Georgia Institute of Technology Research Reactor

Final Survey Package 19

Bismuth Leak Area

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Section 1

Survey Package 19 Worksheet for the Bismuth Leak Area

Duratek Inc.
Survey Package Worksheet for Bismuth Leak Area
Georgia Institute of Technology Research Reactor

Package Identification No.: 19	Prepared by: Paul Jones
Location: Bismuth Leak Area of Basement	Date prepared: 07/9/2001
Area Classification: Suspect Affected	

Area Description

The survey area consists of the bismuth leak area in the basement. This area is located immediately outside the experiment room in the basement. This package includes the bio-medical door pit. The floor of the bismuth leak area is approximately 12 square meters.

This bismuth leak area package does not have a wall 4 (this is the opening to the basement area 04, see package 16).

Historical Information

This area was decontaminated during the fall of 2000. The decontamination consisted of the removal of concrete portions of the floor and walls of this area.

General Survey Instructions

Floor and walls of the bismuth leak area.

1) Ensure the area is gridded as shown on the grid map(s).
2) Perform a 100% beta scan on the floor and walls to identify areas of elevated activity.
3) Obtain 1 direct beta measurement for each 1 m^2.
4) Obtain 1 smear for removable beta and alpha contamination for each 1 m^2 of area.
5) Obtain 1 exposure rate measurement at one meter above the floor at the corresponding direct beta measurement location.
6) Obtain required smears for H-3 analysis (See special Instructions for the minimum number of smears required). Denote location of all smears on map.

Use only the Package ID, L2, L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taking fixed beta readings.

Survey Pa[illegible]ge: ~~1~~ 19 continued
[illegible] 8/10/01

Special Instructions
Source check meters to Tc-99 for beta measurements.
Use gas flow proportional detector model numbers 43-68 and 43-106 for surveys.
Use GM detector model number 44-40 for surveys on heavily scabbled concrete surfaces.
The direct beta, smears, and the exposure rate measurements should be taken in the center of each grid at one meter above the floor.
Verify that the MDA is less than 600dpm/100cm2 for direct beta measurements after obtaining initial background.
Obtain background readings at each grid location for the floor, ceiling, and wall 2. Obtain a minimum of 2 ten-minute backgrounds for other surfaces.
During scanning the detector is to be kept as close to the surface as possible and moved across the surface at a slow speed (scan speed shall not exceed one probe width per sec). The scan should be performed using the audible output and using headphones whenever necessary.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	1 meter Gamma	Smear Gross α/β	LS Smear
L1	L2	L6	L7	L8						
Georgia Tech Research Reactor Ground Floor General Area										
A0219	01F01	B0002, B000	A - D	1 thru 6	Floor	BSK 7-10-01	(20) BSK 7-10-01	(20) DS 7-16-01	(20) WMB 7-17-01	(10) WMB 7-17-01
A0219	01W01	B9999	A thru B	1 thru 4	Wall 1	BSK 7-10-01	(8) BSK 7-10-01	N/A	(8 WMB 7-17-01	(2) WMB 7-17-01
A0219	01W02	B0002	A thru C	1 thru 5 (see grid map)	Wall 2	BSK 7-10-01	(13) BSK 7-10-01	N/A	(13) WMB 7-17-01	(4) WMB 7-17-01
A0219	01W03	B0002, B0001	A thru B	1 thru 5 (see grid map, 3rd grid is missing)	Wall 3	DS 7-25-01	(8) DS 7-17-01	N/A	(8) WMB 7-17-01	(4) WMB 7-17-01

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	1 meter Gamma	Smear Gross α/β	LS Smear
L1	L2	L6	L7	L8						
A0219	01T01	B0002	ZZZZZ	1 thru 10	Trench 1	BSK 7-14-01	(10) BSK 7-14-01	N/A	(10) [illegible] 7-17-01	(4) [illegible] 7-17-01
A0219	01C01	B0002	A thru D	1 thru 6	Ceiling	BSK 7-14-01	(20) BSK 7-14-01	N/A	(20) [illegible] 7-17-01	(4) [illegible] 7-17-01
A0219	01EQ1	B9999	ZZZZZ	1 thru 10	Biomedical Door	BSK 7-14-01	(10) BSK 7-14-01	N/A	(10) [illegible] 7-17-01	(2) [illegible] 7-17-01

A

N

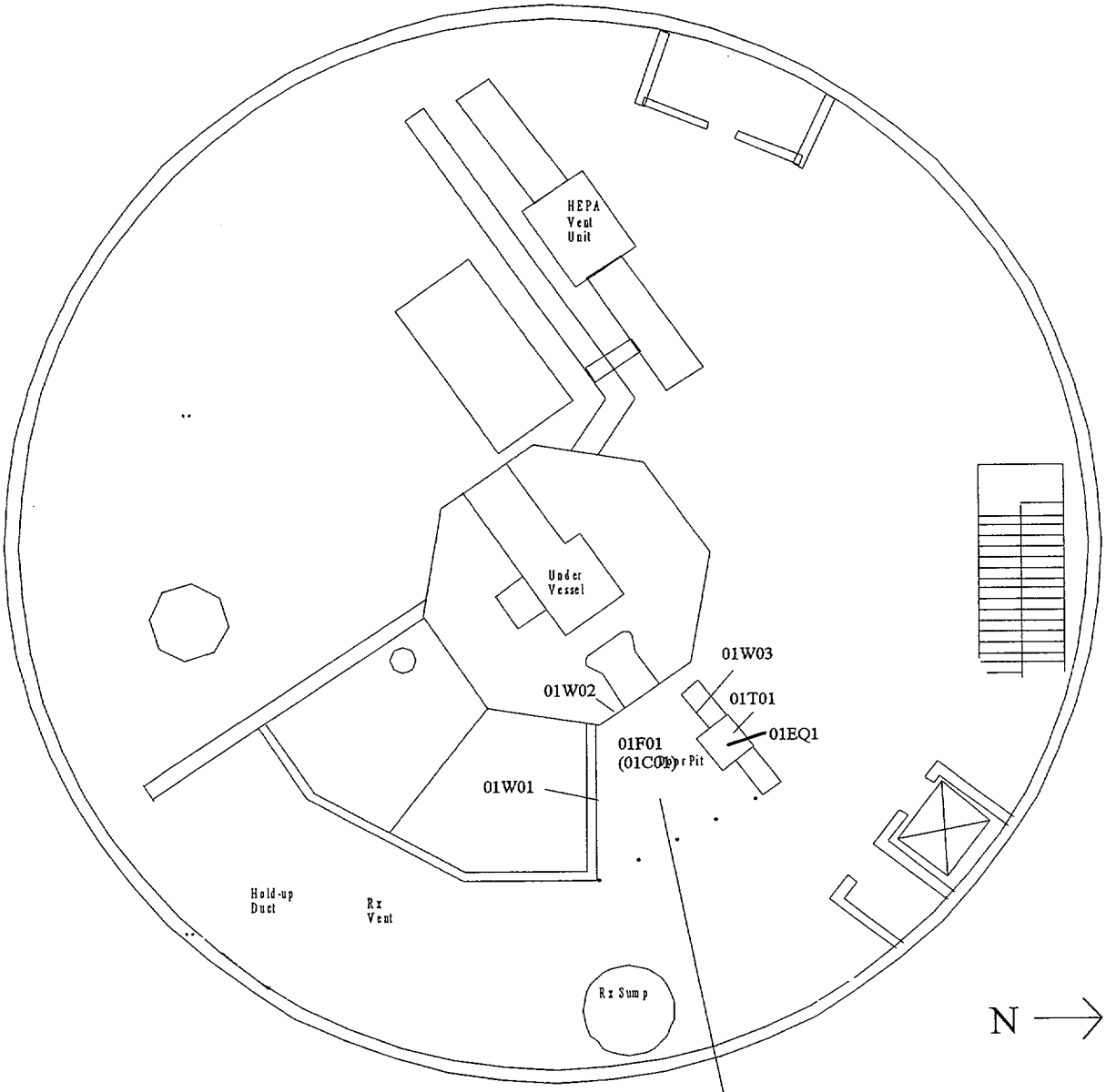
Package Review	
Date Package Completed	5/22/02
Package Reviewed by and Date	Pat James 5/22/02

Survey Comments

Section 2

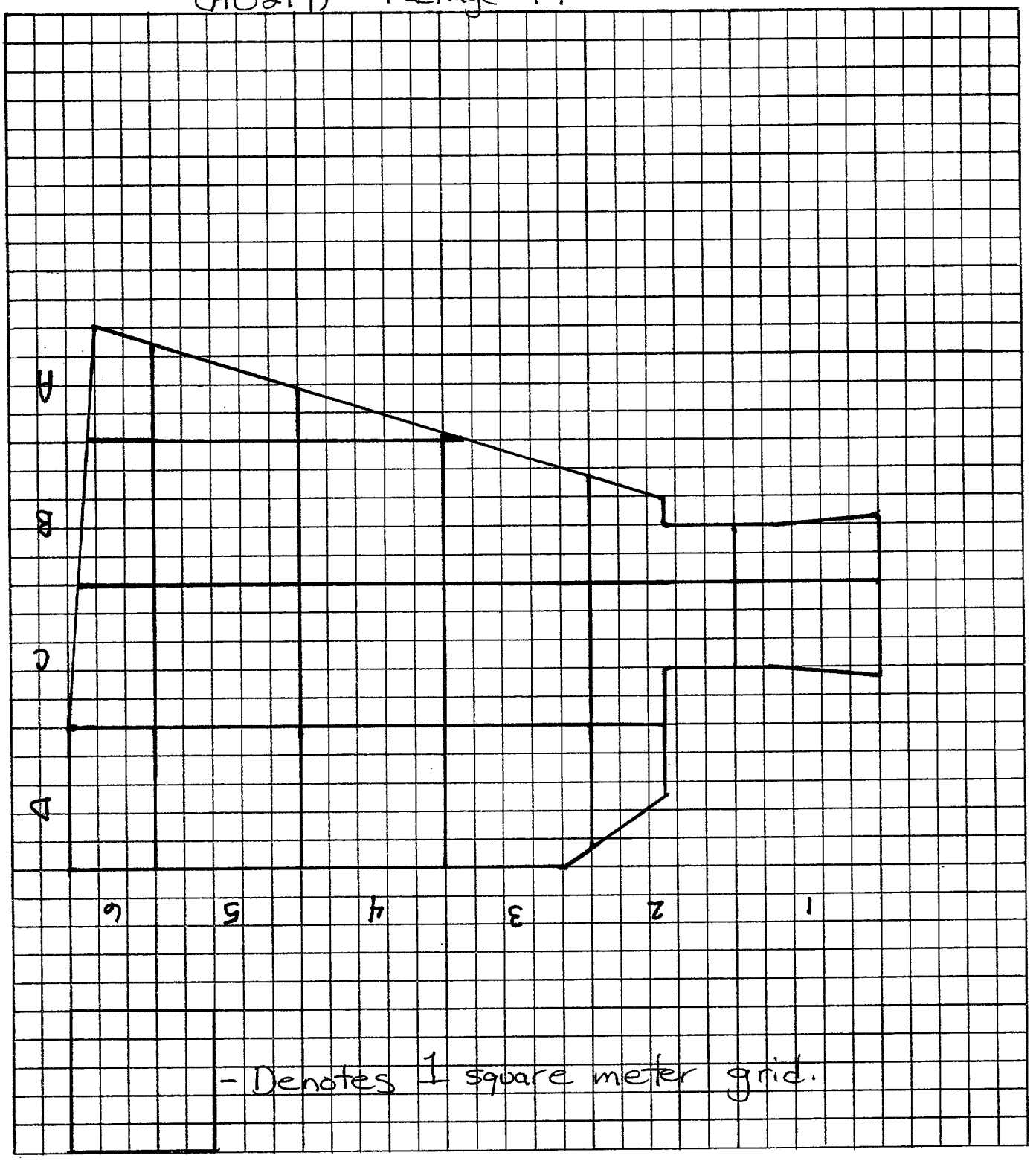
Package 19
Drawings

Bismuth Leak Area

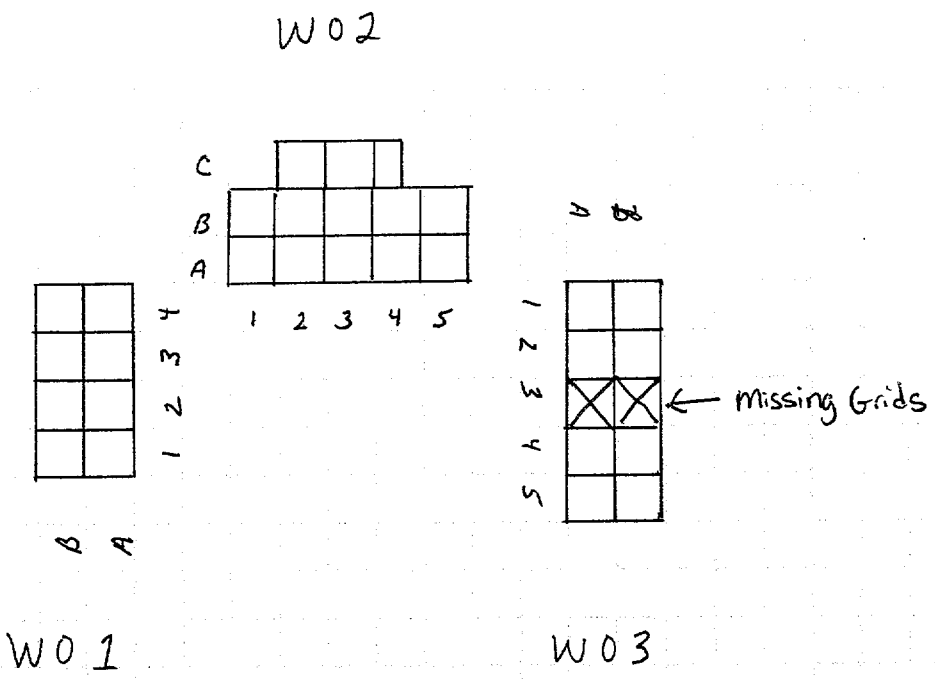


Bismuth Leak Area

(A0219) Package 19



(A0219) Package 19



□ - Denotes 1 square meter grid

Section 3

Package 19
Direct Beta Survey Report for the Suspect Affected Bismuth Leak Area (including download reports)

Direct

Package A0219 ~~Fixed~~ Beta Survey Report (Suspect Affected Bismuth Leak Area)

RJ 5/22/02

Desc.	File	Sample Number	Gross Counts	Count Time (sec)	Material Type	Detector Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Activity (dpm/100cm^2)	Natural Background (dpm/100cm^2)	Net Activity (dpm/100cm^2)	MDA (dpm/100cm^2)
	182	57	659	60	B0002	126	01C01	FLDCT	A	00004	0.211	535	466	354	112	336
	182	58	672	60	B0002	126	01C01	FLDCT	A	00005	0.211	488	692	354	338	323
	182	59	659	60	B0002	126	01C01	FLDCT	A	00006	0.211	483	662	354	308	322
	182	60	793	60	B0002	126	01C01	FLDCT	B	00001	0.211	537	963	354	609	336
	182	61	682	60	B0002	126	01C01	FLDCT	B	00002	0.211	501	681	354	327	327
	182	62	713	60	B0002	126	01C01	FLDCT	B	00003	0.211	486	854	354	500	323
	182	63	632	60	B0002	126	01C01	FLDCT	B	00004	0.211	539	350	354	-4	337
	182	64	683	60	B0002	126	01C01	FLDCT	B	00005	0.211	460	839	354	485	316
	182	65	486	60	B9999	126	01C01	FLDCT	B	00006	0.211	429	214	0	214	279
	182	66	842	60	B0002	126	01C01	FLDCT	C	00001	0.211	577	997	354	643	346
	182	67	730	60	B0002	126	01C01	FLDCT	C	00002	0.211	539	718	354	364	337
	182	68	621	60	B0002	126	01C01	FLDCT	C	00003	0.211	512	410	354	56	330
	(182	69	672	60	B0002	126	01C01	FLDCT	C	00004	0.211	476	737	354	383	320
	182	70	622	60	B0002	126	01C01	FLDCT	C	00005	0.211	489	500	354	146	324
	182	71	656	60	B0002	126	01C01	FLDCT	C	00006	0.211	480	662	354	308	321
	182	72	680	60	B0002	126	01C01	FLDCT	D	00002	0.211	503	666	354	312	327
	182	73	617	60	B0002	126	01C01	FLDCT	D	00003	0.211	480	515	354	161	321
	182	74	606	60	B0002	126	01C01	FLDCT	D	00004	0.211	454	572	354	218	314
	182	75	658	60	B0002	126	01C01	FLDCT	D	00005	0.211	416	910	354	556	303
	182	76	716	60	B0002	126	01C01	FLDCT	D	00006	0.211	499	816	354	462	326
	182	78	106	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00001	0.211	313	19	0	19	416
	182	79	108	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00002	0.211	313	41	0	41	416
	182	80	115	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00003	0.211	313	120	0	120	416
	182	81	140	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00004	0.211	313	402	0	402	416
	182	82	118	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00005	0.211	313	154	0	154	416
	182	83	109	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00006	0.211	313	53	0	53	416
	182	84	119	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00007	0.211	313	166	0	166	416
	182	85	97	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00008	0.211	313	-83	0	-83	416
	182	86	141	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00009	0.211	313	414	0	414	416
	182	87	113	20	B9999	126	01EQ1	FLDCT	ZZZZZ	00010	0.211	313	98	0	98	416
	176	20	758	60	B0003	126	01F01	FLDCT	A	00004	0.212	478	1048	399	649	322
	176	21	703	60	B0003	126	01F01	FLDCT	A	00005	0.212	471	869	399	470	321
	176	22	739	60	B0003	126	01F01	FLDCT	A	00006	0.212	484	955	399	556	324
	176	23	757	60	B0002	126	01F01	FLDCT	B	00001	0.212	538	820	354	466	335
	176	24	713	60	B0002	126	01F01	FLDCT	B	00002	0.212	489	839	354	485	322
	176	25	791	60	B0002	126	01F01	FLDCT	B	00003	0.212	518	1022	354	668	330
	176	26	719	60	B0002	126	01F01	FLDCT	B	00004	0.212	510	782	354	428	328
	176	27	787	60	B0002	126	01F01	FLDCT	B	00005	0.212	526	977	354	623	332
	176	28	776	60	B0003	126	01F01	FLDCT	B	00006	0.212	457	1194	399	795	317
	176	29	735	60	B0002	126	01F01	FLDCT	C	00001	0.212	530	767	354	413	333
	176	30	785	60	B0002	126	01F01	FLDCT	C	00002	0.212	503	1056	354	702	326
	176	31	960	60	B0002	126	01F01	FLDCT	C	00003	0.212	536	1587	354	1233	335
	176	32	769	60	B0002	126	01F01	FLDCT	C	00004	0.212	513	958	354	604	329
	176	33	755	60	B0003	126	01F01	FLDCT	C	00005	0.212	507	928	399	529	330
	176	34	782	60	B0003	126	01F01	FLDCT	C	00006	0.212	547	880	399	481	340
	176	35	899	60	B0002	126	01F01	FLDCT	D	00002	0.212	560	1269	354	915	341
	176	36	858	60	B0002	126	01F01	FLDCT	D	00003	0.212	526	1243	354	889	332
	176	37	724	60	B0002	126	01F01	FLDCT	D	00004	0.212	453	1015	354	661	312
	176	38	824	60	B0003	126	01F01	FLDCT	D	00005	0.212	507	1187	399	788	330
	176	39	775	60	B0003	126	01F01	FLDCT	D	00006	0.212	517	966	399	567	333

Direct

Package A0219 ~~Fixed~~ Beta Survey Report (Suspect Affected Bismuth Leak Area)

6/03/02

Desc.	File	Sample Number	Gross Counts	Count Time (sec)	Material Type	Detector Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Activity (dpm/100cm^2)	Natural Background (dpm/100cm^2)	Net Activity (dpm/100cm^2)	MDA (dpm/100cm^2)
	182	27	938	60	B0002	126	01T01	FLDCT	ZZZZZ	00001	0.211	614	1219	354	865	356
	182	28	867	60	B0002	126	01T01	FLDCT	ZZZZZ	00002	0.211	571	1113	354	759	345
	182	29	756	60	B0002	126	01T01	FLDCT	ZZZZZ	00003	0.211	503	952	354	598	327
	182	30	727	60	B0002	126	01T01	FLDCT	ZZZZZ	00004	0.211	493	880	354	526	325
	182	31	803	60	B0002	126	01T01	FLDCT	ZZZZZ	00005	0.211	537	1001	354	647	336
	182	32	748	60	B0002	126	01T01	FLDCT	ZZZZZ	00006	0.211	514	880	354	526	330
	182	33	760	60	B0002	126	01T01	FLDCT	ZZZZZ	00007	0.211	515	922	354	568	331
	182	34	733	60	B0002	126	01T01	FLDCT	ZZZZZ	00008	0.211	483	940	354	586	322
	182	35	727	60	B0002	126	01T01	FLDCT	ZZZZZ	00009	0.211	556	643	354	289	341
	182	36	752	60	B0002	126	01T01	FLDCT	ZZZZZ	00010	0.211	493	974	354	620	325
	176	41	159	20	B9999	126	01W01	FLDCT	A	00001	0.212	442	131	0	131	486
	176	42	145	20	B9999	126	01W01	FLDCT	A	00002	0.212	442	-26	0	-26	486
	176	43	176	20	B9999	126	01W01	FLDCT	A	00003	0.212	442	322	0	322	486
	176	44	143	20	B9999	126	01W01	FLDCT	A	00004	0.212	442	-49	0	-49	486
	176	45	183	20	B9999	126	01W01	FLDCT	B	00001	0.212	442	401	0	401	486
	176	46	138	20	B9999	126	01W01	FLDCT	B	00002	0.212	442	-105	0	-105	486
	176	47	144	20	B9999	126	01W01	FLDCT	B	00003	0.212	442	-37	0	-37	486
	176	48	162	20	B9999	126	01W01	FLDCT	B	00004	0.212	442	165	0	165	486
	176	63	739	60	B0002	126	01W02	FLDCT	A	00001	0.212	454	1067	354	713	313
	176	64	802	60	B0002	126	01W02	FLDCT	A	00002	0.212	545	962	354	608	337
	176	65	918	60	B0002	126	01W02	FLDCT	A	00003	0.212	544	1400	354	1046	337
	176	66	844	60	B0002	126	01W02	FLDCT	A	00004	0.212	553	1089	354	735	339
	176	67	752	60	B0002	126	01W02	FLDCT	A	00005	0.212	511	902	354	548	328
	176	68	747	60	B0002	126	01W02	FLDCT	B	00001	0.212	498	932	354	578	325
	176	69	559	60	B0002	126	01W02	FLDCT	B	00002	0.212	498	228	354	-126	325
	176	70	849	60	B0002	126	01W02	FLDCT	B	00003	0.212	542	1149	354	795	336
	176	71	822	60	B0002	126	01W02	FLDCT	B	00004	0.212	546	1033	354	679	337
	176	72	746	60	B0002	126	01W02	FLDCT	B	00005	0.212	504	906	354	552	326
	176	73	655	60	B0002	126	01W02	FLDCT	C	00002	0.212	470	693	354	339	317
	176	74	725	60	B0002	126	01W02	FLDCT	C	00003	0.212	521	764	354	410	331
	176	75	712	60	B0002	126	01W02	FLDCT	C	00004	0.212	487	842	354	488	322
	182	6	192	20	B0001	126	01W03	FLDCT	A	00001	0.211	496	301	346	-45	559
	182	7	189	20	B0002	126	01W03	FLDCT	A	00002	0.211	476	342	354	-12	551
	182	8	200	20	B0001	126	01W03	FLDCT	A	00004	0.211	496	391	346	45	559
	182	9	222	20	B0001	126	01W03	FLDCT	A	00005	0.211	496	639	346	293	559
	182	10	196	20	B0001	126	01W03	FLDCT	B	00001	0.211	496	346	346	0	559
	182	11	193	20	B0002	126	01W03	FLDCT	B	00002	0.211	476	387	354	33	551
	182	12	220	20	B0001	126	01W03	FLDCT	B	00004	0.211	496	617	346	271	559
	182	13	204	20	B0001	126	01W03	FLDCT	B	00005	0.211	496	436	346	90	559
														# Measurements	89	
														Average	400	
														Maximum	1233	
														STD DEV	288	
														95% CL on Mean	460	

014

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #176

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: D. Schumaker Signature: [signature] Station: 2 File: 176

Serial No. Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos User ID BSK 0490 Signature: Betty S Kjos Date: 7-10-01

