isotope.lib

Name	Energy keV	Activity Flag dpm	Error dpm	MDA dpm	Error dpm
Co-60	1173.23	1.862e+004	± 1565	509.9	± 30.21
Co-60	1332.51	1.708e+004	± 1704	317.3	± 25.81
Weighted Average		1.785e+004	± 1642		
Grand Total		1.785e+004	± 3282		

Activity (dpm) at Feb/10/1997 10:24:48AM
Divided by Sample Quantity 1 ± 0

Errors Quoted as 2 Sigma

MDA's Quoted as 1.645 Sigma

Flags Meaning

- b Background subtracted
- s Fitted singlet
- m Fitted multiplet
- + Forced MDA from identification
- < MDA value
- ? Activity shown is less than MDA value
- > Activity overflow (too many half lives elapsed)