Print Name: BSK Hovi Bel User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0219 Bismuth Leak Area, Floor, 01W01, 01W02
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12-6-01 Detector: 12-6-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☑ Beta β	091050	43-68B	.212	5350/422	174	176
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			

Local Area Background Measurements MEAN Value in cpm

10 Minutes β Beta	1 4366/4464	2	3	4	5	6	442
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 176	Survey Description: A0219: BISMUTH LEAK AREA FLOOR, WALL 01,02		
Survey Reason: TERMINATION	User ID: BSK0490	Technician name: B.S. Kjos	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-68B	Detector S/N: 091050	Type: 126 cm2 Gas Proportional Detector, Beta Window	
Background: 442 cpm	Beta Efficiency: .212		Survey Date: 7/10/01

Pre and Post source checks are included on this download: Yes ____ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 174 Post File #: 176

Technician Review:

I have reveiwed this cover sheet and 3 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: Betty S. Kjos (Print name) / Betty S Kjos (Signature) Date: 7-11-01

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES (Print name) / [signature] (Signature) Date: 7/16/01

Survey Date: 7/10/01 Report Date: 7/10/01 Page: 1
File: 176 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01F01	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B0003	A	00004	0	60	478	135	
FLDBK	B0003	A	00005	1	60	471	109	
FLDBK	B0003	A	00006	2	60	484	157	
FLDBK	B0002	B	00001	3	60	538	359	
FLDBK	B0002	B	00002	4	60	489	176	
FLDBK	B0002	B	00003	5	60	518	285	
FLDBK	B0002	B	00004	6	60	510	255	
FLDBK	B0003	B	00005	7	60	526	314	
FLDBK	B0003	B	00006	8	60	457	56	
FLDBK	B0002	C	00001	9	60	530	329	
FLDBK	B0002	C	00002	10	60	503	228	
FLDBK	B0002	C	00003	11	60	536	352	
FLDBK	B0002	C	00004	12	60	513	266	
FLDBK	B0003	C	00005	13	60	507	243	
FLDBK	B0003	C	00006	14	60	547	393	
FLDBK	B0002	D	00002	15	60	560	442	
FLDBK	B0002	D	00003	16	60	526	314	
FLDBK	B0002	D	00004	17	60	453	41	
FLDBK	B0003	D	00005	18	60	507	243	
FLDBK	B0003	D	00006	19	60	517	281	
						Group Average:	249	
FLDCT	B0003	A	00004	20	60	758	1183	
FLDCT	B0003	A	00005	21	60	703	977	
FLDCT	B0003	A	00006	22	60	739	1112	
FLDCT	B0002	B	00001	23	60	757	1179	
FLDCT	B0002	B	00002	24	60	713	1015	
FLDCT	B0002	B	00003	25	60	791	1307	
FLDCT	B0002	B	00004	26	60	719	1037	
FLDCT	B0002	B	00005	27	60	787	1292	
FLDCT	B0003	B	00006	28	60	776	1250	
FLDCT	B0002	C	00001	29	60	735	1097	
FLDCT	B0002	C	00002	30	60	785	1284	
FLDCT	B0002	C	00003	31	60	960	1939	
FLDCT	B0002	C	00004	32	60	769	1224	
FLDCT	B0003	C	00005	33	60	755	1172	
FLDCT	B0003	C	00006	34	60	782	1273	
FLDCT	B0002	D	00002	35	60	899	1711	
FLDCT	B0002	D	00003	36	60	858	1557	
FLDCT	B0002	D	00004	37	60	724	1056	
FLDCT	B0003	D	00005	38	60	824	1430	
FLDCT	B0003	D	00006	39	60	775	1247	
						Group Average:	1267	

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01W01	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B9999	ZZZZZ	00000	40	600	4366	-20	
FLDBK	B9999	ZZZZZ	00000	49	600	4464	16	
						Group Average:	-2	
FLDCT	B9999	A	00001	41	20	159	131	
FLDCT	B9999	A	00002	42	20	145	-26	
FLDCT	B9999	A	00003	43	20	176	322	
FLDCT	B9999	A	00004	44	20	143	-49	

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/10/01 Report Date: 7/10/01 Page: 2
File: 176 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01W01	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDCT	B9999	B	00001	45	20	183	401	
FLDCT	B9999	B	00002	46	20	138	-105	
FLDCT	B9999	B	00003	47	20	144	-37	
FLDCT	B9999	B	00004	48	20	162	165	
						Group Average:	100	

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01W02	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDBK	B0002	A	00001	50	60	454	45	
FLDBK	B0002	A	00002	51	60	545	386	
FLDBK	B0002	A	00003	52	60	544	382	
FLDBK	B0002	A	00004	53	60	553	416	
FLDBK	B0002	A	00005	54	60	511	258	
FLDBK	B0002	B	00001	55	60	498	210	
FLDBK	B0002	B	00002	56	60	498	210	
FLDBK	B0002	B	00003	57	60	542	374	
FLDBK	B0002	B	00004	58	60	546	389	
FLDBK	B0002	B	00005	59	60	504	232	
FLDBK	B0002	C	00002	60	60	470	105	
FLDBK	B0002	C	00003	61	60	521	296	
FLDBK	B0002	C	00004	62	60	487	168	
						Group Average:	267	
FLDCT	B0002	A	00001	63	60	739	1112	
FLDCT	B0002	A	00002	64	60	802	1348	
FLDCT	B0002	A	00003	65	60	918	1782	
FLDCT	B0002	A	00004	66	60	844	1505	
FLDCT	B0002	A	00005	67	60	752	1161	
FLDCT	B0002	B	00001	68	60	747	1142	
FLDCT	B0002	B	00002	69	60	559	438	
FLDCT	B0002	B	00003	70	60	849	1524	
FLDCT	B0002	B	00004	71	60	822	1423	
FLDCT	B0002	B	00005	72	60	746	1138	
FLDCT	B0002	C	00002	73	60	655	797	
FLDCT	B0002	C	00003	74	60	725	1059	
FLDCT	B0002	C	00004	75	60	712	1011	
						Group Average:	1188	

Survey Code	L1	L2	L3	L4	Setup Number 0
	ZZZZZ	EZ260	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PTB00	ZZZZZ	ZZZZZ	00000	77	60	5530	19048	*
PTB00	ZZZZZ	ZZZZZ	00001	78	60	6062	21039	*
PTB00	ZZZZZ	ZZZZZ	00002	79	60	5672	19579	*
						Group Average:	19889	

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/10/01 Report Date: 7/10/01 Page: 3
File: 176 Station: 2

Comments

Survey Code	L1	L2	L3	L4
	ZZZZZ	ZZZZZ	TAT01	02200

Setup Number 0
Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PTBBK	ZZZZZ	ZZZZZ	00000	76	600	4191	-86	
						Group Average:	-86	

Total Number of Measurements on this Report: 80

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 2400 dpm/100 cm2

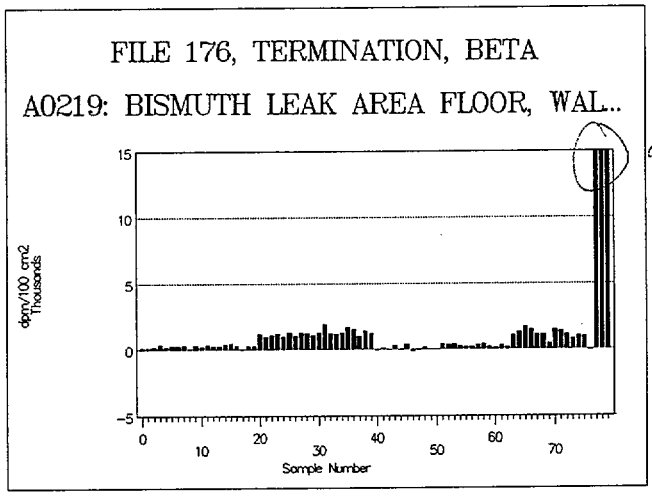
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/10/2001 Graph of File 176 Station: 2

Survey Date: 7/10/2001 Survey Start Time: 12:42:36

Description: A0219: BISMUTH LEAK AREA FLOOR, WALL 01,02



Post S/C

Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #182

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Print
Technician: Name: Don Schumacker Signature: [signature] Station: 2 File: 182
Serial No. Verification: Model 2350: ☑ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kjos User ID BSK 0490 Signature: Betty S Kjos Date: 7-12-01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0219, Bismuth leak Area, Wall 3, Trench, Ceiling + Biomed. door
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12-6-01 Detector: 12-6-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☑ Beta β	091050	43-68B	.211	5309 / 387	182	182
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			

01W03(B0001) = 496 cpm 01W03(B0002) = 476 cpm 01EQ1 = 313 cpm

Local Area Background Measurements — MEAN Value in cpm !

10 minutes							
β Beta	14889 / 5032	24715 / 4906	3 3131 / 3138	4 6195	5	6	456
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 182	Survey Description: A0219: BISMUTH LEAK AREA, WALL 3,TRENCH,CEILING, DOOR		
Survey Reason: TERMINATION	User ID: BSK0490	Technician name: B.S. Kjos	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-68B	Detector S/N: 091050	Type: 126 cm2 Gas Proportional Detector, Beta Window	
Background: 456 cpm	Beta Efficiency: .211		Survey Date: 7/12/01

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 3 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: Betty S. Kjos (Print name) / Betty S Kjos (Signature) Date: 7-12-01

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES (Print name) / Paul A Jones (Signature) Date: 7/16/01

Survey Date: 7/12/01 Report Date: 7/12/01 Page: 1
File: 182 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01C01	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B0002	A	00004	37	60	535	297	
FLDBK	B0002	A	00005	38	60	488	120	
FLDBK	B0002	A	00006	39	60	483	102	
FLDBK	B0002	B	00001	40	60	537	305	
FLDBK	B0002	B	00002	41	60	501	169	
FLDBK	B0002	B	00003	42	60	486	113	
FLDBK	B0002	B	00004	43	60	539	312	
FLDBK	B0002	B	00005	44	60	460	15	
FLDBK	B9999	B	00006	45	60	429	-102	
FLDBK	B0002	C	00001	46	60	577	455	
FLDBK	B0002	C	00002	47	60	539	312	
FLDBK	B0002	C	00003	48	60	512	211	
FLDBK	B0002	C	00004	49	60	476	75	
FLDBK	B0002	C	00005	50	60	489	124	
FLDBK	B0002	C	00006	51	60	480	90	
FLDBK	B0002	D	00002	52	60	503	177	
FLDBK	B0002	D	00003	53	60	480	90	
FLDBK	B0002	D	00004	54	60	454	-8	
FLDBK	B0002	D	00005	55	60	416	-150	
FLDBK	B0002	D	00006	56	60	499	162	
						Group Average:	143	
FLDCT	B0002	A	00004	57	60	659	764	
FLDCT	B0002	A	00005	58	60	672	812	
FLDCT	B0002	A	00006	59	60	659	764	
FLDCT	B0002	B	00001	60	60	793	1268	
FLDCT	B0002	B	00002	61	60	682	850	
FLDCT	B0002	B	00003	62	60	713	967	
FLDCT	B0002	B	00004	63	60	632	662	
FLDCT	B0002	B	00005	64	60	683	854	
FLDCT	B9999	B	00006	65	60	486	113	
FLDCT	B0002	C	00001	66	60	842	1452	
FLDCT	B0002	C	00002	67	60	730	1031	
FLDCT	B0002	C	00003	68	60	621	621	
FLDCT	B0002	C	00004	69	60	672	812	
FLDCT	B0002	C	00005	70	60	622	624	
FLDCT	B0002	C	00006	71	60	656	752	
FLDCT	B0002	D	00002	72	60	680	843	
FLDCT	B0002	D	00003	73	60	617	606	
FLDCT	B0002	D	00004	74	60	606	564	
FLDCT	B0002	D	00005	75	60	658	760	
FLDCT	B0002	D	00006	76	60	716	978	
						Group Average:	805	

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01EQ1	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B9999	ZZZZZ	00000	77	600	3131	-538	
FLDBK	B9999	ZZZZZ	00000	88	600	3138	-535	
						Group Average:	-536	
FLDCT	B9999	ZZZZZ	00001	78	20	106	-519	
FLDCT	B9999	ZZZZZ	00002	79	20	108	-497	
FLDCT	B9999	ZZZZZ	00003	80	20	115	-418	
FLDCT	B9999	ZZZZZ	00004	81	20	140	-135	

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/12/01 Report Date: 7/12/01 Page: 2
File: 182 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01EQ1	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDCT	B9999	ZZZZZ	00005	82	20	118	-384	
FLDCT	B9999	ZZZZZ	00006	83	20	109	-485	
FLDCT	B9999	ZZZZZ	00007	84	20	119	-372	
FLDCT	B9999	ZZZZZ	00008	85	20	97	-621	
FLDCT	B9999	ZZZZZ	00009	86	20	141	-124	
FLDCT	B9999	ZZZZZ	00010	87	20	113	-440	
						Group Average:	-399	

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01T01	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B0002	ZZZZZ	00000	16	600	6195	615	
FLDBK	B0002	ZZZZZ	00001	17	60	614	594	
FLDBK	B0002	ZZZZZ	00002	18	60	571	433	
FLDBK	B0002	ZZZZZ	00003	19	60	503	177	
FLDBK	B0002	ZZZZZ	00004	20	60	493	139	
FLDBK	B0002	ZZZZZ	00005	21	60	537	305	
FLDBK	B0002	ZZZZZ	00006	22	60	514	218	
FLDBK	B0002	ZZZZZ	00007	23	60	515	222	
FLDBK	B0002	ZZZZZ	00008	24	60	483	102	
FLDBK	B0002	ZZZZZ	00009	25	60	556	376	
FLDBK	B0002	ZZZZZ	00010	26	60	493	139	
						Group Average:	302	
FLDCT	B0002	ZZZZZ	00001	27	60	938	1813	
FLDCT	B0002	ZZZZZ	00002	28	60	867	1546	
FLDCT	B0002	ZZZZZ	00003	29	60	756	1128	
FLDCT	B0002	ZZZZZ	00004	30	60	727	1019	
FLDCT	B0002	ZZZZZ	00005	31	60	803	1305	
FLDCT	B0002	ZZZZZ	00006	32	60	748	1098	
FLDCT	B0002	ZZZZZ	00007	33	60	760	1143	
FLDCT	B0002	ZZZZZ	00008	34	60	733	1042	
FLDCT	B0002	ZZZZZ	00009	35	60	727	1019	
FLDCT	B0002	ZZZZZ	00010	36	60	752	1113	
						Group Average:	1223	

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01W03	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B0001	ZZZZZ	00000	4	600	4889	124	
FLDBK	B0002	ZZZZZ	00000	5	600	4715	58	
FLDBK	B0001	ZZZZZ	00000	14	600	5032	178	
FLDBK	B0002	ZZZZZ	00000	15	600	4806	93	
						Group Average:	113	
FLDCT	B0001	A	00001	6	20	192	451	
FLDCT	B0002	A	00002	7	20	189	418	
FLDCT	B0001	A	00004	8	20	200	542	

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/12/01 Report Date: 7/12/01 Page: 3
File: 182 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0219	01W03	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDCT	B0001	A	00005	9	20	222	790	
FLDCT	B0001	B	00001	10	20	196	497	
FLDCT	B0002	B	00002	11	20	193	463	
FLDCT	B0001	B	00004	12	20	220	767	
FLDCT	B0001	B	00005	13	20	204	587	
						Group Average:	564	

Survey Code	L1	L2	L3	L4	Setup Number 0
	ZZZZZ	EZ260	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRB00	ZZZZZ	ZZZZZ	00000	1	60	5620	19424	*
PRB00	ZZZZZ	ZZZZZ	00000	2	60	5736	19860	*
PRB00	ZZZZZ	ZZZZZ	00000	3	60	5733	19849	*
						Group Average:	19711	
PTB00	ZZZZZ	ZZZZZ	00000	90	60	5613	19397	*
PTB00	ZZZZZ	ZZZZZ	00000	91	60	5865	20345	*
PTB00	ZZZZZ	ZZZZZ	00000	92	60	5809	20135	*
						Group Average:	19959	

Survey Code	L1	L2	L3	L4	Setup Number 0
	ZZZZZ	ZZZZZ	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	3867	-261	
						Group Average:	-261	
PTBBK	ZZZZZ	ZZZZZ	00000	89	600	4306	-96	
						Group Average:	-96	

Total Number of Measurements on this Report: 93

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 2400 dpm/100 cm2

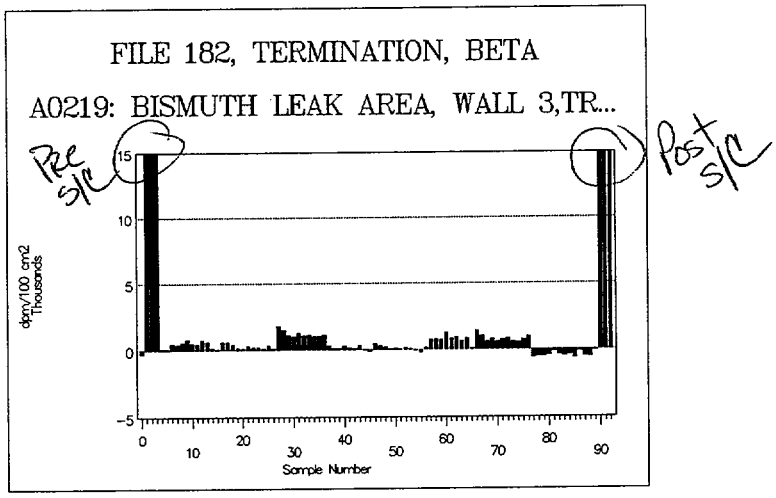
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/12/2001 Graph of File 182 Station: 2

Survey Date: 7/12/2001 Survey Start Time: 09:37:14

Description: A0219: BISMUTH LEAK AREA, WALL 3,TRENCH,CEILING, DOOR



Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

Section 4

Package 19
Exposure Rate Measurements for the Bismuth Leak Area

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: D. Schumacher Signature: [signature] Station: 2 File: 188

Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumacher User ID DS 4133 Signature: [signature] Date: 7-16-01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0219: Bismuth Leak Area Gamma Reading
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 126182

Instrument and Detector Calibration Due Dates: Survey Meter: 9-22-01 Detector: 12-6-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	091034	44-2	N/A	N/A	187	189

Local Area Background Measurements							MEAN Value in cpm
β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Gamma Radiation Survey Report, Micro-R/hour - Integrated Measurement

File Number: 188	Survey Description: A0219: BISMUTH LEAK AREA GAMMA READINGS		
Survey Reason: TERMINATION	User ID: DPS4133	Technician name: Don Schumaker	
Instrument Model: M2350-1	S/N: 126182	Calibration Due: 9/22/01	Group: 2
Detector Model: 44-2	Detector S/N: 091034	Type: High Energy Gamma Scintillator, 1x1 NaI	
Background: 0.0 uR/hr	Gamma Calibration Constant: 1.70095 E10 c/R	PIC ratio: 1.000 (PIC/NaI)	Survey Date: 7/16/01

Pre and Post source checks are included on this download: Yes ___ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 187 Post File #: 189

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: D. Schumaker / [signature] Date: 7/16/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and reason (required):

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 7/16/01
Print name Signature

Survey Date: 7/16/01 Report Date: 7/16/01 Station: 2
File: 188 Page: 1

Survey Code	L1	L2	L3	L4	L5	L6
	A0219	01F01	TAT01	03100	FLDCT	B0002

Setup Number 2
Det Cal Due: 12/06/01

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	Hi
B	00001	3	10	914	19.3	*
B	00002	4	10	863	18.3	*
B	00003	5	10	757	16.0	*
B	00004	6	10	761	16.1	*
C	00001	9	10	886	18.8	*
C	00002	10	10	817	17.3	*
C	00003	11	10	784	16.6	*
C	00004	12	10	735	15.6	*
D	00002	15	10	836	17.7	*
D	00003	16	10	829	17.5	*
D	00004	17	10	747	15.8	*

Group Average: 4870 cpm Average uR/hr: 17.2
Number of measurements: 11

Survey Code	L1	L2	L3	L4	L5	L6
	A0219	01F01	TAT01	03100	FLDCT	B0003

Setup Number 2
Det Cal Due: 12/06/01

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	Hi
A	00004	0	10	764	16.2	*
A	00005	1	10	800	16.9	*
A	00006	2	10	778	16.5	*
B	00005	7	10	728	15.4	*
B	00006	8	10	788	16.7	*
C	00005	13	10	787	16.7	*
C	00006	14	10	792	16.8	*
D	00005	18	10	816	17.3	*
D	00006	19	10	793	16.8	*

Group Average: 4697 cpm Average uR/hr: 16.6
Number of measurements: 9

Total Number of Measurements on this Report: 20

Comments

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 15.0 micro-R/hr.

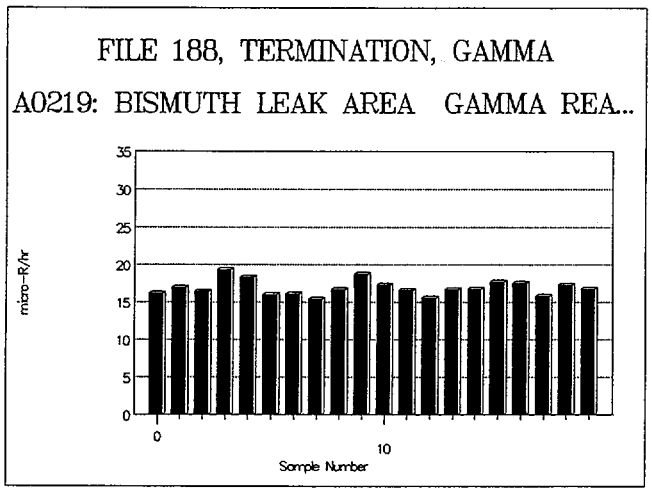
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/16/2001 Graph of File 188 Station: 2

Survey Date: 7/16/2001 Survey Start Time: 07:53:16

Description: A0219: BISMUTH LEAK AREA GAMMA READINGS



Flag set for 15 micro-R/hr. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: D. Schumacher Signature: [signature] Station: 2 File: 189
Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumacher User ID DT 4133 Signature: [signature] Date: 7/16/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0218, A0219: Post s/c For File # 187, 188
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 126182

Instrument and Detector Calibration Due Dates: Survey Meter: 9-22-01 Detector: 12-6-01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☒ Gamma γ	091034	44-2	N/A	N/A	187	189

Local Area Background Measurements — MEAN Value in cpm ↓

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Gamma Radiation Survey Report, Micro-R/hour - Integrated Measurement

File Number: 189	Survey Description: A0218,A0219: POST SOURCE CHECK FOR FILE # 187,188		
Survey Reason: TERMINATION	User ID: DPS4133	Technician name: Don Schumaker	
Instrument Model: M2350-1	S/N: 126182	Calibration Due: 9/22/01	Group: 2
Detector Model: 44-2	Detector S/N: 091034	Type: High Energy Gamma Scintillator, 1x1 NaI	
Background: uR/hr	Gamma Calibration Constant: 1.70095 E10 c/R	PIC ratio: 1.000 (PIC/NaI)	Survey Date: 7/16/01

Pre and Post source checks are included on this download: Yes ___ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 187 Post File #: 189

Technician Review:

I have reveiwed this cover sheet and 01 pages of the report, 01 pages of comments, and 01 graph.

I performed this survey: Don Schumaker / [signature] Date: 7/16/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and reason (required):

Comment Resolution:

Survey Reviewed and Approved by: Paul Jones / [signature] Date: 7/16/01
Print name Signature

Survey Date: 7/16/01 Report Date: 7/16/01 Station: 2
File: 189 Page: 1

Comments

Survey Code	L1	L2	L3	L4	L5	L6	Setup Number 2
	ZZZZZ	19453	TAT01	03100	PTB00	ZZZZZ	Det Cal Due: 12/06/01

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	H i
ZZZZZ	00001	1	60	538489	1899.5	
ZZZZZ	00002	2	60	14871	52.5	
ZZZZZ	00004	4	60	5240	18.5	

Group Average: 186200 cpm Average uR/hr: 656.8
Number of measurements: 3

Survey Code	L1	L2	L3	L4	L5	L6	Setup Number 2
	ZZZZZ	ZZZZZ	TAT01	03100	PTBBK	ZZZZZ	Det Cal Due: 12/06/01

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	H i
ZZZZZ	00000	0	300	19556	13.8	

Group Average: 3911 cpm Average uR/hr: 13.8
Number of measurements: 1

Total Number of Measurements on this Report: 4

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at micro-R/hr.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/16/01 Comments Report for File 189 Station: 2

Comment Number	Comment
1	Deleted sample numbers from 3 to 3. IN THE PROCESS OF DOING PAPERWORK SOURCE JIG WAS BUMPED.

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

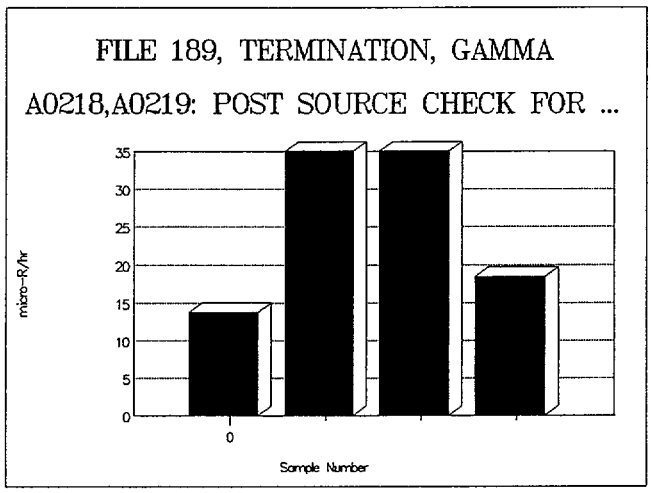
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/16/2001 Graph of File 189 Station: 2

Survey Date: 7/16/2001 Survey Start Time: 09:03:48

Description: A0218,A0219: POST SOURCE CHECK FOR FILE # 187,188



Flag set for micro-R/hr. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

Section 5

Package 19
Removable Beta Contamination for the Bismuth Leak Area (including lab reports)

Removable Beta Contamination Package A0219 (Bismuth Leak Area)

Desc.	Gross Counts	Count Time (sec)	Sample Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
	5	90	100	01C01	FLDCT	A	00004	0.3425	2	5	16
	3	90	100	01C01	FLDCT	A	00005	0.3425	2	1	16
	2	90	100	01C01	FLDCT	A	00006	0.3425	2	-1	16
	1	90	100	01C01	FLDCT	B	00001	0.3425	2	-3	16
	0	90	100	01C01	FLDCT	B	00002	0.3425	2	-5	16
	2	90	100	01C01	FLDCT	B	00003	0.3425	2	-2	16
	0	90	100	01C01	FLDCT	B	00004	0.3425	2	-5	16
	4	90	100	01C01	FLDCT	B	00005	0.3425	2	2	16
	2	90	100	01C01	FLDCT	B	00006	0.3425	2	-3	16
	0	90	100	01C01	FLDCT	C	00001	0.3425	2	-5	16
	2	90	100	01C01	FLDCT	C	00002	0.3425	2	-1	16
	5	90	100	01C01	FLDCT	C	00003	0.3425	2	5	16
	2	90	100	01C01	FLDCT	C	00004	0.3425	2	-1	16
	0	90	100	01C01	FLDCT	C	00005	0.3425	2	-5	16
	1	90	100	01C01	FLDCT	C	00006	0.3425	2	-3	16
	2	90	100	01C01	FLDCT	D	00002	0.3425	2	-1	16
	2	90	100	01C01	FLDCT	D	00003	0.3425	2	-1	16
	3	90	100	01C01	FLDCT	D	00004	0.3425	2	1	16
	0	90	100	01C01	FLDCT	D	00005	0.3425	2	-5	16
	3	90	100	01C01	FLDCT	D	00006	0.3425	2	1	16
	3	90	100	01EQ1	FLDCT	ZZZZZ	00001	0.3425	2	1	16
	1	90	100	01EQ1	FLDCT	ZZZZZ	00002	0.3425	2	-2	16
	1	90	100	01EQ1	FLDCT	ZZZZZ	00003	0.3425	2	-2	16
	3	90	100	01EQ1	FLDCT	ZZZZZ	00004	0.3425	2	1	16
	3	90	100	01EQ1	FLDCT	ZZZZZ	00005	0.3425	2	1	16
	2	90	100	01EQ1	FLDCT	ZZZZZ	00006	0.3425	2	0	16
	0	90	100	01EQ1	FLDCT	ZZZZZ	00007	0.3425	2	-4	16
	12	90	100	01EQ1	FLDCT	ZZZZZ	00008	0.3425	2	19	16
	12	90	100	01EQ1	FLDCT	ZZZZZ	00009	0.3425	2	19	16
	3	90	100	01EQ1	FLDCT	ZZZZZ	00010	0.3425	2	1	16
	7	90	100	01F01	FLDCT	A	00004	0.3425	2	9	16
	7	90	100	01F01	FLDCT	A	00005	0.3425	2	9	16
	3	90	100	01F01	FLDCT	A	00006	0.3425	2	1	16
	4	90	100	01F01	FLDCT	B	00001	0.3425	2	3	16
	2	90	100	01F01	FLDCT	B	00002	0.3425	2	-1	16

Removable Beta Contamination Package A0219 (Bismuth Leak Area)

Desc.	Gross Counts	Count Time (sec)	Sample Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
	6	90	100	01F01	FLDCT	B	00003	0.3425	2	7	16
	4	90	100	01F01	FLDCT	B	00004	0.3425	2	3	16
	3	90	100	01F01	FLDCT	B	00005	0.3425	2	1	16
	2	90	100	01F01	FLDCT	B	00006	0.3425	2	-1	16
	3	90	100	01F01	FLDCT	C	00001	0.3425	2	1	16
	3	90	100	01F01	FLDCT	C	00002	0.3425	2	1	16
	3	90	100	01F01	FLDCT	C	00003	0.3425	2	1	16
	11	90	100	01F01	FLDCT	C	00004	0.3425	2	16	16
	2	90	100	01F01	FLDCT	C	00005	0.3425	2	-1	16
	3	90	100	01F01	FLDCT	C	00006	0.3425	2	0	16
	5	90	100	01F01	FLDCT	D	00002	0.3425	2	5	16
	3	90	100	01F01	FLDCT	D	00003	0.3425	2	1	16
	3	90	100	01F01	FLDCT	D	00004	0.3425	2	1	16
	4	90	100	01F01	FLDCT	D	00005	0.3425	2	3	16
	5	90	100	01F01	FLDCT	D	00006	0.3425	2	5	16
	7	90	100	01T01	FLDCT	ZZZZZ	00001	0.3425	1	10	15
	1	90	100	01T01	FLDCT	ZZZZZ	00002	0.3425	1	-2	15
	2	90	100	01T01	FLDCT	ZZZZZ	00003	0.3425	1	0	15
	3	90	100	01T01	FLDCT	ZZZZZ	00004	0.3425	1	2	15
	2	90	100	01T01	FLDCT	ZZZZZ	00005	0.3425	1	0	15
	1	90	100	01T01	FLDCT	ZZZZZ	00006	0.3425	1	-2	15
	4	90	100	01T01	FLDCT	ZZZZZ	00007	0.3425	1	4	15
	1	90	100	01T01	FLDCT	ZZZZZ	00008	0.3425	1	-2	15
	2	90	100	01T01	FLDCT	ZZZZZ	00009	0.3425	1	0	15
	7	90	100	01T01	FLDCT	ZZZZZ	00010	0.3425	1	10	15
	1	90	100	01W01	FLDCT	A	00001	0.3425	2	-3	16
	5	90	100	01W01	FLDCT	A	00002	0.3425	2	5	16
	2	90	100	01W01	FLDCT	A	00003	0.3425	2	-1	16
	1	90	100	01W01	FLDCT	A	00004	0.3425	2	-3	16
	3	90	100	01W01	FLDCT	B	00001	0.3425	2	1	16
	3	90	100	01W01	FLDCT	B	00002	0.3425	2	1	16
	3	90	100	01W01	FLDCT	B	00003	0.3425	2	1	16
	4	90	100	01W01	FLDCT	B	00004	0.3425	2	3	16
	3	90	100	01W02	FLDCT	A	00001	0.3425	2	1	16

041

Removable Beta Contamination Package A0219 (Bismuth Leak Area)

Desc.	Gross Counts	Count Time (sec)	Sample Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
	3	90	100	01W02	FLDCT	A	00002	0.3425	2	1	16
	4	90	100	01W02	FLDCT	A	00003	0.3425	2	3	16
	4	90	100	01W02	FLDCT	A	00004	0.3425	2	2	16
	1	90	100	01W02	FLDCT	A	00005	0.3425	2	-3	16
	0	90	100	01W02	FLDCT	B	00001	0.3425	2	-5	16
	3	90	100	01W02	FLDCT	B	00002	0.3425	2	1	16
	0	90	100	01W02	FLDCT	B	00003	0.3425	2	-5	16
	11	90	100	01W02	FLDCT	B	00004	0.3425	2	16	16
	4	90	100	01W02	FLDCT	B	00005	0.3425	2	3	16
	2	90	100	01W02	FLDCT	C	00002	0.3425	2	-1	16
	2	90	100	01W02	FLDCT	C	00003	0.3425	2	-1	16
	2	90	100	01W02	FLDCT	C	00004	0.3425	2	-1	16
	3	90	100	01W03	FLDCT	A	00001	0.3425	2	1	16
	6	90	100	01W03	FLDCT	A	00002	0.3425	2	7	16
	4	90	100	01W03	FLDCT	A	00004	0.3425	2	3	16
	2	90	100	01W03	FLDCT	A	00005	0.3425	2	-1	16
	0	90	100	01W03	FLDCT	B	00001	0.3425	2	-6	16
	2	90	100	01W03	FLDCT	B	00002	0.3425	2	-1	16
	7	90	100	01W03	FLDCT	B	00004	0.3425	2	9	16
	7	90	100	01W03	FLDCT	B	00005	0.3425	2	9	16
								# Measurements		89	
									Average	1	
									Maximum	19	
									STD DEV	5	
								95% CL on Mean		2	

042

FINAL SURVEY 01F01 A PIN 19

PIC IPC9025 216712

			ALPHA				BETA			
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	4	1	0.67	1.91		7	2.77	8.08		07-11-2001	14:00:25
002	00	5	0	0.00	0.00		7	2.97	8.66		07-11-2001	14:02:24
003	00	6	0	0.00	0.00		3	0.30	0.88		07-11-2001	14:04:23

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01F01 B PIN 19

PIC IPC9025 216712

			ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm					
SN	RFT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		4	0.97	2.82		07-11-2001	14:11:48
002	00	2	0	0.00	0.00		2	-0.37	-1.07		07-11-2001	14:13:47
003	00	3	0	0.00	0.00		6	2.30	6.72		07-11-2001	14:15:46
004	00	4	0	0.00	0.00		4	0.97	2.82		07-11-2001	14:17:45
005	00	5	0	0.00	0.00		3	0.30	0.88		07-11-2001	14:19:44
006	00	6	0	0.00	0.00		2	-0.37	-1.07		07-11-2001	14:21:43

Performed By: [signature] Date: 7/16/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01F01 C PIN 19
PIC IPC9025 216712

			ALPHA				BETA			
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		3	0.30	0.88		07-11-2001	14:33:57
002	00	2	0	0.00	0.00		3	0.30	0.88		07-11-2001	14:35:57
003	00	3	0	0.00	0.00		3	0.30	0.88		07-11-2001	14:37:56
004	00	4	0	0.00	0.00		11	5.63	16.45		07-11-2001	14:39:55
005	00	5	0	0.00	0.00		2	-0.37	-1.07		07-11-2001	14:41:54
006	00	6	1	0.67	1.91		3	0.10	0.29		07-11-2001	14:43:53

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01F01 D PIN 19
PIC IPC9025 216712

			ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm			BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm				
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE TIME
001	00	2	0	0.00	0.00		5	1.63	4.77		07-11-2001 14:48:29
002	00	3	0	0.00	0.00		3	0.30	0.88		07-11-2001 14:50:28
003	00	4	0	0.00	0.00		3	0.30	0.88		07-11-2001 14:52:27
004	00	5	0	0.00	0.00		4	0.97	2.82		07-11-2001 14:54:26
005	00	6	2	1.33	3.81		5	1.24	3.61		07-11-2001 14:56:25

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W01 A FIN 19

PIC IPC9025 Z16712

			ALPHA				BETA					
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm					
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		1	-1.03	-3.02		07-11-2001	14:59:35
002	00	2	0	0.00	0.00		5	1.63	4.77		07-11-2001	15:01:34
003	00	3	0	0.00	0.00		2	-0.37	-1.07		07-11-2001	15:03:33
004	00	4	0	0.00	0.00		1	-1.03	-3.02		07-11-2001	15:05:32

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W01 B PIN 19
PIC IPC9025 216712

			ALPHA				BETA					
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm					
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		3	0.30	0.88		07-11-2001	15:09:21

FINAL SURVEY 01W01 B PIN 19
PIC IPC9025 216712

			ALPHA				BETA					
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm					
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
002	00	2	0	0.00	0.00		3	0.30	0.88		07-11-2001	15:14:48
003	00	3	0	0.00	0.00		3	0.30	0.88		07-11-2001	15:16:47
004	00	4	0	0.00	0.00		4	0.97	2.82		07-11-2001	15:18:46

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W02 A PIN 15

PIC IPC9025 216712

			ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm					
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		3	0.30	0.88		07-11-2001	15:26:05
002	00	2	0	0.00	0.00		3	0.30	0.88		07-11-2001	15:28:05
003	00	3	0	0.00	0.00		4	0.97	2.82		07-11-2001	15:30:04
004	00	4	1	0.67	1.91		4	0.77	2.24		07-11-2001	15:32:03
005	00	5	0	0.00	0.00		1	-1.03	-3.02		07-11-2001	15:34:02

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/11/01

FINAL SURVEY 01W02 B PIN 19
PIC IPC9025 216712

SN	RPT	ID	ALPHA COUNTS (Eff: 34.97%)	ALPHA NET CPM (Bkg: 0.00 cpm)	ALPHA DPM (MDA: 5.17 dpm)	ALPHA LIMITS	BETA COUNTS (Eff: 34.25%)	BETA NET CPM (Bkg: 1.70 cpm)	BETA DPM (MDA: 19.73 dpm)	BETA LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		0	-1.70	-4.96		07-11-2001	15:36:53
002	00	2	0	0.00	0.00		3	0.30	0.88		07-11-2001	15:38:52
003	00	3	0	0.00	0.00		0	-1.70	-4.96		07-11-2001	15:40:51
004	00	4	0	0.00	0.00		11	5.63	16.45		07-11-2001	15:42:50
005	00	5	0	0.00	0.00		4	0.97	2.82		07-11-2001	15:44:49

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W02 C FIN 19
PIC IPD9025 216712

			ALPHA				BETA					
			Eff: 34.97%	Bkg: 0.00 cpm	MDA: 5.17 dpm		Eff: 34.25%	Bkg: 1.70 cpm	MDA: 19.73 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	2	0	0.00	0.00		2	-0.37	-1.07		07-11-2001	15:51:42
002	00	3	0	0.00	0.00		2	-0.37	-1.07		07-11-2001	15:53:41
003	00	4	0	0.00	0.00		2	-0.37	-1.07		07-11-2001	15:55:40

Performed By: [signature] Date: 7/11/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01W03 A PIN 19

PIC IPC9025 216712

			ALPHA				BETA			
			Eff: 34.97%	Bkg: 0.00 cpm	MDA: 5.17 dpm		Eff: 34.25%	Bkg: 1.70 cpm	MDA: 19.73 dpm	
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		3	0.30	0.88		07-11-2001	15:59:03
002	00	2	0	0.00	0.00		6	2.30	6.72		07-11-2001	16:01:02
003	00	4	0	0.00	0.00		4	0.97	2.82		07-11-2001	16:03:01
004	00	5	0	0.00	0.00		2	-0.37	-1.07		07-11-2001	16:05:00

Performed By: _____ Date: 7/11/01

Reviewed By: _____ Date: 7/16/01

FINAL SURVEY 01W03 B FIN 19
PIC IPC9025 216712

			ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm					
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	1	0.67	1.91		0	-1.90	-5.54		07-12-2001	09:52:15
002	00	2	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	09:54:15
003	00	4	0	0.00	0.00		7	2.97	8.66		07-12-2001	09:56:14
004	00	5	0	0.00	0.00		7	2.97	8.66		07-12-2001	09:58:13

Performed By: [signature] Date: 7/12/01

Reviewed By: [signature] Date: 7/12/01

FINAL SURVEY 01C01 A FIN 19

PIC IPC9025 216712

			ALPHA				BETA			
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	4	0	0.00	0.00		5	1.63	4.77		07-12-2001	10:03:27
002	00	5	0	0.00	0.00		3	0.30	0.88		07-12-2001	10:05:26
003	00	6	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	10:07:25

Performed By: [illegible] Date: 7/16/01

Reviewed By: [illegible] Date: 7/16/01

FINAL SURVEY 01C01 B FIN 19

PIC IPC9025 216712

			ALPHA				BETA			
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		1	-1.03	-3.02		07-12-2001	10:18:14
002	00	2	0	0.00	0.00		0	-1.70	-4.96		07-12-2001	10:20:13
003	00	3	2	1.33	3.81		2	-0.76	-2.23		07-12-2001	10:22:12
004	00	4	0	0.00	0.00		0	-1.70	-4.96		07-12-2001	10:24:11
005	00	5	1	0.67	1.91		4	0.77	2.24		07-12-2001	10:26:10
006	00	6	3	2.00	5.72		2	-0.96	-2.81		07-12-2001	10:28:09

Performed By: [signature] Date: 7/12/01

Reviewed By: [signature] Date: 7/12/01

FINAL SURVEY 01C01 C PIN 19
PIC IPC9025 216712

SN	RPT	ID	ALPHA COUNTS	ALPHA NET CPM	ALPHA DPM	ALPHA LIMITS	BETA COUNTS	BETA NET CPM	BETA DPM	BETA LIMITS	DATE	TIME
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm					
001	00	1	0	0.00	0.00		0	-1.70	-4.96		07-12-2001	13:48:45
002	00	2	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	13:50:44
003	00	3	0	0.00	0.00		5	1.63	4.77		07-12-2001	13:52:43
004	00	4	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	13:54:42
005	00	5	0	0.00	0.00		0	-1.70	-4.96		07-12-2001	13:56:41
006	00	6	1	0.67	1.91		1	-1.23	-3.60		07-12-2001	13:58:40

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01C01 D PIN 19

PIC IPC9025 216712

			ALPHA				BETA			
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	2	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	14:03:02
002	00	3	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	14:05:01
003	00	4	0	0.00	0.00		3	0.30	0.88		07-12-2001	14:07:00
004	00	5	0	0.00	0.00		0	-1.70	-4.96		07-12-2001	14:08:59
005	00	6	0	0.00	0.00		3	0.30	0.88		07-12-2001	14:10:58

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 01E01 [Z] PIN 19

PIC IPC9025 216712

			ALPHA				BETA					
			Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm				Eff: 34.25% Bkg: 1.50 cpm MDA: 18.85 dpm					
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	-0.10	-0.29		3	0.50	1.46		07-13-2001	14:49:0
002	00	2	1	0.57	1.62		1	-1.00	-2.93		07-13-2001	14:51:0
003	00	3	0	-0.10	-0.29		1	-0.83	-2.43		07-13-2001	14:53:0
004	00	4	0	-0.10	-0.29		3	0.50	1.46		07-13-2001	14:55:0
005	00	5	0	-0.10	-0.29		3	0.50	1.46		07-13-2001	14:57:0
006	00	6	0	-0.10	-0.29		2	-0.17	-0.49		07-13-2001	14:59:0
007	00	7	0	-0.10	-0.29		0	-1.50	-4.38		07-13-2001	15:01:0
008	00	8	0	-0.10	-0.29		12	6.50	18.98		07-13-2001	15:02:5
009	00	9	0	-0.10	-0.29		12	6.50	18.98		07-13-2001	15:04:5
010	00	10	0	-0.10	-0.29		3	0.50	1.46		07-13-2001	15:06:5

Performed By: _____ Date: 7/16/01

Reviewed By: _____ Date: 7/16/01

FINAL SURVEY 01T01 [Z] PIN 19

PIC IPC9025 216712

			ALPHA				BETA			
			Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm				Eff: 34.25% Bkg: 1.30 cpm MDA: 17.91 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	-0.10	-0.29		7	3.37	9.83		07-16-2001	07:50:3
002	00	2	0	-0.10	-0.29		1	-0.63	-1.85		07-16-2001	07:52:3
003	00	3	0	-0.10	-0.29		2	0.03	0.10		07-16-2001	07:54:3
004	00	4	1	0.57	1.62		3	0.53	1.55		07-16-2001	07:56:3
005	00	5	0	-0.10	-0.29		2	0.03	0.10		07-16-2001	07:58:3
006	00	6	0	-0.10	-0.29		1	-0.63	-1.85		07-16-2001	08:00:3
007	00	7	1	0.57	1.62		4	1.20	3.50		07-16-2001	08:02:3
008	00	8	0	-0.10	-0.29		1	-0.63	-1.85		07-16-2001	08:04:3
009	00	9	0	-0.10	-0.29		2	0.03	0.10		07-16-2001	08:06:3
010	00	10	0	-0.10	-0.29		7	3.37	9.83		07-16-2001	08:08:3

Performed By: _____ Date: 7/16/01

Reviewed By: _____ Date: 7/16/01

Section 6

Package 19
H-3 Removable Beta Contamination
Summary Data Table (including lab reports)

Carrier No.	CPM	Count Time (sec)	Sample Area (cm^2)	Surface	Row	Location	Beta Efficiency	Beta Background (cpm)	Activity ($dpm/100cm^2$)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
1	38	60	100	01F01	A	00005	14.090%	0.00	270	270	19
2	26	60	100	01F01	B	00001	14.270%	0.00	182	182	19
3	28	60	100	01F01	B	00003	9.450%	0.00	296	296	29
4	31	60	100	01F01	B	00004	14.450%	0.00	215	215	19
5	26	60	100	01F01	C	00002	9.719%	0.00	268	268	28
6	26	60	100	01F01	C	00003	10.560%	0.00	246	246	26
7	24	60	100	01F01	C	00004	9.719%	0.00	247	247	28
8	24	60	100	01F01	C	00006	16.320%	0.00	147	147	17
9	25	60	100	01F01	D	00002	10.710%	0.00	233	233	25
10	31	60	100	01F01	D	00005	8.928%	0.00	347	347	30
11	26	60	100	01W01	A	00002	23.610%	0.00	110	110	11
12	31	60	100	01W01	B	00004	30.530%	0.00	102	102	9
13	23	60	100	01W02	A	00001	28.020%	0.00	82	82	10
14	30	60	100	01W02	A	00005	31.390%	0.00	96	96	9
15	20	60	100	01W02	B	00004	30.530%	0.00	66	66	9
16	20	60	100	01W02	C	00002	24.360%	0.00	82	82	11
17	30	60	100	01W03	A	00002	29.120%	0.00	103	103	9
18	37	60	100	01W03	A	00005	28.290%	0.00	131	131	10
19	24	60	100	01W03	B	00001	29.680%	0.00	81	81	9
20	30	60	100	01W03	B	00004	16.720%	0.00	179	179	16
21	35	60	100	01C01	A	00006	19.430%	0.00	180	180	14
22	45	60	100	01C01	B	00005	20.310%	0.00	222	222	13
23	29	60	100	01C01	C	00003	17.940%	0.00	162	162	15
24	30	60	100	01C01	D	00004	21.690%	0.00	138	138	12
25	26	60	100	01EQ1	ZZZZZ	00007	26.420%	0.00	98	98	10
26	33	60	100	01EQ1	ZZZZZ	00004	30.810%	0.00	107	107	9
27	38	60	100	01T01	ZZZZZ	00003	13.570%	0.00	280	280	20
28	30	60	100	01T01	ZZZZZ	00005	24.110%	0.00	124	124	11
29	32	60	100	01T01	ZZZZZ	00007	29.960%	0.00	107	107	9
30	37	60	100	01T01	ZZZZZ	00009	24.610%	0.00	150	150	11
									# Measurements	30	
									Average	168	
									Maximum	347	
									STD DEV	75	
									95% CL on Mean	200	

061

SCR: 1 ID:SMEARS PRESET TIME: 1.00 FRI 13 JUL 2001 15:23
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.328559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
1	2- 1	1	38.00	32.44	1.00	1.31	200.0	
		2	65.00	24.81				
		3	92.00	20.85				
					%EFF:14.09	ISO1 DPM	:269.6684	
2	2- 2	1	26.00	39.22	1.00	2.79	199.0	
		2	58.00	26.26				
		3	85.00	21.69				
					%EFF:14.27	ISO1 DPM	:182.2138	
3	2- 3	1	28.00	37.80	1.00	4.27	230.0	
		2	64.00	25.00				
		3	77.00	22.79				
					%EFF:9.450	ISO1 DPM	:296.2911	
4	2- 4	1	31.00	35.92	1.00	5.74	198.0	
		2	76.00	22.94				
		3	94.00	20.63				
					%EFF:14.45	ISO1 DPM	:214.5626	
5	2- 5	1	26.00	39.22	1.00	7.23	228.0	
		2	57.00	26.49				
		3	72.00	23.57				
					%EFF:9.719	ISO1 DPM	:267.5063	
6	2- 6	1	26.00	39.22	1.00	8.71	222.0	
		2	61.00	25.61				
		3	84.00	21.82				
					%EFF:10.56	ISO1 DPM	:246.1932	
7	2- 7	1	24.00	40.82	1.00	10.19	228.0	
		2	52.00	27.74				
		3	64.00	25.00				
					%EFF:9.719	ISO1 DPM	:246.9289	
8	2- 8	1	24.00	40.82	1.00	11.68	188.0	
		2	52.00	27.74				
		3	66.00	24.62				
					%EFF:16.32	ISO1 DPM	:147.0252	
9	2- 9	1	25.00	40.00	1.00	13.15	221.0	
		2	58.00	26.26				
		3	70.00	23.90				
					%EFF:10.71	ISO1 DPM	:233.5139	

Performed By: [signature] Date: 7/16/01

Reviewed By: [signature] Date: 7/16/01

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
10	2-10	1	31.00	35.92	1.00	14.63	234.0	
		2	64.00	25.00				
		3	72.00	23.57				
					%EFF:8.928	ISO1	DPM	:347.2254
11	2-11	1	26.00	39.22	1.00	16.11	155.0	
		2	54.00	27.22				
		3	90.00	21.08				
					%EFF:23.61	ISO1	DPM	:110.1067
12	2-12	1	31.00	35.92	1.00	17.58	129.0	
		2	61.00	25.61				
		3	90.00	21.08				
					%EFF:30.53	ISO1	DPM	:101.5457
13	3- 1	1	23.00	41.70	1.00	19.12	138.0	
		2	48.00	28.57				
		3	79.00	22.65				
					%EFF:28.02	ISO1	DPM	:82.07933
14	3- 2	1	30.00	36.51	1.00	20.61	126.0	
		2	53.00	27.47				
		3	79.00	22.50				
					%EFF:31.39	ISO1	DPM	:95.57417
15	3- 3	1	20.00	44.72	1.00	22.08	129.0	
		2	52.00	27.74				
		3	76.00	22.94				
					%EFF:30.53	ISO1	DPM	:65.51334
	3- 4	1	20.00	44.72	1.00	23.57	152.0	
		2	54.00	27.22				
		3	80.00	22.36				
					%EFF:24.36	ISO1	DPM	:82.10253
17	3- 5	1	30.00	36.51	1.00	25.05	134.0	
		2	67.00	24.43				
		3	91.00	20.97				
					%EFF:29.12	ISO1	DPM	:103.0177
18	3- 6	1	37.00	32.88	1.00	26.53	137.0	
		2	70.00	23.90				
		3	97.00	20.31				
					%EFF:28.29	ISO1	DPM	:130.7676
19	3- 7	1	24.00	40.82	1.00	28.01	132.0	
		2	55.00	26.97				
		3	87.00	21.44				
					%EFF:29.68	ISO1	DPM	:80.86346
20	3- 8	1	30.00	36.51	1.00	29.50	186.0	
		2	66.00	24.62				
		3	89.00	21.32				
					%EFF:16.72	ISO1	DPM	:179.4539
21	3- 9	1	35.00	33.81	1.00	30.98	173.0	
		2	72.00	23.57				
		3	97.00	20.31				
					%EFF:19.43	ISO1	DPM	:180.1570
22	3-10	1	45.00	29.81	1.00	32.47	169.0	
		2	73.00	23.41				
		3	95.00	20.52				
					%EFF:20.31	ISO1	DPM	:221.5193

Performed By: [signature] Date: 7/16/01

Reviewed By: [signature] Date: 7/16/01

SAM	POS	CH	CPM	ISIG%	TIME	EL TIME	AVG	H#	ERR
23	3-11	1	29.00	37.14	1.00	33.95	180.0		
		2	43.00	25.20					
		3	22.00	22.09					
					%EFF:	17.94	ISO1	DPM	:161.6902
24	3-12	1	30.00	36.51	1.00	35.43	163.0		
		2	46.00	24.62					
		3	89.00	21.72					
					%EFF:	21.69	ISO1	DPM	:138.3047
25	6- 1	1	26.00	39.22	1.00	36.97	144.0		
		2	42.00	25.40					
		3	57.00	21.44					
					%EFF:	26.42	ISO1	DPM	:98.42297
26	6- 2	1	33.00	34.82	1.00	38.45	128.0		
		2	49.00	24.08					
		3	101.00	19.50					
					%EFF:	30.81	ISO1	DPM	:107.0956
27	6- 3	1	39.00	32.44	1.00	39.92	203.0		
		2	63.00	25.20					
		3	78.00	22.65					
					%EFF:	13.57	ISO1	DPM	:280.0809
28	6- 4	1	30.00	36.51	1.00	41.41	153.0		
		2	41.00	25.61					
		3	89.00	21.32					
					%EFF:	24.11	ISO1	DPM	:124.4317
	6- 5	1	32.00	35.36	1.00	42.89	131.0		
		2	57.00	26.49					
		3	94.00	20.63					
					%EFF:	29.96	ISO1	DPM	:106.8055
30	6- 6	1	37.00	32.88	1.00	44.38	151.0		
		2	61.00	25.61					
		3	92.00	20.85					
					%EFF:	24.61	ISO1	DPM	:150.3362

Performed By: [signature] Date: 7/16/01

Reviewed By: _____ Date: _____

Georgia Institute of Technology Research Reactor

Final Survey Package 20

Reactor Ventilation Above 2 Meters

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Section 1

Survey Package 20 Worksheet for Reactor Ventilation System Above 2 Meters

Duratek Inc.
Survey Package Worksheet for Reactor Ventilation System Above 2 Meters
Georgia Institute of Technology Research Reactor

Package Identification No.: 20	Prepared by: Paul Jones
Location: Process Reactor Ventilation System Above 2 Meters	Date prepared: 07/09/2001
Area Classification: Non-Suspect Affected	

Area Description

The survey area consists of all areas 2 meters above the floor up to and including any ceilings in the following areas;

1) Reactor Building Stack Main Vent Room,
2) Stack Kanne Chamber Room, and
3) The Reactor Building Stack.

These areas are accessed either through the door located immediately adjacent to the stack dilution air intake grate on the west side of the reactor building exterior or through the personnel hatch in the stack.

Historical Information

No decontamination was required in this area.

General Survey Instructions

Overhead (Non-Suspect Affected):

1) Perform a minimum of 10% scan of accessible surfaces. The surface scanned should be biased towards surfaces with a higher potential of being contaminated, (i.e. tops of lamps and other tops of horizontal surfaces).
2) Obtain 1 direct beta measurement in the overhead for each 20 square meters of surface area (See Special Instructions for the minimum number of readings required). Denote location of all readings on map
3) Obtain 1 smear for gross alpha/beta analysis at each measurement location.
4) Obtain required smears for H-3 analysis (See Special Instructions for the minimum number of smears required). Denote location of all smears on map.

Use only the Package ID, L2, L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taking fixed beta readings.

Special Instructions
Source check meters to Tc-99 for beta measurements. Use gas flow proportional detector model numbers 43-68 and 43-106 for surveys. Perform a minimum of two 10-minute backgrounds on each surface to be surveyed. Verify that the MDA is less than 600 dpm/100cm2 for direct beta measurements after obtaining initial background. The direct beta measurements and smears should be taken equidistant throughout the survey area. During scanning the detector is to be kept as close to the surface as possible and moved across the surface at a slow speed (scan speed shall not exceed on probe width per sec). The scan should be performed using the audible output and using headphones whenever necessary.

Survey performance (Initial and date as each survey is complete)										
Location Code					General Description	Beta Scan	Direct Beta	1 meter Gamma	Smear Gross α/β	LS Smear
L1	L2	L6	L7	L8						
Georgia Tech Research Reactor ~~2nd Floor Lower Walls and Floor~~ Reactor ventilation system below 2 meters										
A0220	01OH1	B0002, B9999	ZZZZZ	1 thru 30	Overhead areas above 2 meters.	BSK 7-14-01	(30) BSK 7-14-01	N/A	(30) BSK 7-14-01	(30) BSK 7-14-01
						A				
					N					

005

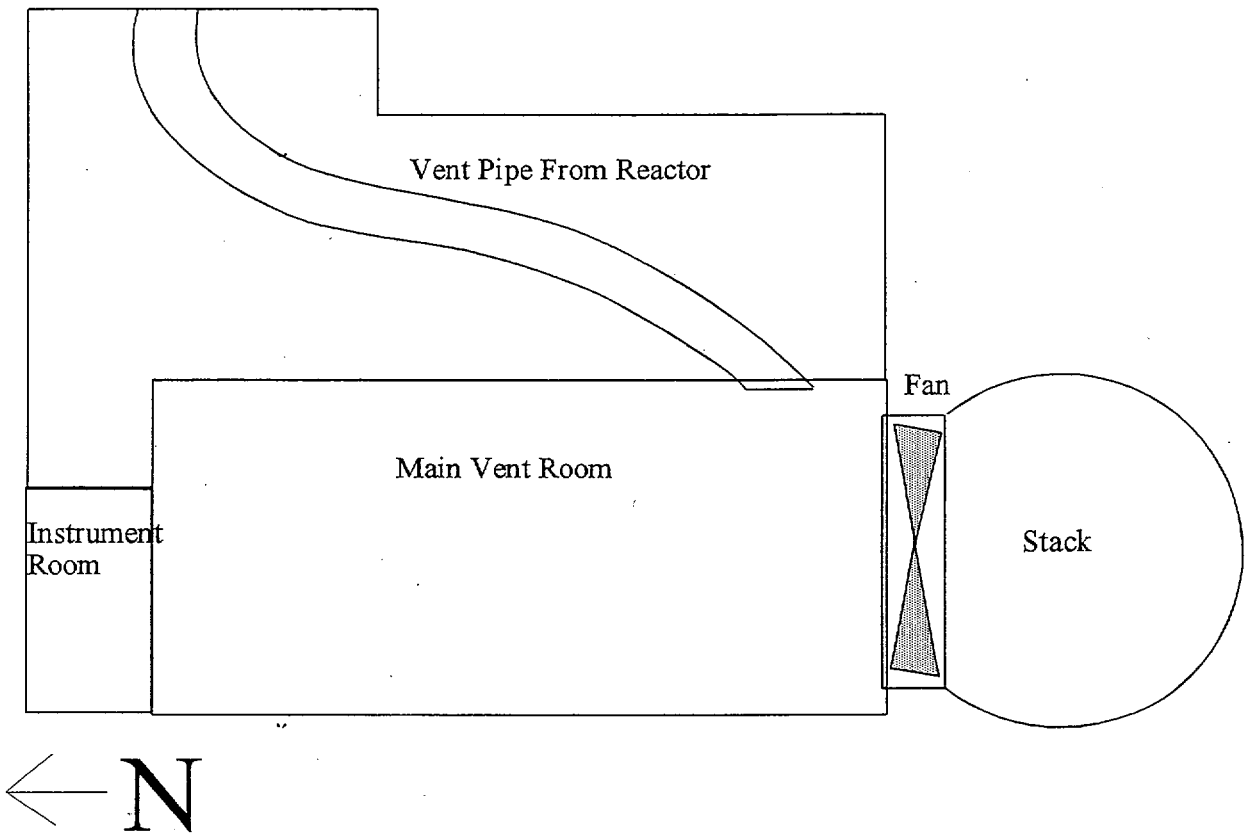
Package Review
Date Package Completed
Package Reviewed by and Date

Survey Comments

Section 2

Package 20
Drawing

Reactor Ventilation Above 2 Meters



Section 3

Package 20
Direct Beta Survey Report for the Non-Suspect Affected Process Reactor Ventilation System (including download reports)

Desc.	File	Sample Number	Gross Counts	Count Time (sec)	Material Type	Detector Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Activity ($dpm/100cm^2$)	Natural Background ($dpm/100cm^2$)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
010H1	178	29	104	20	B9999	126	010H1	FLDCT	ZZZZZ	00001	0.209	336	-91	0	-91	434
	178	30	107	20	B9999	126	010H1	FLDCT	ZZZZZ	00002	0.209	336	-57	0	-57	434
	178	31	123	20	B9999	126	010H1	FLDCT	ZZZZZ	00003	0.209	336	125	0	125	434
	178	32	114	20	B9999	126	010H1	FLDCT	ZZZZZ	00004	0.209	336	23	0	23	434
	178	33	100	20	B9999	126	010H1	FLDCT	ZZZZZ	00005	0.209	336	-137	0	-137	434
	178	36	219	20	B0002	126	010H1	FLDCT	ZZZZZ	00006	0.209	465	729	354	375	551
	178	37	173	20	B0002	126	010H1	FLDCT	ZZZZZ	00007	0.209	465	205	354	-149	551
	178	38	166	20	B0002	126	010H1	FLDCT	ZZZZZ	00008	0.209	465	125	354	-229	551
	178	39	147	20	B0002	126	010H1	FLDCT	ZZZZZ	00009	0.209	465	-91	354	-445	551
	178	40	165	20	B0002	126	010H1	FLDCT	ZZZZZ	00010	0.209	465	114	354	-240	551
	178	41	172	20	B0002	126	010H1	FLDCT	ZZZZZ	00011	0.209	465	194	354	-160	551
	178	42	209	20	B0002	126	010H1	FLDCT	ZZZZZ	00012	0.209	465	615	354	261	551
	178	43	177	20	B0002	126	010H1	FLDCT	ZZZZZ	00013	0.209	465	251	354	-103	551
	178	44	180	20	B0002	126	010H1	FLDCT	ZZZZZ	00014	0.209	465	285	354	-69	551
	178	45	191	20	B0002	126	010H1	FLDCT	ZZZZZ	00015	0.209	465	410	354	56	551
	178	46	190	20	B0002	126	010H1	FLDCT	ZZZZZ	00016	0.209	465	399	354	45	551
	178	47	191	20	B0002	126	010H1	FLDCT	ZZZZZ	00017	0.209	465	410	354	56	551
	178	48	184	20	B0002	126	010H1	FLDCT	ZZZZZ	00018	0.209	465	330	354	-24	551
	178	49	198	20	B0002	126	010H1	FLDCT	ZZZZZ	00019	0.209	465	490	354	136	551
	178	50	205	20	B0002	126	010H1	FLDCT	ZZZZZ	00020	0.209	465	570	354	216	551
	178	51	235	20	B0002	126	010H1	FLDCT	ZZZZZ	00021	0.209	465	911	354	557	551
	178	52	229	20	B0002	126	010H1	FLDCT	ZZZZZ	00022	0.209	465	843	354	489	551
	178	53	188	20	B0002	126	010H1	FLDCT	ZZZZZ	00023	0.209	465	376	354	22	551
	178	55	126	20	B9999	126	010H1	FLDCT	ZZZZZ	00024	0.209	435	-216	0	-216	490
	178	56	136	20	B9999	126	010H1	FLDCT	ZZZZZ	00025	0.209	435	-103	0	-103	490
	178	57	235	20	B9999	126	010H1	FLDCT	ZZZZZ	00026	0.209	435	1025	0	1025	490
	178	58	252	20	B9999	126	010H1	FLDCT	ZZZZZ	00027	0.209	435	1219	0	1219	490
	178	59	175	20	B9999	126	010H1	FLDCT	ZZZZZ	00028	0.209	435	342	0	342	490
	181	40	85	20	B9999	126	01H01	FLDCT	ZZZZZ	00029	0.218	287	-116	0	-116	387
	181	41	92	20	B9999	126	01H01	FLDCT	ZZZZZ	00030	0.218	287	-40	0	-40	387
														# Measurements	30	
														Average	92	
														Maximum	1219	
														STD DEV	352	
														95% CL on Mean	218	

010

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #178

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

012

Download Technician: Print Name: Don Schumacker Signature: [signature] Station: 2 File: 178
Serial No. Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: Betty S. Kyes User ID BSKDA90 Signature: Betty S Kyes Date: 7-12-01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0220, Rx Ventilation System Above 2 Meters
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12-6-01 Detector: 12-6-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☑ Beta β	091050	43-68B	.209	5279 | 399	178	178
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			

Local Area Background Measurements — MEAN Value in cpm

β Beta	13263 | 3454	24651	34421 | 4288	4	5	6	401
α Alpha	1 avg = 336	2	3 avg = 435	4	5	6	

COMMENTS: Points 29 + 30 (010H) are on download file. #181.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 178	Survey Description: A0220: RX VENTILATION SYS. ABOVE 2 METERS		
Survey Reason: TERMINATION	User ID: BSK0490	Technician name: B.S. Kjos	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-68B	Detector S/N: 091050	Type: 126 cm2 Gas Proportional Detector, Beta Window	
Background: 427 cpm	Beta Efficiency: .209		Survey Date: 7/11/01

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: Betty S. Kjos (Print name) / Betty S Kjos (Signature) Date: 7-12-01

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: Ron Jones (Print name) / [signature] (Signature) Date: 12/1/01

Survey Date: 7/11/01 Report Date: 7/12/01 Page: 1
File: 178 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0220	010H1	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDBK	B9999	ZZZZZ	00000	28	600	3263	-382	
FLDBK	B9999	ZZZZZ	00000	34	600	3454	-310	
FLDBK	B0002	ZZZZZ	00000	35	600	4651	145	
FLDBK	B9999	ZZZZZ	00000	54	600	4421	57	
FLDBK	B9999	ZZZZZ	00000	60	600	4288	7	
						Group Average:	-97	
FLDCT	B9999	ZZZZZ	00001	29	20	104	-437	
FLDCT	B9999	ZZZZZ	00002	30	20	107	-403	
FLDCT	B9999	ZZZZZ	00003	31	20	123	-220	
FLDCT	B9999	ZZZZZ	00004	32	20	114	-323	
FLDCT	B9999	ZZZZZ	00005	33	20	100	-482	
FLDCT	B0002	ZZZZZ	00006	36	20	219	873	*
FLDCT	B0002	ZZZZZ	00007	37	20	173	349	
FLDCT	B0002	ZZZZZ	00008	38	20	166	270	
FLDCT	B0002	ZZZZZ	00009	39	20	147	53	
FLDCT	B0002	ZZZZZ	00010	40	20	165	258	
FLDCT	B0002	ZZZZZ	00011	41	20	172	338	
FLDCT	B0002	ZZZZZ	00012	42	20	209	759	*
FLDCT	B0002	ZZZZZ	00013	43	20	177	395	
FLDCT	B0002	ZZZZZ	00014	44	20	180	429	
FLDCT	B0002	ZZZZZ	00015	45	20	191	554	
FLDCT	B0002	ZZZZZ	00016	46	20	190	543	
FLDCT	B0002	ZZZZZ	00017	47	20	191	554	
FLDCT	B0002	ZZZZZ	00018	48	20	184	475	
FLDCT	B0002	ZZZZZ	00019	49	20	198	634	*
FLDCT	B0002	ZZZZZ	00020	50	20	205	714	*
FLDCT	B0002	ZZZZZ	00021	51	20	235	1056	*
FLDCT	B0002	ZZZZZ	00022	52	20	229	987	*
FLDCT	B0002	ZZZZZ	00023	53	20	188	520	
FLDCT	B9999	ZZZZZ	00024	55	20	126	-186	
FLDCT	B9999	ZZZZZ	00025	56	20	136	-72	
FLDCT	B9999	ZZZZZ	00026	57	20	235	1056	*
FLDCT	B9999	ZZZZZ	00027	58	20	252	1249	*
FLDCT	B9999	ZZZZZ	00028	59	20	175	372	
						Group Average:	368	

Survey Code	L1	L2	L3	L4	Setup Number 0
	ZZZZZ	EZ260	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PRB00	ZZZZZ	ZZZZZ	00000	1	60	5424	18975	*
PRB00	ZZZZZ	ZZZZZ	00000	2	60	5772	20297	*
PRB00	ZZZZZ	ZZZZZ	00000	3	60	5837	20544	*
						Group Average:	19939	
PTB00	ZZZZZ	ZZZZZ	00000	86	60	5501	19268	*
PTB00	ZZZZZ	ZZZZZ	00000	87	60	5822	20487	*
PTB00	ZZZZZ	ZZZZZ	00000	88	60	5723	20111	*
						Group Average:	19955	

* Hi flag set at 600 dpm/100 cm2

Survey Date: 7/11/01 Report Date: 7/12/01 Page: 2
File: 178 Station: 2

Comments

Survey Code	L1	L2	L3	L4
	ZZZZZ	ZZZZZ	TAT01	02200

Setup Number 0
Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	3989	-107	
						Group Average:	-107	
PTBBK	ZZZZZ	ZZZZZ	00000	85	600	4112	-60	
						Group Average:	-60	

Total Number of Measurements on this Report: 41

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 600 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/12/01 Comments Report for File 178 Station: 2

Comment Number	Comment
1	Deleted sample numbers from 4 to 27. SEE FILE # 177 FOR THESE DATA POINTS.
2	Deleted sample numbers from 61 to 84. SEE FILE # 177 FOR THESE DATA POINTS.

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

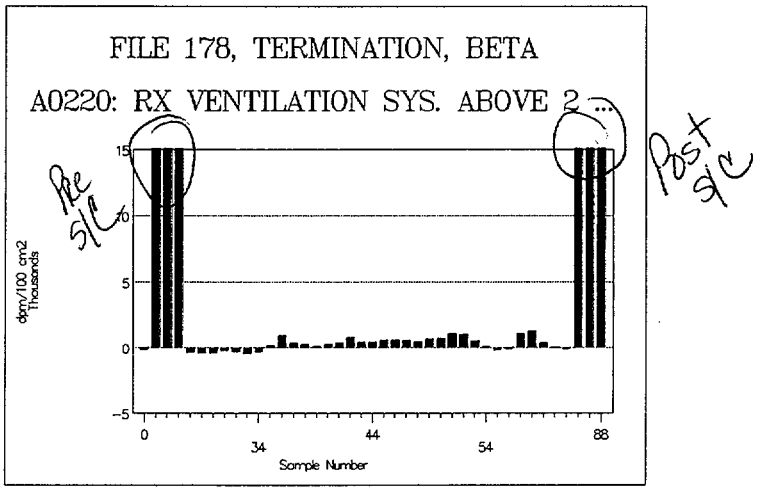
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/12/2001 Graph of File 178 Station: 2

Survey Date: 7/11/2001 Survey Start Time: 10:16:48

Description: A0220: RX VENTILATION SYS. ABOVE 2 METERS



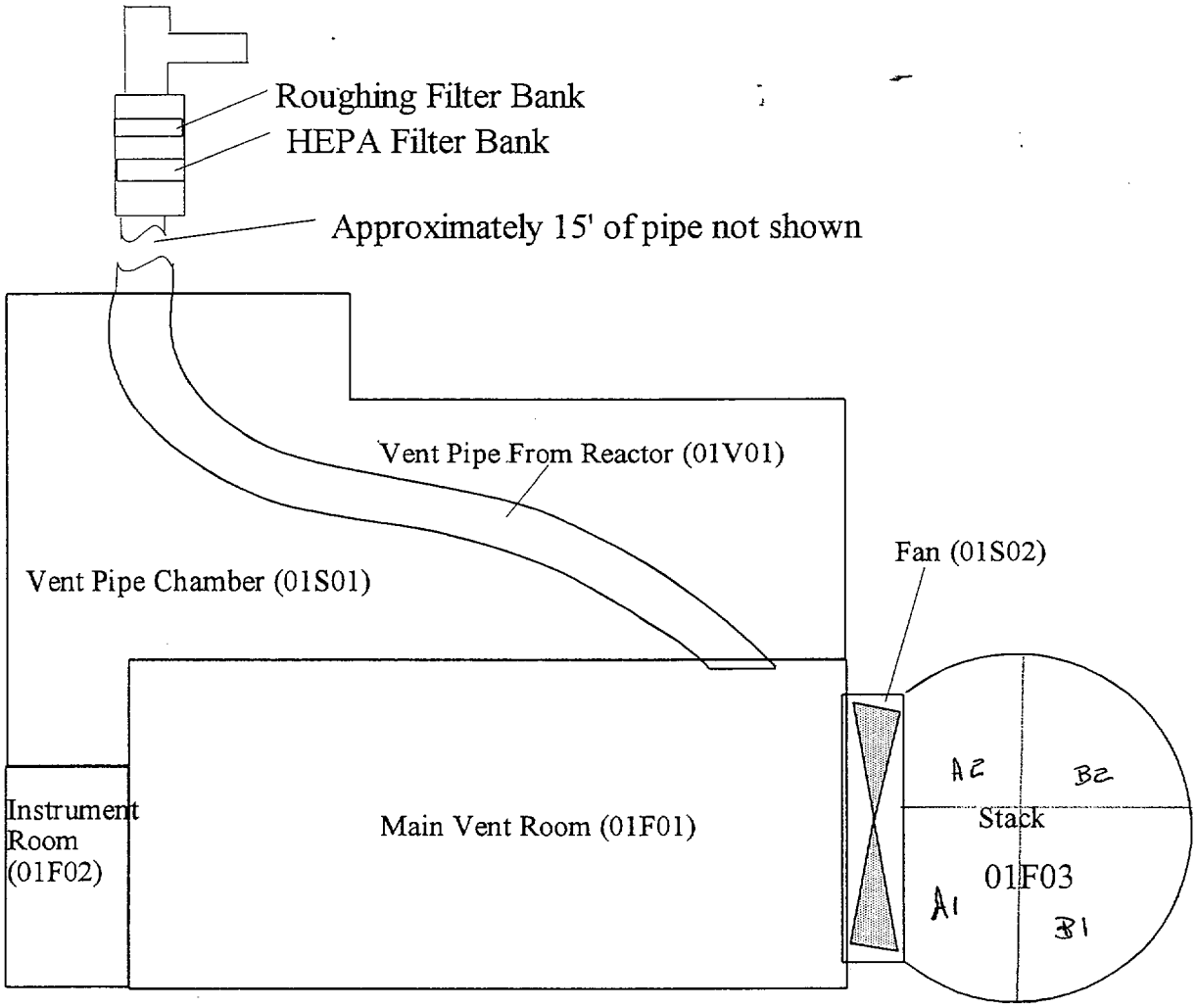
Flag set for 600 dpm/100 cm2. Review values greater than this value.

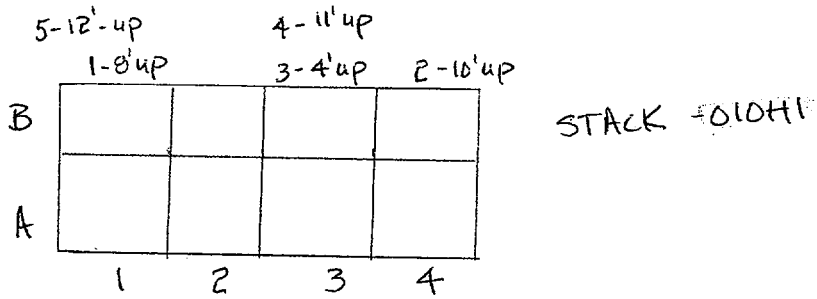
Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

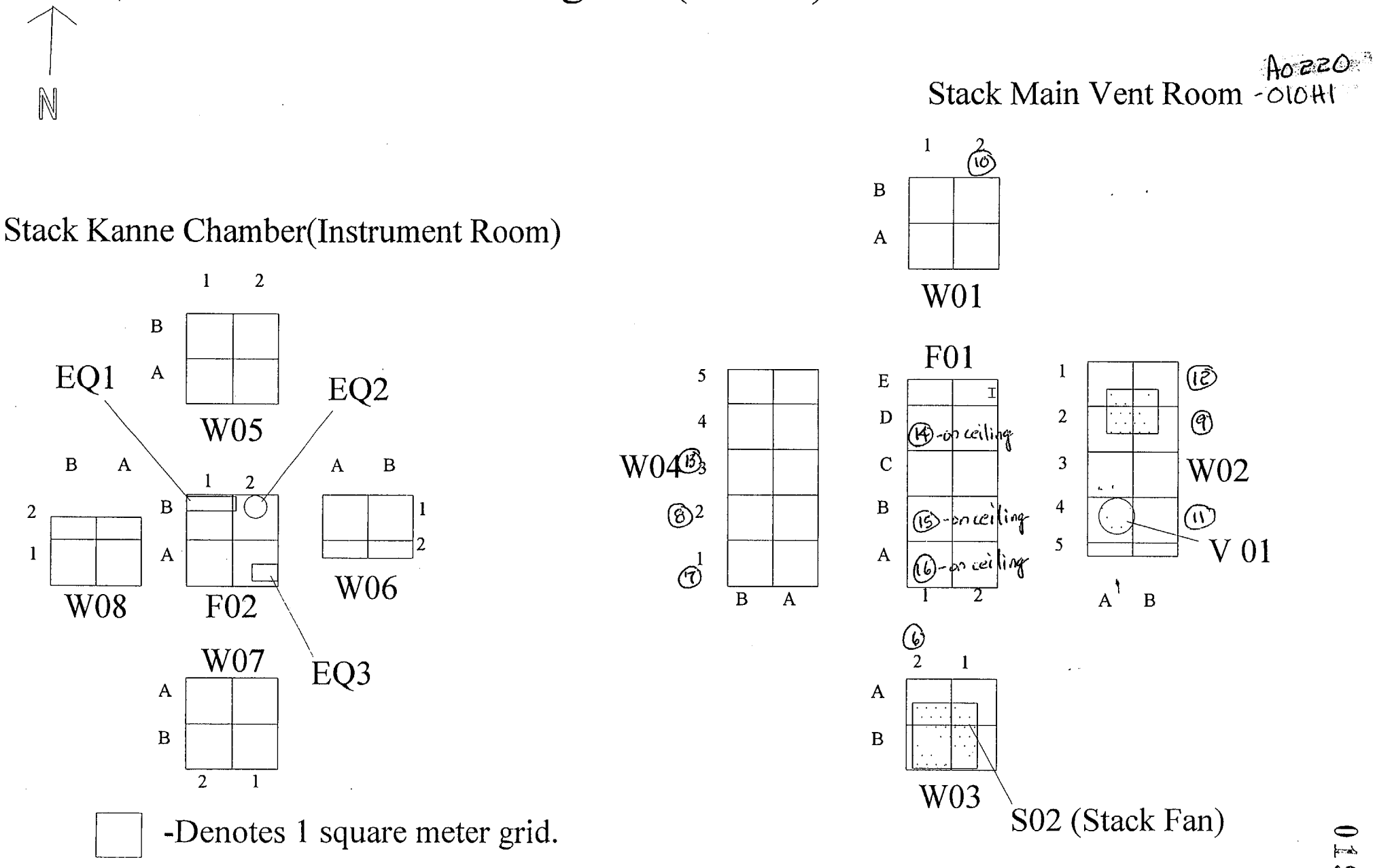
A0220 018
010H1

REACTOR BUILDING VENTILATION ROOM AND STACK





Package 07 (A0207)

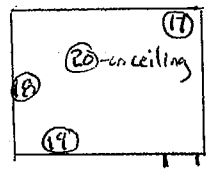


0149

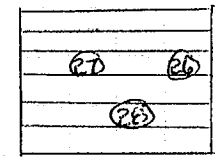
020

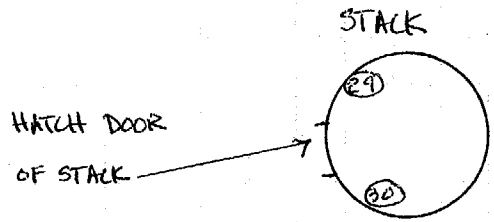
A0220
010H1

STACK MAIN Vent Room
Area @ top of ladder



STACK MAIN VENT ROOM
VENTS @ TOP OF LADDER





The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #181

022

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: D. Schumaker Signature: [signature] Station: 2 File: 181

Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: RA LEIGH User ID RAL7103 Signature: [signature] Date: 7-18-01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0220: Rx Ventilation Sys Above 2 meters #29, 30 1/s TACK
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129433

Instrument and Detector Calibration Due Dates: Survey Meter: 11-24-01 Detector: ~~091029~~ 12-21-01 7-14-01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info: Pre File No.	Pre & Post Use Info: Post File No.
☐ Beta β		43-106B				
☒ Beta β	~~091029~~ 095080 7/14/01	43-68B	.218	5497/426	181	181
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			

Local Area Background Measurements — MEAN Value in cpm

β Beta	1 2877	2 2865	3	4	5	6	287
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 181	Survey Description: A0220: RX VENTILATION SYS. ABOVE 2 METERS #29&30 I/S STACK		
Survey Reason: TERMINATION	User ID: RAL7103	Technician name: R.A. Leigh	
Instrument Model: 2350-1	S/N: 129433	Calibration Due: 10/24/01	Group: 2
Detector Model: 43-68	Detector S/N: 095080	Type: 126 cm2 Gas Proportional Detector	
Background: 287 cpm	Beta Efficiency: .218		Survey Date: 7/12/01

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and RAL 1 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: R.A. LEIGH (Print name) / RAL (Signature) Date: 7-18-01

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: Paul Jones (Print name) / Paul Jones (Signature) Date: 12/1/01

Survey Date: 7/12/01 Report Date: 7/14/01 Page: 1
File: 181 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0220	01H01	TAT01	02200	Det Cal Due: 12/21/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B9999	ZZZZZ	00000	39	600	2877	3	
FLDBK	B9999	ZZZZZ	00000	42	600	2865	-2	
						Group Average:	0	
FLDCT	B9999	ZZZZZ	00029	40	20	85	-116	
FLDCT	B9999	ZZZZZ	00030	41	20	92	-40	
						Group Average:	-78	

Survey Code	L1	L2	L3	L4	Setup Number 0
	ZZZZZ	EZ260	TAT01	02200	Det Cal Due: 12/21/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRB00	ZZZZZ	ZZZZZ	00000	1	60	5778	19991	*
PRB00	ZZZZZ	ZZZZZ	00000	2	60	6089	21123	*
PRB00	ZZZZZ	ZZZZZ	00000	3	60	5850	20253	*
						Group Average:	20455	
PTB00	ZZZZZ	ZZZZZ	00000	44	60	6029	20904	*
PTB00	ZZZZZ	ZZZZZ	00000	45	60	6144	21323	*
PTB00	ZZZZZ	ZZZZZ	00000	46	60	6075	21072	*
						Group Average:	21100	

Survey Code	L1	L2	L3	L4	Setup Number 0
	ZZZZZ	ZZZZZ	TAT01	02200	Det Cal Due: 12/21/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	4133	460	
						Group Average:	460	
PTBBK	ZZZZZ	ZZZZZ	00000	43	600	4235	497	
						Group Average:	497	

Total Number of Measurements on this Report: 12

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 600 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/14/01 Comments Report for File 181 Station: 2

Comment Number	Comment
1	Deleted sample numbers from 4 to 38. SEE FILE # 183 FOR THESE DATA POINTS.

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

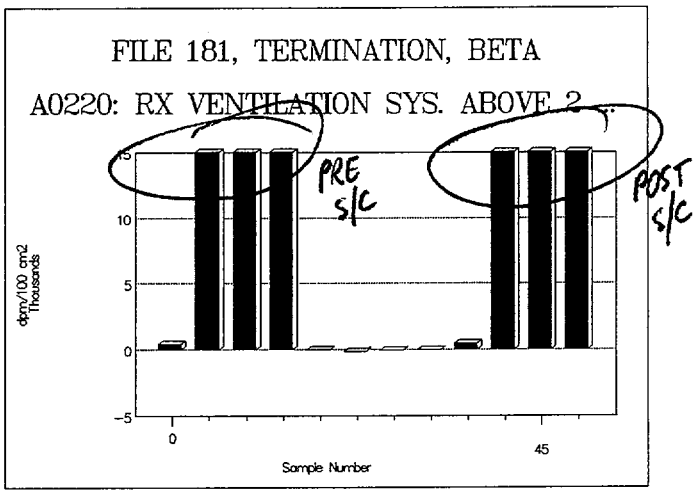
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/14/2001 Graph of File 181 Station: 2

Survey Date: 7/12/2001 Survey Start Time: 11:04:34

Description: A0220: RX VENTILATION SYS. ABOVE 2 METERS #29&30 I/S STACK

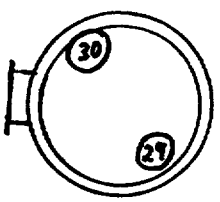


Flag set for 600 dpm/100 cm2. Review values greater than this value.

PLOT.SC

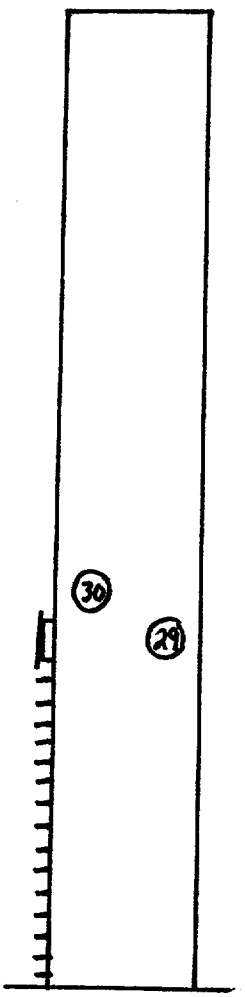
A0220
REACTOR VENTILATION SYSTEM
ABOVE 2 METERS
1/5 STACK

TOP VIEW



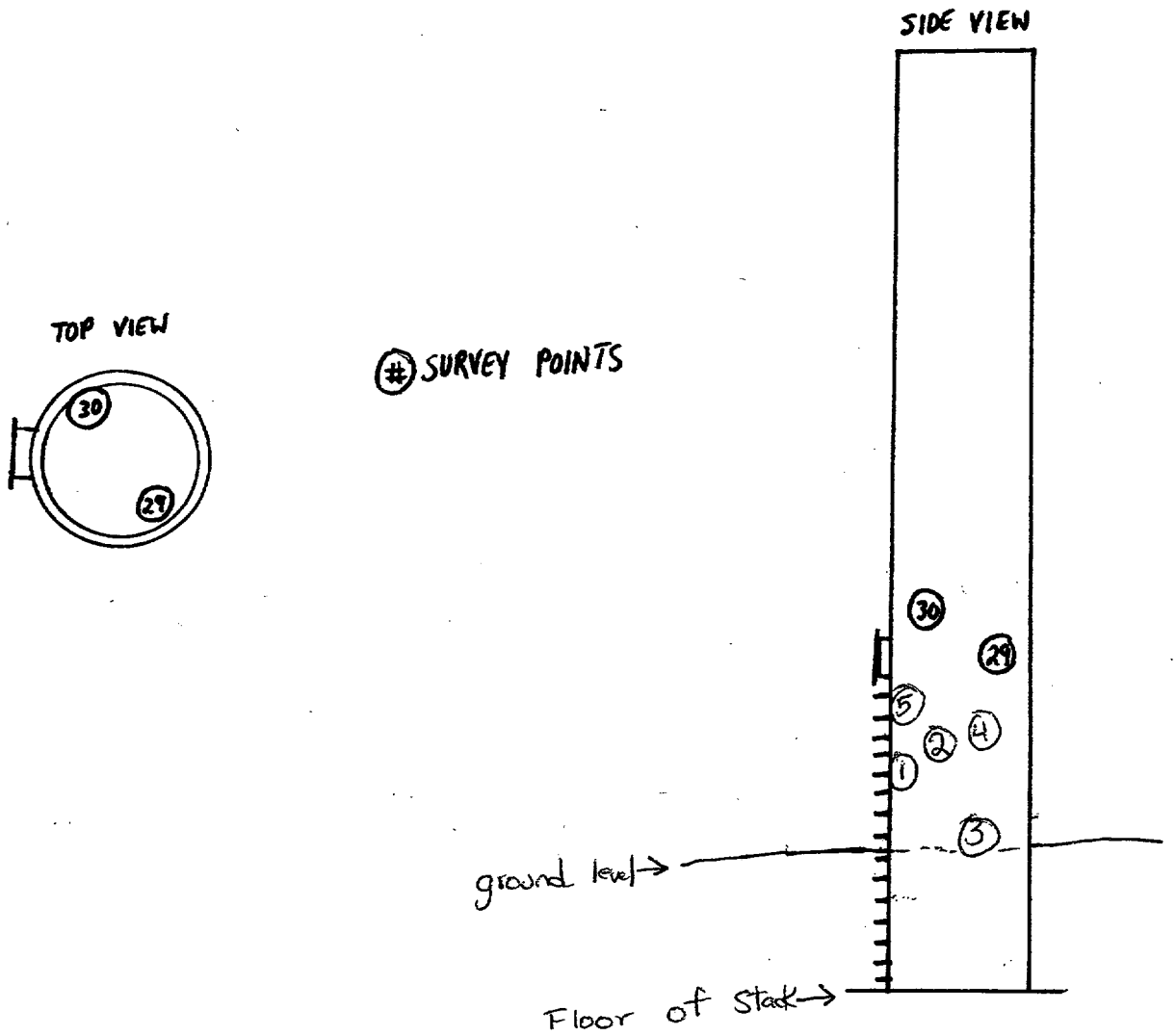
(#) SURVEY POINTS

SIDE VIEW



R.G. Zil
7-19-01

A0220
REACTOR VENTILATION SYSTEM
ABOVE 2 METERS
1/s STACK
(combined drawing)
download files 178 and 181 Stack Drawing



R.G. Zil
7-19-01

P. Jones

Section 4

Package 20
Removable Beta Contamination for the Ventilation System Above 2 Meters Non-Suspect Affected (including lab reports)

Removable Beta Contamination Package A0220 (Ventilation System Above 2 Metes Non Suspect Affected)

Desc.	Gross Counts	Count Time (sec)	Sample Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
	4	90	100	010H1	FLDCT	ZZZZZ	00001	0.3425	2	3	16
	5	90	100	010H1	FLDCT	ZZZZZ	00002	0.3425	2	5	16
	2	90	100	010H1	FLDCT	ZZZZZ	00003	0.3425	2	-1	16
	0	90	100	010H1	FLDCT	ZZZZZ	00004	0.3425	2	-5	16
	5	90	100	010H1	FLDCT	ZZZZZ	00005	0.3425	2	5	16
	2	90	100	010H1	FLDCT	ZZZZZ	00006	0.3425	2	-1	16
	1	90	100	010H1	FLDCT	ZZZZZ	00007	0.3425	2	-3	16
	1	90	100	010H1	FLDCT	ZZZZZ	00008	0.3425	2	-3	16
	0	90	100	010H1	FLDCT	ZZZZZ	00009	0.3425	2	-5	16
	5	90	100	010H1	FLDCT	ZZZZZ	00010	0.3425	2	5	16
	2	90	100	010H1	FLDCT	ZZZZZ	00011	0.3425	2	-2	16
	9	90	100	010H1	FLDCT	ZZZZZ	00012	0.3425	2	12	16
	4	90	100	010H1	FLDCT	ZZZZZ	00013	0.3425	2	3	16
	2	90	100	010H1	FLDCT	ZZZZZ	00014	0.3425	2	-1	16
	0	90	100	010H1	FLDCT	ZZZZZ	00015	0.3425	2	-5	16
	2	90	100	010H1	FLDCT	ZZZZZ	00016	0.3425	2	-1	16
	5	90	100	010H1	FLDCT	ZZZZZ	00017	0.3425	2	4	16
	17	90	100	010H1	FLDCT	ZZZZZ	00018	0.3425	2	28	16
	15	90	100	010H1	FLDCT	ZZZZZ	00019	0.3425	2	24	16
	5	90	100	010H1	FLDCT	ZZZZZ	00020	0.3425	2	4	16
	0	90	100	010H1	FLDCT	ZZZZZ	00021	0.3425	2	-5	16
	3	90	100	010H1	FLDCT	ZZZZZ	00022	0.3425	2	1	16
	3	90	100	010H1	FLDCT	ZZZZZ	00023	0.3425	2	1	16
	1	90	100	010H1	FLDCT	ZZZZZ	00024	0.3425	2	-3	16
	4	90	100	010H1	FLDCT	ZZZZZ	00025	0.3425	2	3	16
	7	90	100	010H1	FLDCT	ZZZZZ	00026	0.3425	2	7	16
	1	90	100	010H1	FLDCT	ZZZZZ	00027	0.3425	2	-4	16
	10	90	100	010H1	FLDCT	ZZZZZ	00028	0.3425	2	15	16
	2	90	100	01H01	FLDCT	ZZZZZ	00029	0.3425	2	-1	16
	1	90	100	01H01	FLDCT	ZZZZZ	00030	0.3425	2	-3	16
									# Measurements	30	
									Average	2	
									Maximum	28	
									STD DEV	8	
									95% CL on Mean	5	

030

FINAL SURVEY 010M1 [Z] PIN 20

PIC IPC9025 216712

			ALPHA Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				BETA Eff: 34.25% Bkg: 1.70 cpm MDA: 19.73 dpm					
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	0.00	0.00		4	0.97	2.82		07-12-2001	14:20:05
002	00	2	0	0.00	0.00		5	1.63	4.77		07-12-2001	14:22:07
003	00	3	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	14:24:06
004	00	4	0	0.00	0.00		0	-1.70	-4.96		07-12-2001	14:26:05
005	00	5	0	0.00	0.00		5	1.63	4.77		07-12-2001	14:28:04
006	00	6	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	14:30:03
007	00	7	0	0.00	0.00		1	-1.03	-3.02		07-12-2001	14:32:02
008	00	8	0	0.00	0.00		1	-1.03	-3.02		07-12-2001	14:34:01
009	00	9	1	0.67	1.91		0	-1.90	-5.54		07-12-2001	14:36:00
010	00	10	0	0.00	0.00		5	1.63	4.77		07-12-2001	14:37:59
011	00	11	1	0.67	1.91		2	-0.57	-1.65		07-12-2001	14:39:58
012	00	12	1	0.67	1.91		9	4.10	11.97		07-12-2001	14:41:57
013	00	13	0	0.00	0.00		4	0.97	2.82		07-12-2001	14:43:56
014	00	14	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	14:45:55
015	00	15	0	0.00	0.00		0	-1.70	-4.96		07-12-2001	14:47:54

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

FINAL SURVEY 010H1 [2] PIN 20

PIC IPD9025 216712

			ALPHA				BETA					
			Eff: 34.97%	Bkg: 0.00 cpm	MDA: 5.17 dpm		Eff: 34.25%	Bkg: 1.70 cpm	MDA: 19.73 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
016	00	16	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	14:51:37
017	00	17	2	1.33	3.81		5	1.24	3.61		07-12-2001	14:53:36
018	00	18	0	0.00	0.00		17	9.63	28.13		07-12-2001	14:55:35
019	00	19	0	0.00	0.00		15	8.30	24.23		07-12-2001	14:57:34
020	00	20	2	1.33	3.81		5	1.24	3.61		07-12-2001	14:59:33
021	00	21	0	0.00	0.00		0	-1.70	-4.96		07-12-2001	15:01:32
022	00	22	0	0.00	0.00		3	0.30	0.88		07-12-2001	15:03:31
023	00	23	0	0.00	0.00		3	0.30	0.88		07-12-2001	15:05:30
024	00	24	0	0.00	0.00		1	-1.03	-3.02		07-12-2001	15:07:29
025	00	25	0	0.00	0.00		4	0.97	2.82		07-12-2001	15:09:28
026	00	26	3	2.00	5.72		7	2.37	6.92		07-12-2001	15:11:27
027	00	27	1	0.67	1.91		1	-1.23	-3.60		07-12-2001	15:13:26
028	00	28	0	0.00	0.00		10	4.97	14.50		07-12-2001	15:15:25
029	00	29	0	0.00	0.00		2	-0.37	-1.07		07-12-2001	15:17:24
030	00	30	0	0.00	0.00		1	-1.03	-3.02		07-12-2001	15:19:23

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

Section 5

Package 20
H-3 Removable Beta Contamination
Summary Data Table (including lab reports)

Carrier No.	CPM	Count Time (sec)	Sample Area (cm^2)	Surface	Row	Location	Beta Efficiency	Beta Background (cpm)	Activity ($dpm/100cm^2$)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
1	25	60	100	01OH1	ZZZZZ	00001	0.270	0.00	93	93	10
2	19	60	100	01OH1	ZZZZZ	00002	0.229	0.00	83	83	12
3	32	60	100	01OH1	ZZZZZ	00003	0.259	0.00	124	124	10
4	27	60	100	01OH1	ZZZZZ	00004	0.254	0.00	106	106	11
5	33	60	100	01OH1	ZZZZZ	00005	0.226	0.00	146	146	12
6	20	60	100	01OH1	ZZZZZ	00006	0.283	0.00	71	71	10
7	28	60	100	01OH1	ZZZZZ	00007	0.288	0.00	97	97	9
8	29	60	100	01OH1	ZZZZZ	00008	0.294	0.00	99	99	9
9	34	60	100	01OH1	ZZZZZ	00009	0.264	0.00	129	129	10
10	28	60	100	01OH1	ZZZZZ	00010	0.236	0.00	119	119	11
11	28	60	100	01OH1	ZZZZZ	00011	0.323	0.00	87	87	8
12	32	60	100	01OH1	ZZZZZ	00012	0.219	0.00	146	146	12
13	27	60	100	01OH1	ZZZZZ	00013	0.181	0.00	149	149	15
14	23	60	100	01OH1	ZZZZZ	00014	0.353	0.00	65	65	8
15	25	60	100	01OH1	ZZZZZ	00015	0.344	0.00	73	73	8
16	31	60	100	01OH1	ZZZZZ	00016	0.270	0.00	115	115	10
17	19	60	100	01OH1	ZZZZZ	00017	0.074	0.00	258	258	37
18	34	60	100	01OH1	ZZZZZ	00018	0.259	0.00	131	131	10
19	38	60	100	01OH1	ZZZZZ	00019	0.034	0.00	1133	1133	81
20	32	60	100	01OH1	ZZZZZ	00020	0.156	0.00	206	206	17
21	33	60	100	01OH1	ZZZZZ	00021	0.246	0.00	134	134	11
22	23	60	100	01OH1	ZZZZZ	00022	0.297	0.00	77	77	9
23	42	60	100	01OH1	ZZZZZ	00023	0.234	0.00	180	180	12
24	20	60	100	01OH1	ZZZZZ	00024	0.171	0.00	117	117	16
25	28	60	100	01OH1	ZZZZZ	00025	0.097	0.00	288	288	28
26	18	60	100	01OH1	ZZZZZ	00026	0.143	0.00	126	126	19
27	33	60	100	01OH1	ZZZZZ	00027	0.058	0.00	573	573	47
28	28	60	100	01OH1	ZZZZZ	00028	0.028	0.00	983	983	95
29	37	60	100	01OH1	ZZZZZ	00029	0.072	0.00	517	517	38
30	24	60	100	01OH1	ZZZZZ	00030	0.157	0.00	152	152	17
									# Measurements	30	
									Average	219	
									Maximum	1133	
									STD DEV	253	
									95% CL on Mean	323	

USER: 1 ID:SMEARS PRESET TIME: 1.00 THU 12 JUL 2001 14:43
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AOC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.328559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
1	8- 1	1	25.00	40.00	1.00	1.31	142.0	
		2	60.00	25.82				
		3	85.00	21.69				
					%EFF:26.95	ISO1 DPM	:92.77919	
2	8- 2	1	19.00	45.88	1.00	2.79	158.0	
		2	38.00	32.44				
		3	60.00	25.82				
					%EFF:22.88	ISO1 DPM	:83.03809	
3	8- 3	1	32.00	35.36	1.00	4.28	146.0	
		2	63.00	25.20				
		3	88.00	21.32				
					%EFF:25.89	ISO1 DPM	:123.5844	
4	8- 4	1	27.00	38.49	1.00	5.75	148.0	
		2	50.00	28.28				
		3	69.00	24.08				
					%EFF:25.38	ISO1 DPM	:106.3989	
5	8- 5	1	33.00	34.82	1.00	7.23	159.0	
		2	54.00	27.22				
		3	81.00	22.22				
					%EFF:22.64	ISO1 DPM	:145.7591	
6	8- 6	1	20.00	44.72	1.00	8.72	137.0	
		2	42.00	30.86				
		3	73.00	23.41				
					%EFF:28.29	ISO1 DPM	:70.68519	
7	8- 7	1	28.00	37.80	1.00	10.20	135.0	
		2	54.00	27.22				
		3	86.00	21.57				
					%EFF:28.84	ISO1 DPM	:97.07360	
8	8- 8	1	29.00	37.14	1.00	11.68	133.0	
		2	51.00	28.01				
		3	77.00	22.79				
					%EFF:29.40	ISO1 DPM	:98.64037	
9	8- 9	1	34.00	34.30	1.00	13.17	144.0	
		2	62.00	25.40				
		3	84.00	21.82				
					%EFF:26.42	ISO1 DPM	:128.7070	

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
10	8-10	1	28.00	37.80	1.00	14.65	155.0	
		2	55.00	26.97				
		3	79.00	22.80				
					%EFF:	23.61	ISO1 DPM	:118.5764
11	8-11	1	28.00	37.80	1.00	16.14	123.0	
		2	50.00	28.28				
		3	86.00	21.57				
					%EFF:	32.26	ISO1 DPM	:86.78757
12	8-12	1	32.00	35.36	1.00	17.63	162.0	
		2	69.00	24.08				
		3	93.00	20.74				
					%EFF:	21.93	ISO1 DPM	:145.9451
13	7- 1	1	27.00	38.49	1.00	19.15	179.0	
		2	58.00	26.26				
		3	76.00	22.94				
					%EFF:	18.14	ISO1 DPM	:148.8105
14	7- 2	1	23.00	41.70	1.00	20.63	113.0	
		2	53.00	27.47				
		3	79.00	22.50				
					%EFF:	35.26	ISO1 DPM	:65.22385
15	7- 3	1	25.00	40.00	1.00	22.12	116.0	
		2	59.00	26.04				
		3	77.00	22.79				
					%EFF:	34.35	ISO1 DPM	:72.78199
	7- 4	1	31.00	35.92	1.00	23.59	142.0	
		2	51.00	28.01				
		3	79.00	22.50				
					%EFF:	26.95	ISO1 DPM	:115.0462
17	7- 5	1	19.00	45.88	1.00	25.07	247.0	
		2	52.00	27.74				
		3	63.00	25.20				
					%EFF:	7.377	ISO1 DPM	:257.5454
18	7- 6	1	34.00	34.30	1.00	26.56	146.0	
		2	66.00	24.62				
		3	86.00	21.57				
					%EFF:	25.89	ISO1 DPM	:131.3084
19	7- 7	1	38.00	32.44	1.00	28.16	295.0	
		2	68.00	24.25				
		3	79.00	22.50				
					%EFF:	3.354	ISO1 DPM	:1133.005
20	7- 8	1	32.00	35.36	1.00	29.65	192.0	
		2	73.00	23.41				
		3	99.00	20.10				
					%EFF:	15.55	ISO1 DPM	:205.7220
21	7- 9	1	33.00	34.82	1.00	31.13	151.0	
		2	59.00	26.04				
		3	86.00	21.57				
					%EFF:	24.61	ISO1 DPM	:134.0836
22	7-10	1	23.00	41.70	1.00	32.62	132.0	
		2	48.00	28.87				
		3	69.00	24.08				
					%EFF:	29.68	ISO1 DPM	:77.49414

Performed By: [signature] Date: 7/13/07

Reviewed By: [signature] Date: 7/16/01

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
23	7-11	1	42.00	30.36	1.00	34.10	156.0	
		2	71.00	23.74				
		3	98.00	21.32				
					%EFF:	23.37	ISO1 DPM	:179.7330
24	7-12	1	20.00	44.72	1.00	35.58	184.0	
		2	45.00	29.61				
		3	58.00	26.26				
					%EFF:	17.12	ISO1 DPM	:116.8423
25	8- 1	1	28.00	37.80	1.00	37.12	228.0	
		2	62.00	25.40				
		3	69.00	24.08				
					%EFF:	9.719	ISO1 DPM	:288.0837
26	8- 2	1	18.00	47.14	1.00	38.60	199.0	
		2	48.00	28.87				
		3	65.00	24.25				
					%EFF:	14.27	ISO1 DPM	:126.1480
27	8- 3	1	33.00	34.82	1.00	40.08	263.0	
		2	59.00	26.04				
		3	67.00	24.43				
					%EFF:	5.758	ISO1 DPM	:573.0901
28	8- 4	1	28.00	37.80	1.00	41.57	304.0	
		2	65.00	24.81				
		3	73.00	23.41				
					%EFF:	2.849	ISO1 DPM	:982.9003
	8- 5	1	37.00	32.88	1.00	43.07	249.0	
		2	71.00	23.74				
		3	87.00	21.44				
					%EFF:	7.158	ISO1 DPM	:516.9059
30	8- 6	1	24.00	40.82	1.00	44.55	191.0	
		2	56.00	26.73				
		3	65.00	24.81				
					%EFF:	15.74	ISO1 DPM	:152.4310

Performed By: [signature] Date: 7/13/01

Reviewed By: [signature] Date: 7/16/01

Georgia Institute of Technology Research Reactor

Final Survey Package 21

Elevator Equipment Room and Elevator Shaft

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Section 1

Survey Package 21 Worksheet for Elevator Equipment Area and Elevator Shaft

Duratek Inc.
Survey Package Worksheet for Elevator Equipment Area and Elevator Shaft
Georgia Institute of Technology Research Reactor

Package Identification No.: **21**	Prepared by: Paul Jones
Location: Elevator Equipment Area and Elevator Shaft	Date prepared: 07/12/2001
Area Classification: ~~Non-Suspect Affected~~ Unaffected RJ 3/15/02	

Area Description

This area consists of the elevator equipment area and the elevator shaft. Access to these areas is from the North side of the basement.

Historical Information

No decontamination was required in these areas. No known radioactive materials were transported through these areas.

General Survey Instructions

Elevator shaft and elevator equipment room (~~Non-suspect Affected~~ Unaffected):

1) Perform a minimum of 10% scan of accessible surfaces. The surface scanned should be biased towards surfaces with a higher potential of being contaminated, (i.e. floors, tops of horizontal surfaces).
2) Obtain 1 direct beta measurement for each 20 square meters of surface area (See Special Instructions for the minimum number of readings required). Denote location of all readings on map.
3) Obtain 1 smear for gross alpha/beta analysis at each measurement location.
4) Obtain required smears for H-3 analysis (See Special Instructions for the minimum number of smears required). Denote location of all smears on map.

Use only the Package ID, L2, L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taking fixed beta readings.

Survey Pa... ge: ~~1~~ 21 continued
ia 8/10/01

Special Instructions
Source check meters to Tc-99 for beta measurements. Use gas flow proportional detector model numbers 43-68 and 43-106 for surveys. Verify that the MDA is less than 600 dpm/100cm2 for direct beta measurements after obtaining initial background. A minimum of 4 direct beta measurements and smears should be taken at all 3 elevations of the survey area. During scanning the detector is to be kept as close to the surface as possible and moved across the surface at a slow speed (scan speed shall not exceed on probe width per sec). The scan should be performed using the audible output and using headphones whenever necessary.

Survey performance (Initial and date as each survey is complete)

Location Code					General Description	Beta Scan	Direct Beta	1 meter Gamma (*2)	Smear Gross α/β	LS Smear
L1	L2	L6	L7	L8						
Georgia Tech Research Reactor ~~Areas Outside the Process Area Room Above 2 Meters~~ Elevator Equip Area & Shaft.										
A02~~17~~ 21 7/25/01	01S01	B0001, B0002, B9999	ZZZZZ	1 thru 15	Elevator Shaft.	WMB 7-19-01	(15) DP 7-17-01	N/A (*2)	(15) RG2 7-25-01	(15) RG2 7-25-01
A02~~17~~ 21 7/25/01	02S02	B0001, B0002, B9999	ZZZZZ	1 thru 15	Elevator Equipment Room.	RG2 7-25-01	(15) DP 7-17-01	N/A (*2)	(15) RG2 7-25-01	(15) RG2 7-25-01
					A					
				N						

005

Package Review	
Date Package Completed	5/24/02
Package Reviewed by and Date	P. A. Jones 5/24/02

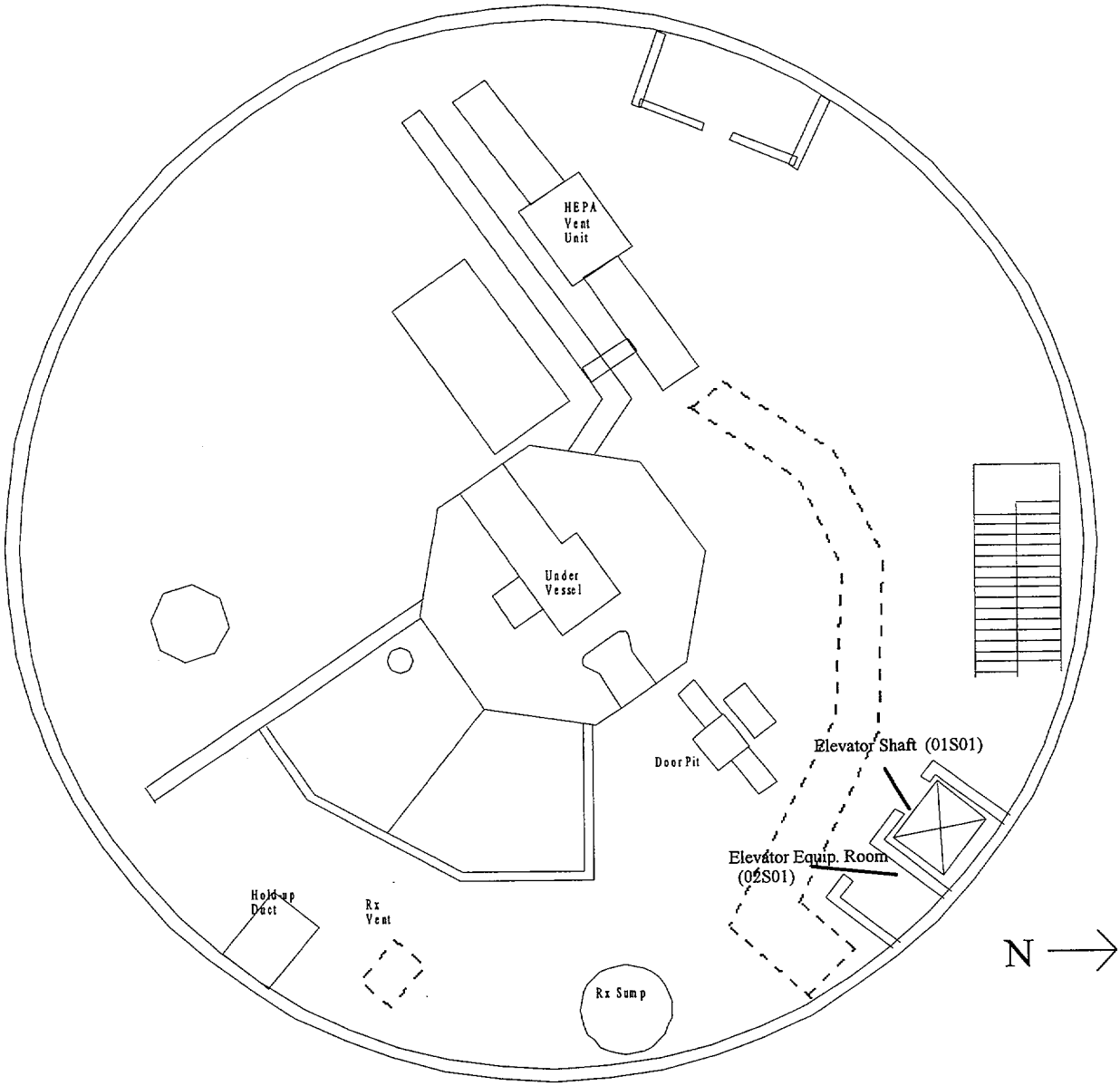
Survey Comments
* Note: This package was reclassified to unaffected to assure compliance with the Final Survey Plan. P. Jones 3/13/02
(*2) Note 2: A total of six exposure rate readings were taken at one meter above the floor at the ~~floor~~ PJ 3/18/02 corresponding direct beta locations of the elevator equipment room and elevator shaft. P. Jones 3/18/02

Section 2

Package 21
Drawings

Package 21

Elevator Equipment Room and Shaft



Section 3

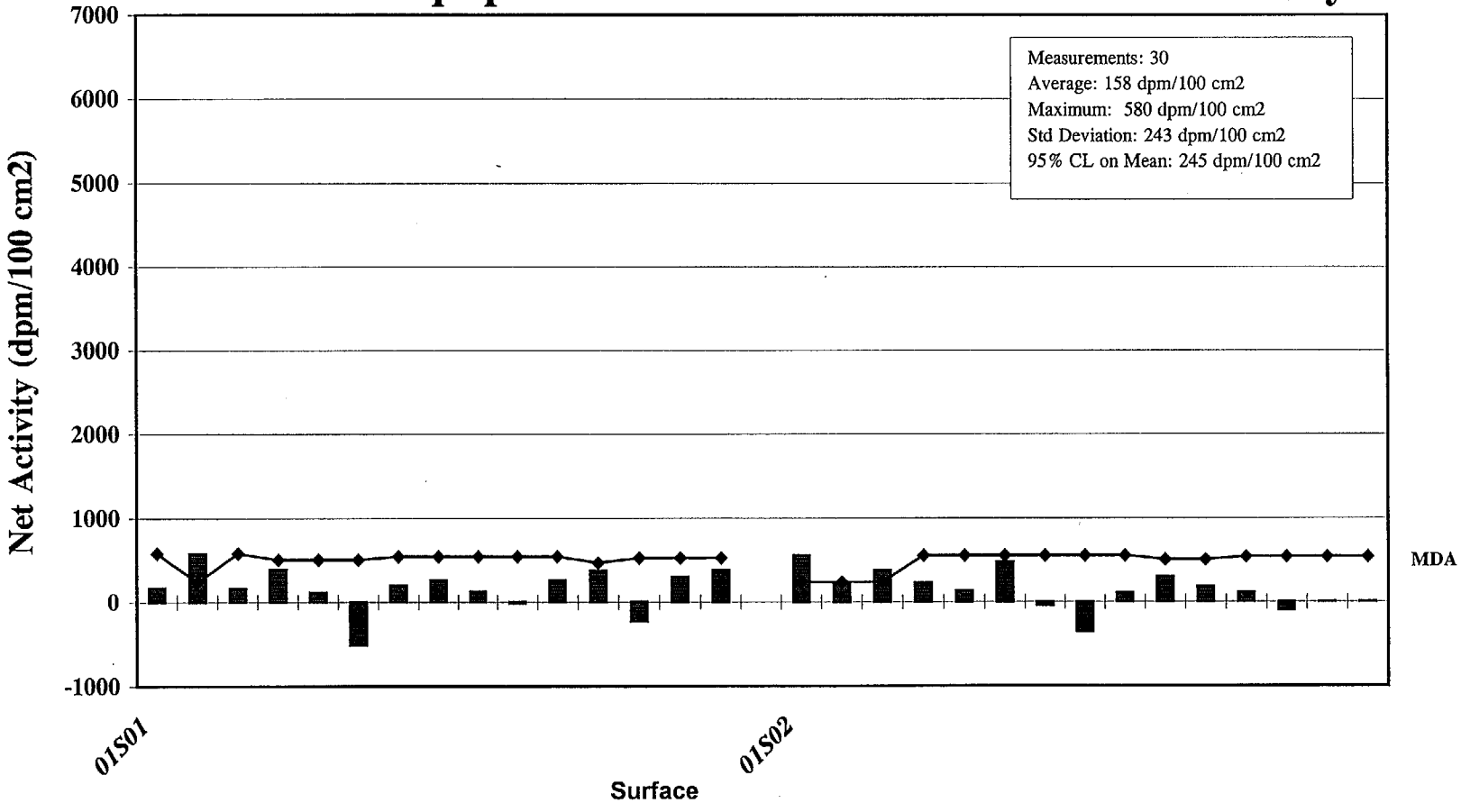
Package 21
Direct Beta Survey Report for the Unaffected Elevator Equipment Room and Shaft (including download reports)

Package 21_A0221 FBSR (Non-Suspect Affected Elevator Equip. Room and Shaft

01S01	195	20	221	20	B0002	126	01S01	FLDCT	ZZZZZ	00001	0.206	527	524	354	170	587
	236	1	1481	120	B0002	126	01S01	FLDCT	ZZZZZ	00002	0.21	493	934	354	580	238
	195	22	220	20	B0002	126	01S01	FLDCT	ZZZZZ	00003	0.206	527	512	354	158	587
	195	25	186	20	B9999	126	01S01	FLDCT	ZZZZZ	00004	0.206	457	389	0	389	508
	195	26	162	20	B9999	126	01S01	FLDCT	ZZZZZ	00005	0.206	457	112	0	112	508
	195	27	108	20	B9999	126	01S01	FLDCT	ZZZZZ	00006	0.206	457	-512	0	-512	508
	195	30	196	20	B0001	126	01S01	FLDCT	ZZZZZ	00007	0.206	448	539	346	193	549
	195	31	202	20	B0001	126	01S01	FLDCT	ZZZZZ	00008	0.206	448	609	346	263	549
	195	32	190	20	B0001	126	01S01	FLDCT	ZZZZZ	00009	0.206	448	470	346	124	549
	195	33	178	20	B0001	126	01S01	FLDCT	ZZZZZ	00010	0.206	448	331	346	-15	549
	195	34	202	20	B0001	126	01S01	FLDCT	ZZZZZ	00011	0.206	448	609	346	263	549
	195	37	161	20	B9999	126	01S01	FLDCT	ZZZZZ	00012	0.206	386	374	0	374	470
	195	39	147	20	B0001	126	01S01	FLDCT	ZZZZZ	00013	0.206	411	116	346	-230	531
	195	40	193	20	B0001	126	01S01	FLDCT	ZZZZZ	00014	0.206	411	647	346	301	531
	195	41	200	20	B0001	126	01S01	FLDCT	ZZZZZ	00015	0.206	411	728	346	382	531
01S02	236	3	1484	120	B0001	126	01S02	FLDCT	ZZZZZ	00001	0.21	503	903	346	557	240
	236	4	1307	120	B0001	126	01S02	FLDCT	ZZZZZ	00002	0.21	503	569	346	223	240
	236	5	1387	120	B0001	126	01S02	FLDCT	ZZZZZ	00003	0.21	503	720	346	374	240
	195	8	206	20	B0001	126	01S02	FLDCT	ZZZZZ	00004	0.206	470	570	346	224	559
	195	9	198	20	B0001	126	01S02	FLDCT	ZZZZZ	00005	0.206	470	478	346	132	559
	195	10	228	20	B0001	126	01S02	FLDCT	ZZZZZ	00006	0.206	470	824	346	478	559
	195	11	183	20	B0001	126	01S02	FLDCT	ZZZZZ	00007	0.206	470	304	346	-42	559
	195	12	156	20	B0001	126	01S02	FLDCT	ZZZZZ	00008	0.206	470	-8	346	-354	559
	195	13	196	20	B0001	126	01S02	FLDCT	ZZZZZ	00009	0.206	470	455	346	109	559
	195	16	178	20	B9999	126	01S02	FLDCT	ZZZZZ	00010	0.206	457	297	0	297	508
	195	17	168	20	B9999	126	01S02	FLDCT	ZZZZZ	00011	0.206	457	181	0	181	508
	195	44	185	20	B0002	126	01S02	FLDCT	ZZZZZ	00012	0.206	434	466	354	112	543
	195	45	167	20	B0002	126	01S02	FLDCT	ZZZZZ	00013	0.206	434	258	354	-96	543
	195	46	175	20	B0002	126	01S02	FLDCT	ZZZZZ	00014	0.206	434	351	354	-3	543
	195	47	175	20	B0002	126	01S02	FLDCT	ZZZZZ	00015	0.206	434	351	354	-3	543

# Measurements	30
Average	158
Maximum	580
STD DEV	243
95% CL on Mean	245

Elevator Equipment Room & Shaft Direct Beta Activity



The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #195

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Print
Technician: Name: D. Schumaker Signature: [signature] Station: 2 File: 195
Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D P Schumaker User ID DPS 4133 Signature: [signature] Date: 7/17/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: ~~A0217~~ A0021: Elevator Equip. Rm and SHAFT
(Example: Survey Package description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 12/6/01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☒ Beta β	091050	43-68B	.206	5192/391	195	195
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			

Local Area Background Measurements — MEAN Value in cpm

10 min β Beta	14590/4802	24645/4498	35361/5173	44563/4582	54429/4538	6 3862	453
~~α Alpha~~ β Beta DS 7-17-01	14677/4146	24422/4258	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 195	Survey Description: A0021: ELEVATOR SHAFT AND EQUIPMENT ROOM		
Survey Reason: TERMINATION	User ID: DPS4133	Technician name: Don Schumaker	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-68B	Detector S/N: 091050	Type: 126 cm2 Gas Proportional Detector, Beta Window	
Background: 453 cpm	Beta Efficiency: .206		Survey Date: 7/17/01

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: Don Schumaker / [signature] Date: 7/25/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: Paul Jones / [signature] Date: 12/1/01
Print name Signature

Survey Date: 7/17/01 Report Date: 7/25/01 Page: 1
File: 195 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0021	01S01	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDBK	B0002	ZZZZZ	00000	19	600	5361	320	
FLDBK	B0002	ZZZZZ	00000	23	600	5173	248	
FLDBK	B9999	ZZZZZ	00000	24	600	4563	13	
FLDBK	B9999	ZZZZZ	00000	28	600	4582	20	
FLDBK	B0001	ZZZZZ	00000	29	600	4429	-39	
FLDBK	B0001	ZZZZZ	00000	35	600	4538	3	
FLDBK	B9999	ZZZZZ	00000	36	600	3862	-257	
FLDBK	B0001	ZZZZZ	00000	38	600	4077	-175	
FLDBK	B0001	ZZZZZ	00000	42	600	4146	-148	
						Group Average:	-2	
FLDCT	B0002	ZZZZZ	00001	20	20	221	809	*
FLDCT	B0002	ZZZZZ	00002	21	20	274	1422	*
FLDCT	B0002	ZZZZZ	00003	22	20	220	798	*
FLDCT	B9999	ZZZZZ	00004	25	20	186	405	
FLDCT	B9999	ZZZZZ	00005	26	20	162	127	
FLDCT	B9999	ZZZZZ	00006	27	20	108	-497	
FLDCT	B0001	ZZZZZ	00007	30	20	196	520	
FLDCT	B0001	ZZZZZ	00008	31	20	202	589	
FLDCT	B0001	ZZZZZ	00009	32	20	190	451	
FLDCT	B0001	ZZZZZ	00010	33	20	178	312	
FLDCT	B0001	ZZZZZ	00011	34	20	202	589	
FLDCT	B9999	ZZZZZ	00012	37	20	161	116	
FLDCT	B0001	ZZZZZ	00013	39	20	147	-46	
FLDCT	B0001	ZZZZZ	00014	40	20	193	485	
LDCT	B0001	ZZZZZ	00015	41	20	200	566	
						Group Average:	443	

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0021	01S02	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDBK	B0001	ZZZZZ	00000	4	600	4590	23	
FLDBK	B0001	ZZZZZ	00000	14	600	4802	105	
FLDBK	B9999	ZZZZZ	00000	15	600	4645	44	
FLDBK	B9999	ZZZZZ	00000	18	600	4498	-12	
FLDBK	B0002	ZZZZZ	00000	43	600	4422	-42	
FLDBK	B0002	ZZZZZ	00000	48	600	4258	-105	
						Group Average:	2	
FLDCT	B0001	ZZZZZ	00001	5	20	254	1190	*
FLDCT	B0001	ZZZZZ	00002	6	20	244	1075	*
FLDCT	B0001	ZZZZZ	00003	7	20	263	1294	*
FLDCT	B0001	ZZZZZ	00004	8	20	206	636	*
FLDCT	B0001	ZZZZZ	00005	9	20	198	543	
FLDCT	B0001	ZZZZZ	00006	10	20	228	890	*
FLDCT	B0001	ZZZZZ	00007	11	20	183	370	
FLDCT	B0001	ZZZZZ	00008	12	20	156	58	
FLDCT	B0001	ZZZZZ	00009	13	20	196	520	
FLDCT	B9999	ZZZZZ	00010	16	20	178	312	
FLDCT	B9999	ZZZZZ	00011	17	20	168	196	
FLDCT	B0002	ZZZZZ	00012	44	20	185	393	
LDCT	B0002	ZZZZZ	00013	45	20	167	185	
LDCT	B0002	ZZZZZ	00014	46	20	175	277	
FLDCT	B0002	ZZZZZ	00015	47	20	175	277	

* Hi flag set at 600 dpm/100 cm2

Survey Date: 7/17/01 Report Date: 7/25/01 Page: 2
File: 195 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0021	01S02	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
						Group Average:	548	

Survey Code	L1	L2	L3	L4	Setup Number 0
	ZZZZZ	EZ260	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRB00	ZZZZZ	ZZZZZ	00000	1	60	5517	19510	*
PRB00	ZZZZZ	ZZZZZ	00000	2	60	5815	20658	*
PRB00	ZZZZZ	ZZZZZ	00000	3	60	5416	19121	*
						Group Average:	19763	
PTB00	ZZZZZ	ZZZZZ	00000	50	60	5424	19152	*
PTB00	ZZZZZ	ZZZZZ	00000	51	60	5942	21147	*
PTB00	ZZZZZ	ZZZZZ	00000	52	60	5745	20388	*
						Group Average:	20229	

Survey Code	L1	L2	L3	L4	Setup Number 0
	ZZZZZ	ZZZZZ	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	3912	-238	
						Group Average:	-238	
PTBBK	ZZZZZ	ZZZZZ	00000	49	600	4045	-187	
						Group Average:	-187	

Total Number of Measurements on this Report: 53

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 600 dpm/100 cm2

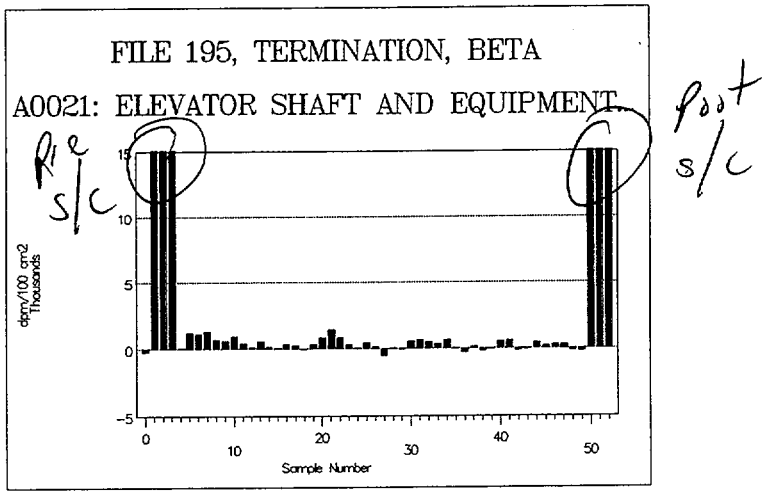
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/25/2001 Graph of File 195 Station: 2

Survey Date: 7/17/2001 Survey Start Time: 09:59:42

Description: A0021: ELEVATOR SHAFT AND EQUIPMENT ROOM



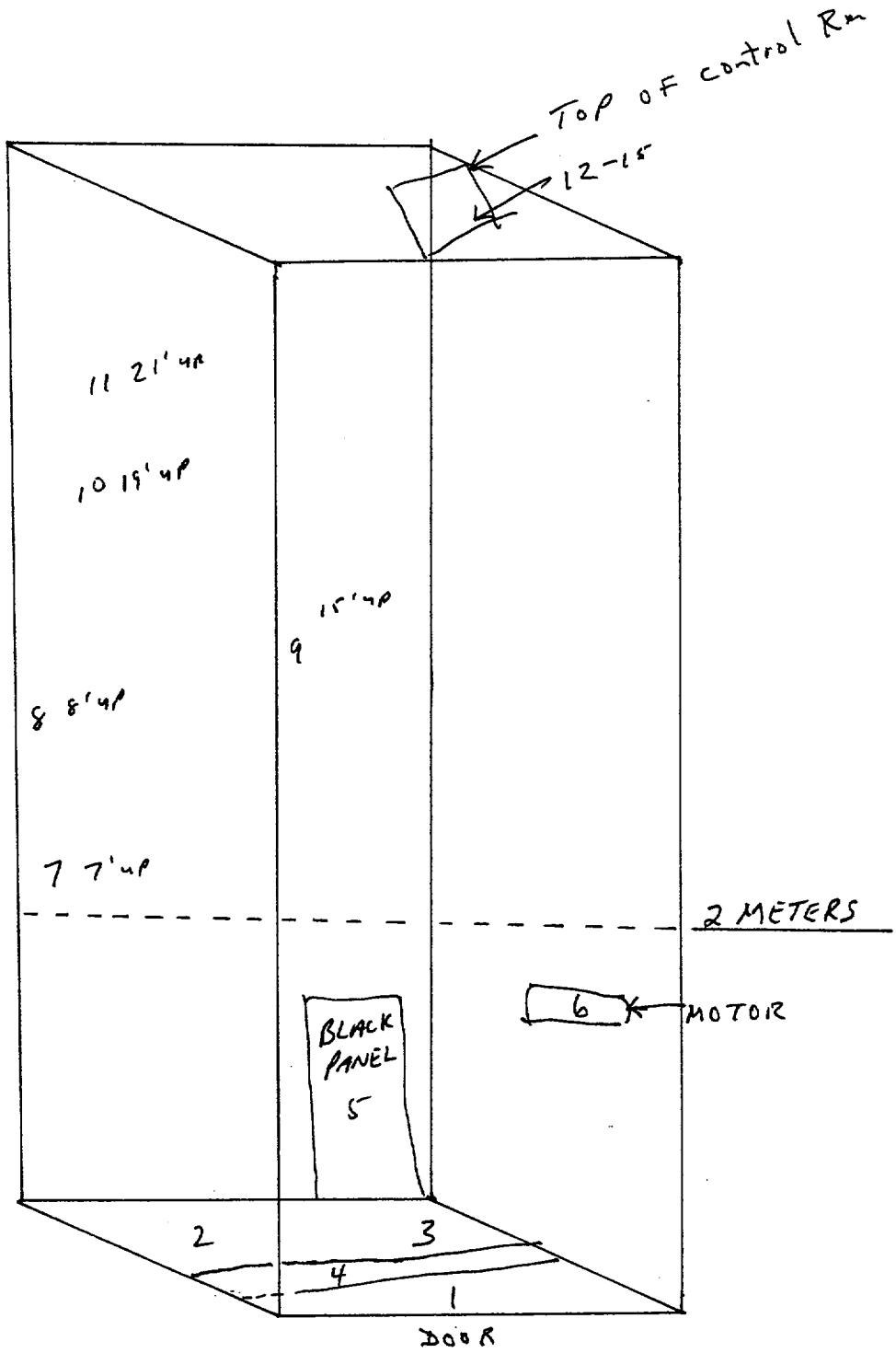
Flag set for 600 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

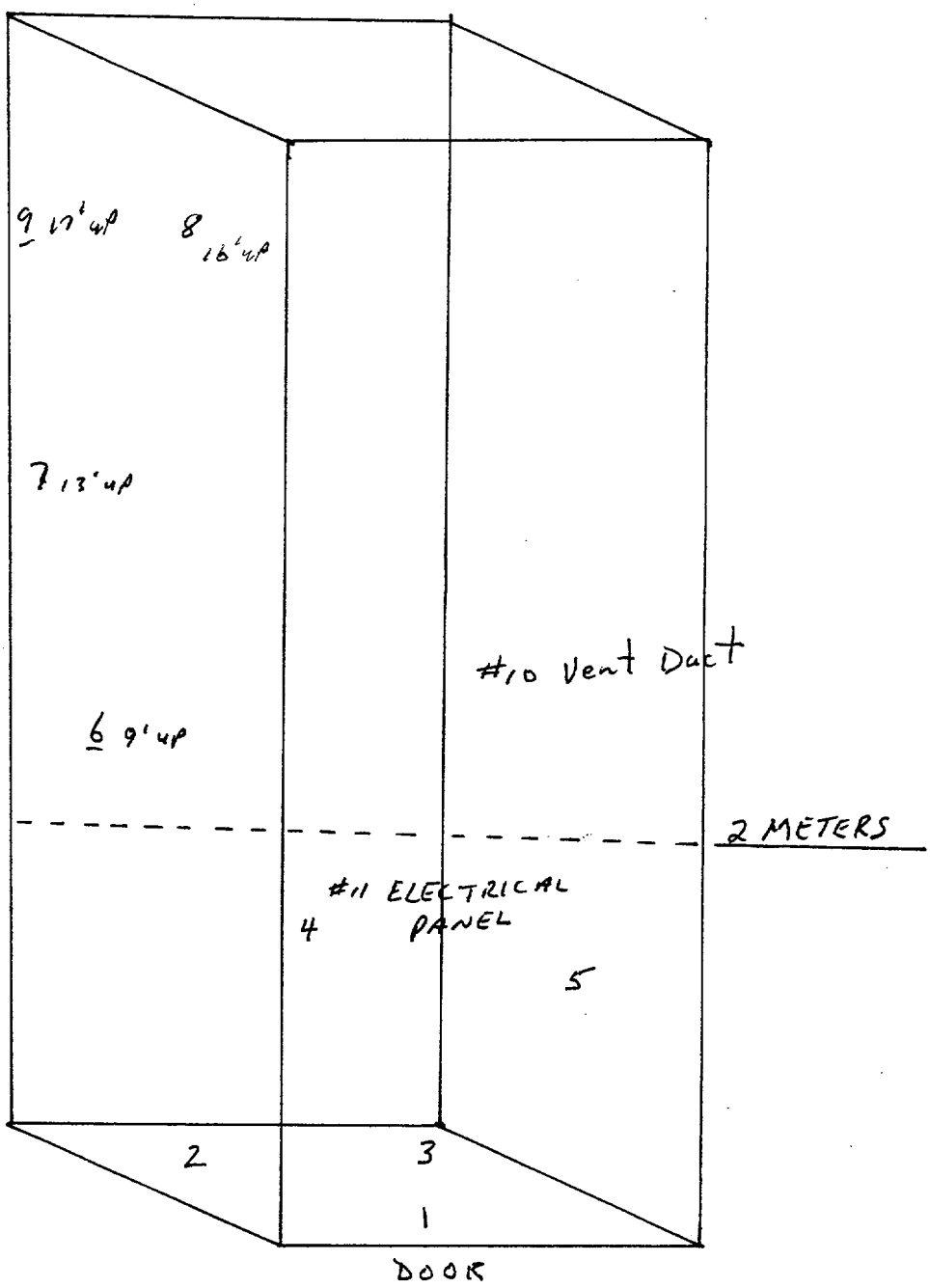
A0021 01501

ELEVATOR SHAFT



A0021
~~A0217~~ 01502

EQUIPMENT Rm.



TRITIUM SMEARS TAKEN AT EACH LOCATION Pt.

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 236
Serial No. Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumaker User ID DPS 4133 Signature: [signature] for D. Schumaker Date: 12/13/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0221 Elevator Shaft & Equipment Room Survey
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 12/6/01

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☑ Beta β	091050	43-68B	.210	N/A	231	237
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1	2	3	4	5	6	Ø
α Alpha	1	2	3	4	5	6	

COMMENTS: This survey taken using local area backgrounds at each measurement location to verify ~~result~~ 5/31/02 activity levels.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 236	Survey Description: A0221: Elevator Shaft and Equipment Room		
Survey Reason: TERMINATION	User ID: DPS4133	Technician name: Don Schumaker	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-68B	Detector S/N: 091050	Type: 126 cm2 Gas Proportional Detector, Beta Window	
Background: 0 cpm	Beta Efficiency: .210		Survey Date: 12/06/01

Pre and Post source checks are included on this download: Yes ____ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 231 Post File #: 237

Technician Review:

I have reveiwed this cover sheet and _____ pages of the report, _____ pages of comments, and _____ graph.

I performed this survey: Don Schumaker / [signature] Date: 12/13/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 1/12/02
Print name Signature

Survey Date: 12/06/01 Report Date: 12/13/01 Page: 1
File: 236 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0217	01S01	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B0002	ZZZZZ	00002	0	600	4934	1865	
						Group Average:	1865	
FLDCT	B0002	ZZZZZ	00002	1	120	1481	2799	*
						Group Average:	2799	

Survey Code	L1	L2	L3	L4	Setup Number 0
	A0217	01S02	TAT01	02200	Det Cal Due: 12/06/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B0001	ZZZZZ	00000	2	600	5032	1902	
						Group Average:	1902	
FLDCT	B0001	ZZZZZ	00001	3	120	1484	2804	*
FLDCT	B0001	ZZZZZ	00002	4	120	1307	2470	*
FLDCT	B0001	ZZZZZ	00003	5	120	1387	2621	*
						Group Average:	2632	

Total Number of Measurements on this Report: 6

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 2400 dpm/100 cm2

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12/13/01 Comments Report for File 236 Station: 2

Comment Number	Comment
1	Deleted sample numbers from 6 to 45. Because these sample results can be found on other downloads. See files 235 and 237.

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

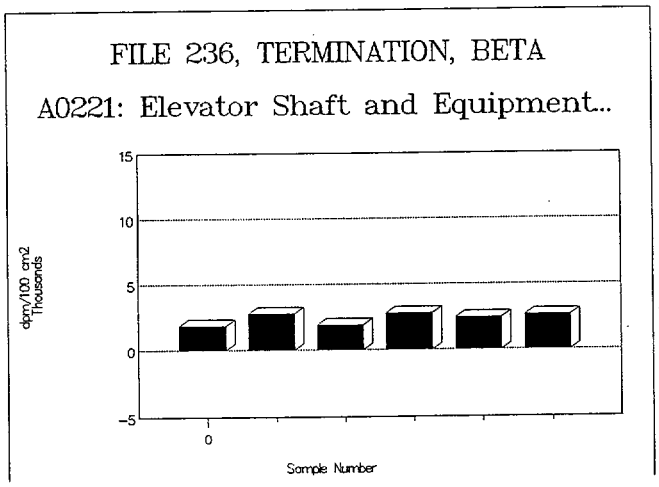
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

12/13/2001 Graph of File 236 Station: 2

Survey Date: 12/06/2001 Survey Start Time: 15:28:06

Description: A0221: Elevator Shaft and Equipment Room



Section 4

Package 21
Exposure Rate Measurement Results for the Elevator Equipment Room

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 238

Serial No. Verification: Model 2350: ☑ Detector: ☑ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: B.S. Kjos User ID BSK0490 Signature: BS Kjos Date: 3-12-02

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0021; 01501, 01502 ; ~~A0304 #9~~ 3/15/02
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☑: 126192

Instrument and Detector Calibration Due Dates: Survey Meter: 8-8-02 Detector: 8-8-02

Type Of Survey: ☑ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☑ Gamma γ	121806	44-2	N/A	N A	238	238

Local Area Background Measurements — MEAN Value in cpm

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Gamma Radiation Survey Report, Micro-R/hour - Integrated Measurement

File Number: 238	Survey Description: A0021 (Package#21) 01S01 & 01S02		
Survey Reason: TERMINATION	User ID: BSK0490	Technician name: B.S. Kjos	
Instrument Model: 2350-1	S/N: 126192	Calibration Due: 8/08/02	Group: 2
Detector Model: 44-2	Detector S/N: 121806	Type: High Energy Gamma Scintillator, 1x1 NaI	
Background: 0.0 uR/hr	Gamma Calibration Constant: 1.69908 E10 c/R	PIC ratio: 1.000 (PIC/NaI)	Survey Date: 3/12/02

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: Betty S. Kjos (Print name) / BS Kjos (Signature) Date: 3-18-02

and,

I performed this survey: _____ (Print name) / _____ (Signature) Date: _____

Corrections and reason (required):

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES (Print name) / Paul O Jones (Signature) Date: 3/18/02

Survey Date: 3/12/02 Report Date: 3/18/02 Station: 2
File: 238 Page: 1

Comments

Survey Code	L1	L2	L3	L4	L5	L6	Setup Number 1
	A0021	01S01	TAT01	03100	FLDCT	B0002	Det Cal Due: 8/08/02

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	Hi
FLOOR	00001	4	10	859	18.2	
FLOOR	00002	5	10	918	19.5	
FLOOR	00003	6	10	867	18.4	

Group Average: 5288 cpm Average uR/hr: 18.7
Number of measurements: 3

Survey Code	L1	L2	L3	L4	L5	L6	Setup Number 1
	A0021	01S02	TAT01	03100	FLDCT	B0002	Det Cal Due: 8/08/02

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	Hi
FLOOR	00001	7	10	908	19.2	
FLOOR	00002	8	10	757	16.0	
FLOOR	00003	9	10	762	16.1	

Group Average: 4854 cpm Average uR/hr: 17.1
Number of measurements: 3

Survey Code	L1	L2	L3	L4	L5	L6	Setup Number 1
	ZZZZZ	19463	TAT01	03100	PRG00	ZZZZZ	Det Cal Due: 8/08/02

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	Hi
ZZZZZ	00000	1	60	526982	1860.9	*
ZZZZZ	00000	2	60	14276	50.4	*
ZZZZZ	00000	3	60	5224	18.4	

Group Average: 182161 cpm Average uR/hr: 643.3
Number of measurements: 3

Survey Code	L1	L2	L3	L4	L5	L6	Setup Number 1
	ZZZZZ	19463	TAT01	03100	PTG00	ZZZZZ	Det Cal Due: 8/08/02

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	Hi
ZZZZZ	00000	27	60	531715	1877.7	*
ZZZZZ	00000	28	60	14064	49.7	*
ZZZZZ	00000	29	60	5184	18.3	

Group Average: 183654 cpm Average uR/hr: 648.5
Number of measurements: 3

* Hi flag set at 25.0 micro-R/hr.

Survey Date: 3/12/02 Report Date: 3/18/02 Station: 2
File: 238 Page: 2

Comments

Survey Code	L1	L2	L3	L4	L5	L6	Setup Number 1
	ZZZZZ	ZZZZZ	TAT01	03100	PRGBK	ZZZZZ	Det Cal Due: 8/08/02

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	Hi
ZZZZZ	00000	0	300	19336	13.7	

Group Average: 3867 cpm Average uR/hr: 13.7
Number of measurements: 1

Survey Code	L1	L2	L3	L4	L5	L6	Setup Number 1
	ZZZZZ	ZZZZZ	TAT01	03100	PTGBK	ZZZZZ	Det Cal Due: 8/08/02

L7 Code Grid ID	L8 Code Location Number	Sample Number	Count Time (sec)	Gross Counts	Gross Micro R/hr	Hi
ZZZZZ	00000	26	300	19577	13.8	

Group Average: 3915 cpm Average uR/hr: 13.8
Number of measurements: 1

Total Number of Measurements on this Report: 14

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 25.0 micro-R/hr.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

3/18/02 Comments Report for File 238 Station: 2

Comment Number	Comment
1	Deleted sample numbers from 10 to 25. See file # 239 for these results.

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

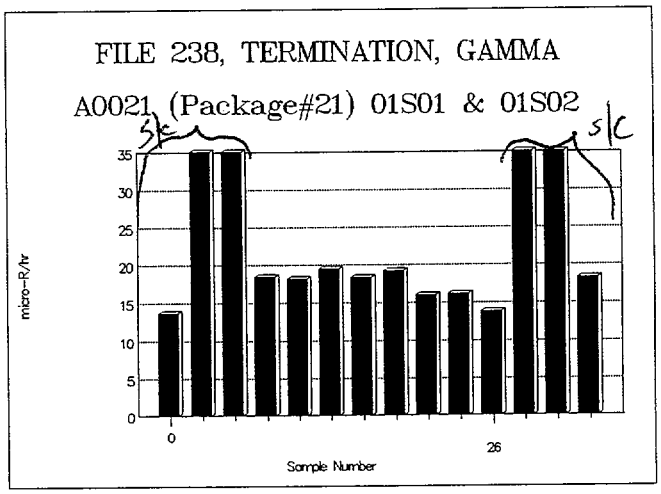
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

3/18/2002 Graph of File 238 Station: 2

Survey Date: 3/12/2002 Survey Start Time: 11:14:48

Description: A0021 (Package#21) 01S01 & 01S02



Flag set for 25 micro-R/hr. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

Section 5

Package 21
Removable Beta Contamination for the Elevator Equipment Room Unaffected (including lab reports)

Removable Beta Contamination Package A0221 (Elevator Equip Room Non Suspect Affected)

Desc.	Gross Counts	Count Time (sec)	Sample Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)	
	8	90	100	01S01	FLDCT	ZZZZZ	00001	0.3425	1	11	15	
	6	90	100	01S01	FLDCT	ZZZZZ	00002	0.3425	1	7	15	
	7	90	100	01S01	FLDCT	ZZZZZ	00003	0.3425	1	10	15	
	27	90	100	01S01	FLDCT	ZZZZZ	00004	0.3425	1	48	15	
	6	90	100	01S01	FLDCT	ZZZZZ	00005	0.3425	1	7	15	
	22	90	100	01S01	FLDCT	ZZZZZ	00006	0.3425	1	39	15	
	5	90	100	01S01	FLDCT	ZZZZZ	00007	0.3425	1	6	15	
	1	90	100	01S01	FLDCT	ZZZZZ	00008	0.3425	1	-2	15	
	4	90	100	01S01	FLDCT	ZZZZZ	00009	0.3425	1	4	15	
	1	90	100	01S01	FLDCT	ZZZZZ	00010	0.3425	1	-2	15	
	0	90	100	01S01	FLDCT	ZZZZZ	00011	0.3425	1	-4	15	
	7	90	100	01S01	FLDCT	ZZZZZ	00012	0.3425	1	10	15	
	5	90	100	01S01	FLDCT	ZZZZZ	00013	0.3425	1	6	15	
	35	90	100	01S01	FLDCT	ZZZZZ	00014	0.3425	1	64	15	
	10	90	100	01S01	FLDCT	ZZZZZ	00015	0.3425	1	15	15	
	10	90	100	01S02	FLDCT	ZZZZZ	00001	0.3425	1	15	15	
	3	90	100	01S02	FLDCT	ZZZZZ	00002	0.3425	1	2	15	
	11	90	100	01S02	FLDCT	ZZZZZ	00003	0.3425	1	17	15	
	0	90	100	01S02	FLDCT	ZZZZZ	00004	0.3425	1	-4	15	
	3	90	100	01S02	FLDCT	ZZZZZ	00005	0.3425	1	2	15	
	0	90	100	01S02	FLDCT	ZZZZZ	00006	0.3425	1	-4	15	
	0	90	100	01S02	FLDCT	ZZZZZ	00007	0.3425	1	-4	15	
	2	90	100	01S02	FLDCT	ZZZZZ	00008	0.3425	1	0	15	
	0	90	100	01S02	FLDCT	ZZZZZ	00009	0.3425	1	-4	15	
	2	90	100	01S02	FLDCT	ZZZZZ	00010	0.3425	1	0	15	
	7	90	100	01S02	FLDCT	ZZZZZ	00011	0.3425	1	10	15	
	3	90	100	01S02	FLDCT	ZZZZZ	00012	0.3425	1	1	15	
	4	90	100	01S02	FLDCT	ZZZZZ	00013	0.3425	1	4	15	
	3	90	100	01S02	FLDCT	ZZZZZ	00014	0.3425	1	2	15	
	12	90	100	01S02	FLDCT	ZZZZZ	00015	0.3425	1	19	15	
									# Measurements	30		
									Average	9		
									Maximum	64		
									STD DEV	16		
									95% CL on Mean	15		

FINAL SURVEY 01B01 [Z] PIN 21

PIC IPC9025 216712

			ALPHA				BETA			
			Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm				Eff: 34.25% Bkg: 1.40 cpm MDA: 18.39 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	-0.10	-0.29		8	3.93	11.48		07-18-2001	11:40:38
002	00	2	1	0.57	1.62		6	2.43	7.10		07-18-2001	11:42:38
003	00	3	0	-0.10	-0.29		7	3.27	9.54		07-18-2001	11:44:38
004	00	4	0	-0.10	-0.29		27	16.60	48.47		07-18-2001	11:46:38
005	00	5	1	0.57	1.62		6	2.43	7.10		07-18-2001	11:48:38
006	00	6	0	-0.10	-0.29		22	13.27	38.73		07-18-2001	11:50:38
007	00	7	0	-0.10	-0.29		5	1.93	5.64		07-18-2001	11:52:38
008	00	8	0	-0.10	-0.29		1	-0.73	-2.14		07-18-2001	11:54:38
009	00	9	0	-0.10	-0.29		4	1.27	3.70		07-18-2001	11:56:37
010	00	10	0	-0.10	-0.29		1	-0.73	-2.14		07-18-2001	11:58:37
011	00	11	0	-0.10	-0.29		0	-1.40	-4.09		07-18-2001	12:00:37
012	00	12	0	-0.10	-0.29		7	3.27	9.54		07-18-2001	12:02:37
013	00	13	0	-0.10	-0.29		5	1.93	5.64		07-18-2001	12:04:37
014	00	14	1	0.57	1.62		35	21.76	63.55		07-18-2001	12:06:37
015	00	15	0	-0.10	-0.29		10	5.27	15.38		07-18-2001	12:08:37

Performed By: [signature] Date: 7/18/01

Reviewed By: [signature] Date: 7/18/01

FINAL SURVEY 01802 [Z] PIN 21

PIC IPD9025 216712

			ALPHA				BETA			
			Eff: 34.97%	Bkg: 0.10 cpm	MDA: 8.60 dpm		Eff: 34.25%	Bkg: 1.40 cpm	MDA: 18.39 dpm	
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	-0.10	-0.29		10	5.27	15.38		07-18-2001	12:23:32
002	00	2	0	-0.10	-0.29		3	0.60	1.75		07-18-2001	12:25:31
003	00	3	0	-0.10	-0.29		11	5.93	17.32		07-18-2001	12:27:32
004	00	4	0	-0.10	-0.29		0	-1.40	-4.09		07-18-2001	12:29:32
005	00	5	0	-0.10	-0.29		3	0.60	1.75		07-18-2001	12:31:32
006	00	6	0	-0.10	-0.29		0	-1.40	-4.09		07-18-2001	12:33:31
007	00	7	0	-0.10	-0.29		0	-1.40	-4.09		07-18-2001	12:35:31
008	00	8	0	-0.10	-0.29		2	-0.07	-0.19		07-18-2001	12:37:30
009	00	9	0	-0.10	-0.29		0	-1.40	-4.09		07-18-2001	12:39:29
010	00	10	0	-0.10	-0.29		2	-0.07	-0.19		07-18-2001	12:41:28
011	00	11	0	-0.10	-0.29		7	3.27	9.54		07-18-2001	12:43:27
012	00	12	1	0.57	1.62		3	0.43	1.26		07-18-2001	12:45:26
013	00	13	0	-0.10	-0.29		4	1.27	3.70		07-18-2001	12:47:25
014	00	14	0	-0.10	-0.29		3	0.60	1.75		07-18-2001	12:49:24
015	00	15	0	-0.10	-0.29		12	6.60	19.27		07-18-2001	12:51:23

Performed By: _____ Date: 7/18/01

Reviewed By: _____ Date: 7/18/01

Section 6

Package 21
H-3 Removable Beta Contamination
Summary Data Table (including lab reports)

Carrier No.	CPM	Count Time (sec)	Sample Area (cm^2)	Surface	Row	Location	Beta Efficiency	Beta Background (cpm)	Activity ($dpm/100cm^2$)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
1	98	60	100	01S01	ZZZZZ	00001	0.087	0.00	1130	1130	31
2	59	60	100	01S01	ZZZZZ	00002	0.091	0.00	652	652	30
3	92	60	100	01S01	ZZZZZ	00003	0.143	0.00	645	645	19
4	116	60	100	01S01	ZZZZZ	00004	0.124	0.00	935	935	22
5	64	60	100	01S01	ZZZZZ	00005	0.177	0.00	361	361	15
6	44	60	100	01S01	ZZZZZ	00006	0.294	0.00	150	150	9
7	67	60	100	01S01	ZZZZZ	00007	0.272	0.00	246	246	10
8	77	60	100	01S01	ZZZZZ	00008	0.197	0.00	392	392	14
9	18	60	100	01S01	ZZZZZ	00009	0.326	0.00	55	55	8
10	29	60	100	01S01	ZZZZZ	00010	0.335	0.00	87	87	8
11	36	60	100	01S01	ZZZZZ	00011	0.270	0.00	134	134	10
12	40	60	100	01S01	ZZZZZ	00012	0.236	0.00	169	169	11
13	53	60	100	01S01	ZZZZZ	00013	0.236	0.00	224	224	11
14	33	60	100	01S01	ZZZZZ	00014	0.278	0.00	119	119	10
15	48	60	100	01S01	ZZZZZ	00015	0.267	0.00	180	180	10
16	58	60	100	01S02	ZZZZZ	00001	0.069	0.00	835	835	39
17	38	60	100	01S02	ZZZZZ	00002	0.152	0.00	250	250	18
18	56	60	100	01S02	ZZZZZ	00003	0.118	0.00	476	476	23
19	42	60	100	01S02	ZZZZZ	00004	0.291	0.00	144	144	9
20	54	60	100	01S02	ZZZZZ	00005	0.314	0.00	172	172	9
21	38	60	100	01S02	ZZZZZ	00006	0.297	0.00	128	128	9
22	48	60	100	01S02	ZZZZZ	00007	0.302	0.00	159	159	9
23	53	60	100	01S02	ZZZZZ	00008	0.323	0.00	164	164	8
24	35	60	100	01S02	ZZZZZ	00009	0.291	0.00	120	120	9
25	42	60	100	01S02	ZZZZZ	00010	0.262	0.00	161	161	10
26	33	60	100	01S02	ZZZZZ	00011	0.217	0.00	152	152	12
27	40	60	100	01S02	ZZZZZ	00012	0.201	0.00	199	199	13
28	42	60	100	01S02	ZZZZZ	00013	0.205	0.00	204	204	13
29	42	60	100	01S02	ZZZZZ	00014	0.246	0.00	171	171	11
30	53	60	100	01S02	ZZZZZ	00015	0.132	0.00	401	401	20
									# Measurements	30	
									Average	307	
									Maximum	1130	
									STD DEV	266	
									95% CL on Mean	417	

USER: 1 ID:SMEARS PRESET TIME: 1.00 THU 19 JUL 2001 07:44
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.329559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
1	8- 1	1	98.00	20.20	1.00	1.32	236.0	
		2	129.00	17.61				
		3	144.00	16.67				
					%EFF:8.675	ISO1 DPM	:1129.694	
2	8- 2	1	59.00	26.04	1.00	2.82	233.0	
		2	101.00	19.90				
		3	116.00	18.57				
					%EFF:9.056	ISO1 DPM	:651.4727	
	8- 3	1	92.00	20.85	1.00	4.31	199.0	
		2	136.00	17.15				
		3	150.00	16.33				
					%EFF:14.27	ISO1 DPM	:644.7566	
4	8- 4	1	116.00	18.57	1.00	5.80	210.0	
		2	148.00	16.44				
		3	168.00	15.43				
					%EFF:12.40	ISO1 DPM	:935.6363	
5	8- 5	1	64.00	25.00	1.00	7.30	181.0	
		2	98.00	20.20				
		3	114.00	18.73				
					%EFF:17.73	ISO1 DPM	:360.9980	
6	8- 6	1	44.00	30.15	1.00	8.79	133.0	
		2	83.00	21.95				
		3	106.00	19.43				
					%EFF:29.40	ISO1 DPM	:149.6613	
7	8- 7	1	67.00	24.43	1.00	10.28	141.0	
		2	104.00	19.61				
		3	129.00	17.61				
					%EFF:27.21	ISO1 DPM	:246.2119	
8	8- 8	1	77.00	22.79	1.00	11.78	172.0	
		2	113.00	18.81				
		3	136.00	17.15				
					%EFF:19.65	ISO1 DPM	:391.9225	
9	8- 9	1	18.00	47.14	1.00	13.26	122.0	
		2	44.00	30.15				
		3	77.00	22.79				
					%EFF:32.56	ISO1 DPM	:55.28801	

Performed By: [signature] Date: 7/19/01

Reviewed By: [signature] Date: 8/3/01

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
10	8-10	1	29.00	37.14	1.00	14.73	119.0	
		2	57.00	26.49				
		3	85.00	21.69				
					%EFF:	33.45	ISO1 DPM	:86.70484
11	8-11	1	36.00	33.33	1.00	16.23	142.0	
		2	64.00	25.00				
		3	91.00	20.97				
					%EFF:	26.95	ISO1 DPM	:133.6020
12	8-12	1	40.00	31.62	1.00	17.72	155.0	
		2	76.00	22.94				
		3	102.00	19.80				
					%EFF:	23.61	ISO1 DPM	:169.3949
13	6- 1	1	53.00	27.47	1.00	19.25	155.0	
		2	84.00	21.82				
		3	103.00	19.71				
					%EFF:	23.61	ISO1 DPM	:224.4482 ✓
14	6- 2	1	33.00	34.82	1.00	20.73	139.0	
		2	77.00	22.79				
		3	104.00	19.61				
					%EFF:	27.75	ISO1 DPM	:118.9162
15	6- 3	1	48.00	28.87	1.00	22.22	143.0	
		2	76.00	22.94				
		3	103.00	19.71				
					%EFF:	26.68	ISO1 DPM	:179.9083
	6- 4	1	58.00	26.26	1.00	23.71	251.0	
		2	101.00	19.90				
		3	115.00	18.65				
					%EFF:	6.944	ISO1 DPM	:835.2935
17	6- 5	1	38.00	32.44	1.00	25.19	194.0	
		2	71.00	23.74				
		3	90.00	21.08				
					%EFF:	15.18	ISO1 DPM	:250.3317
18	6- 6	1	56.00	26.73	1.00	26.68	214.0	
		2	100.00	20.00				
		3	121.00	18.18				
					%EFF:	11.76	ISO1 DPM	:476.0950
19	6- 7	1	42.00	30.86	1.00	28.17	134.0	
		2	74.00	23.25				
		3	95.00	20.52				
					%EFF:	29.12	ISO1 DPM	:144.2248
20	6- 8	1	54.00	27.22	1.00	29.65	126.0	
		2	85.00	21.69				
		3	112.00	18.90				
					%EFF:	31.39	ISO1 DPM	:172.0335
21	6- 9	1	38.00	32.44	1.00	31.12	132.0	
		2	68.00	24.25				
		3	109.00	19.16				
					%EFF:	29.68	ISO1 DPM	:128.0338
22	6-10	1	48.00	28.87	1.00	32.58	130.0	
		2	85.00	21.69				
		3	119.00	18.33				
					%EFF:	30.24	ISO1 DPM	:158.7107

Performed By: [signature] Date: 7/15/01

Reviewed By: [signature] Date: 8/3/01

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
23	6-11	1	53.00	27.47	1.00	34.06	123.0	
		2	77.00	22.79				
		3	111.00	18.98				
					%EFF:	32.26	ISO1 DPM	:164.2765
24	6-12	1	35.00	33.81	1.00	35.55	134.0	
		2	62.00	25.40				
		3	98.00	20.52				
					%EFF:	29.12	ISO1 DPM	:120.1874
25	3- 1	1	42.00	30.86	1.00	37.07	145.0	
		2	73.00	23.09				
		3	97.00	20.31				
					%EFF:	26.15	ISO1 DPM	:160.5863
26	3- 2	1	33.00	34.82	1.00	38.55	163.0	
		2	69.00	24.08				
		3	84.00	21.57				
					%EFF:	21.69	ISO1 DPM	:152.1352
27	3- 3	1	40.00	31.62	1.00	40.04	170.0	
		2	73.00	23.41				
		3	99.00	20.10				
					%EFF:	20.09	ISO1 DPM	:199.1028
28	3- 4	1	42.00	30.86	1.00	41.52	168.0	
		2	78.00	22.65				
		3	98.00	20.20				
					%EFF:	20.54	ISO1 DPM	:204.4810
	3- 5	1	42.00	30.86	1.00	43.02	151.0	
		2	79.00	22.50				
		3	100.00	20.00				
					%EFF:	24.61	ISO1 DPM	:170.6519
30	3- 6	1	53.00	27.47	1.00	44.51	205.0	
		2	91.00	20.97				
		3	114.00	18.73				
					%EFF:	13.23	ISO1 DPM	:400.7286

Performed By: _____ Date: 7/19/07

Reviewed By: _____ Date: 8/3/01

Georgia Institute of Technology Research Reactor

Final Survey Package 22

Miscellaneous Pipes and Penetrations

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Section 1

Survey Package 22 Worksheet for Miscellaneous Penetrations

Duratek Inc.
Survey Package Worksheet for Miscellaneous Penetrations
Georgia Institute of Technology Research Reactor

Package Identification No.: **22**	Prepared by: Paul Jones
Area: **01**	Date prepared: 07/21/2001
Area Classification: Suspect Affected	

Area Description

Reactor building penetrations and pipes on all floors that were not specifically identified on other packages.

Historical Information

None of these penetrations and pipes required decontamination.

General Survey Instructions

1) Perform a 100% beta scan of all accessible areas of the penetrations and pipes (Denote any areas on map which were inaccessible).
2) Obtain a minimum of 1 direct beta measurement for each penetration.
3) Obtain a minimum of 1 smear on the inside of each penetration for gross alpha/beta analysis..
4) Obtain required smears for H-3 analysis(See Special Instructions for the minimum number of smears required).

Use only the Package ID and L7 and L8 codes when labeling smears for counting.

Use all location codes provided below when taking fixed beta readings.

Special Instructions
Source check meters to Tc-99 for beta measurements. Use pipe detector model numbers 43-94, 43-98, PSL-3R, and SP-175-3M for surveys inside of pipes & penetrations. Direct beta readings should be taken at areas with elevated activity, as found during beta scan of inside of pipe. If no elevated areas were identified during the scan then one reading should be taken at the 1st elbow inside each pipe whenever possible. Gross α/β and LS smears should be taken at approximately 1 foot inside of ~~each~~ 2 penetration whenever possible. If the smear was taken at a different location then denote on the attached map. See Smear Gross α/β and LS smear blocks below for minimum number of required measurements. PQ 8/22/01

Survey performance (Initial and date as each survey is complete)									
Location Code					Beta Scan	Direct Beta	1 meter Gamma	Smear Gross α/β	LS Smear
L1	L2	L6	L7	L8					
Georgia Tech Research Reactor Penetrations									
A0022	01P00	B9999	ZZZZZ	1 thru 93	1st floor plug holes	~~(93)~~ PQ 7/31/01 (91) PQ 7/31/01	N/A	(93) 8/22/01	(15) 8/22/01
A0022	02P00	B9999	ZZZZZ	1 thru 27	Other Penetrations & pipes (all floors)	(27) PQ 8/21/01	N/A	(27) 8/22/01	(15) 8/22/01

0025

Package Review
Date Package Completed
Package Reviewed by and Date

Survey Comments
Only 91 direct beta readings required for 01P00 due to the secondary cooling water pipes obstructing the detector from entering penetrations # 92 & #93.
93 Smears were still required in these penetrations. P. Jones 7/31/01

006

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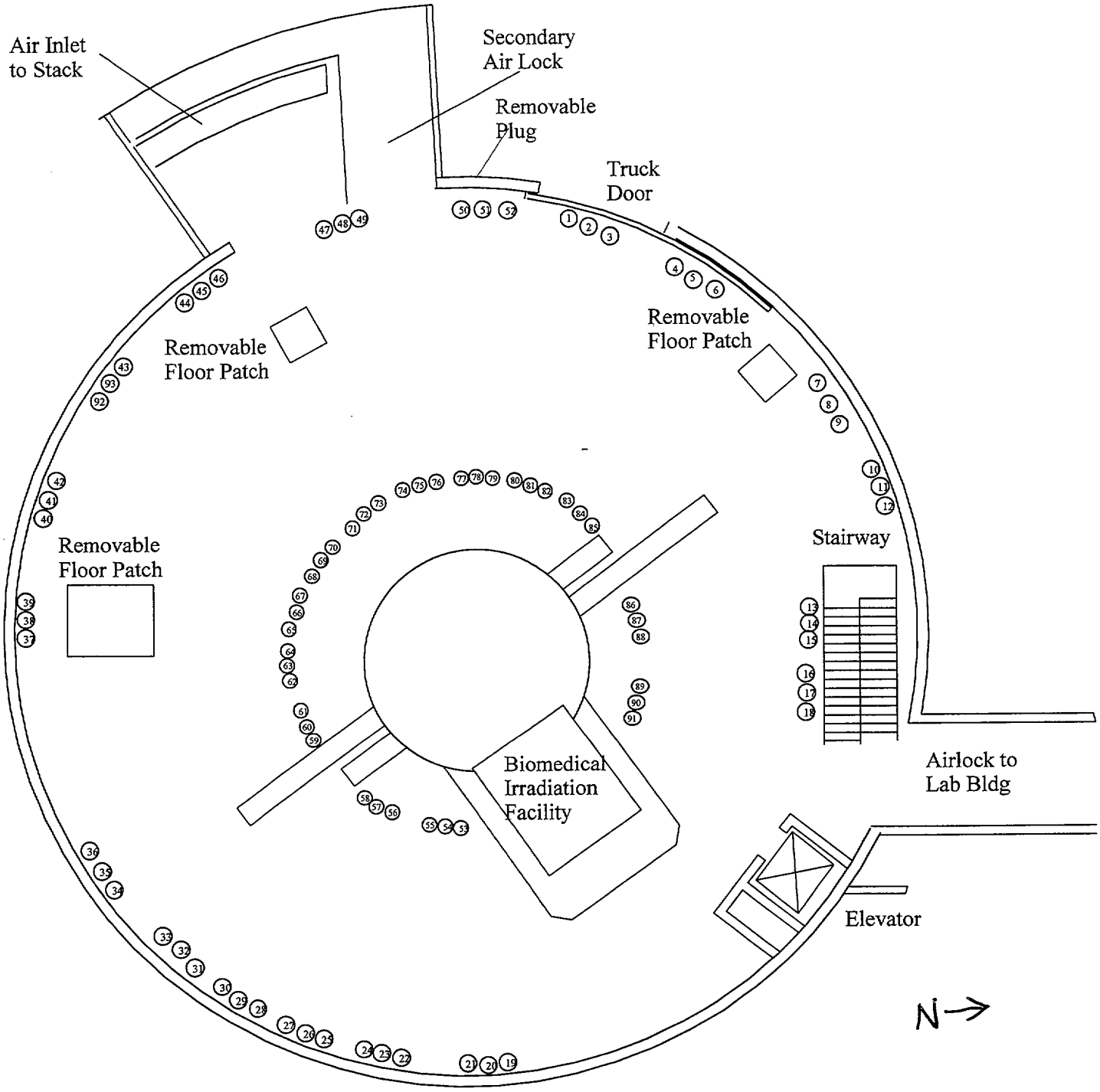
Section 2

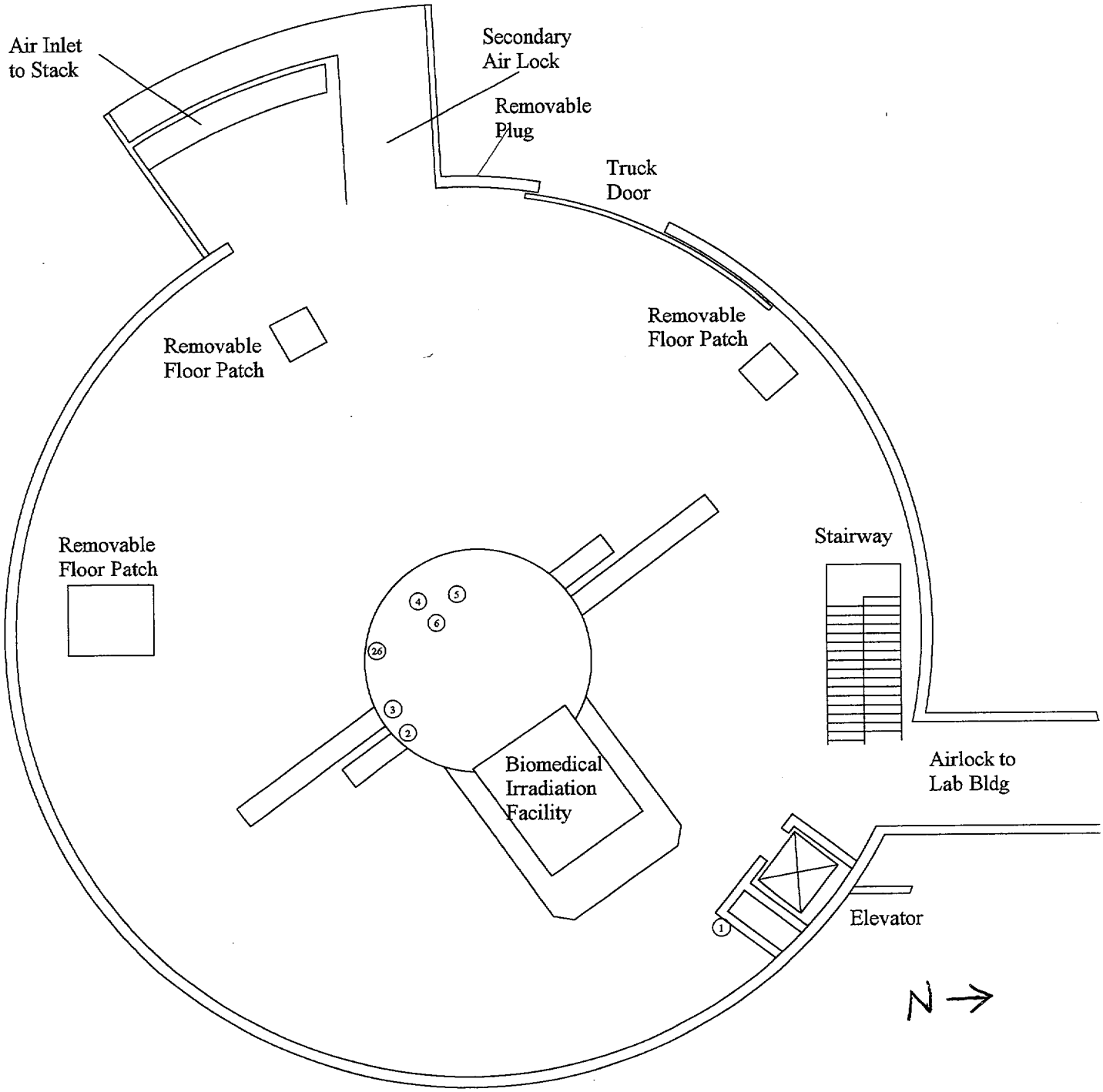
Package 22
GTRR Basement Pipes and Penetrations Drawings

GTRR 1st Floor Pipes and Penetrations Package 22, 01P00



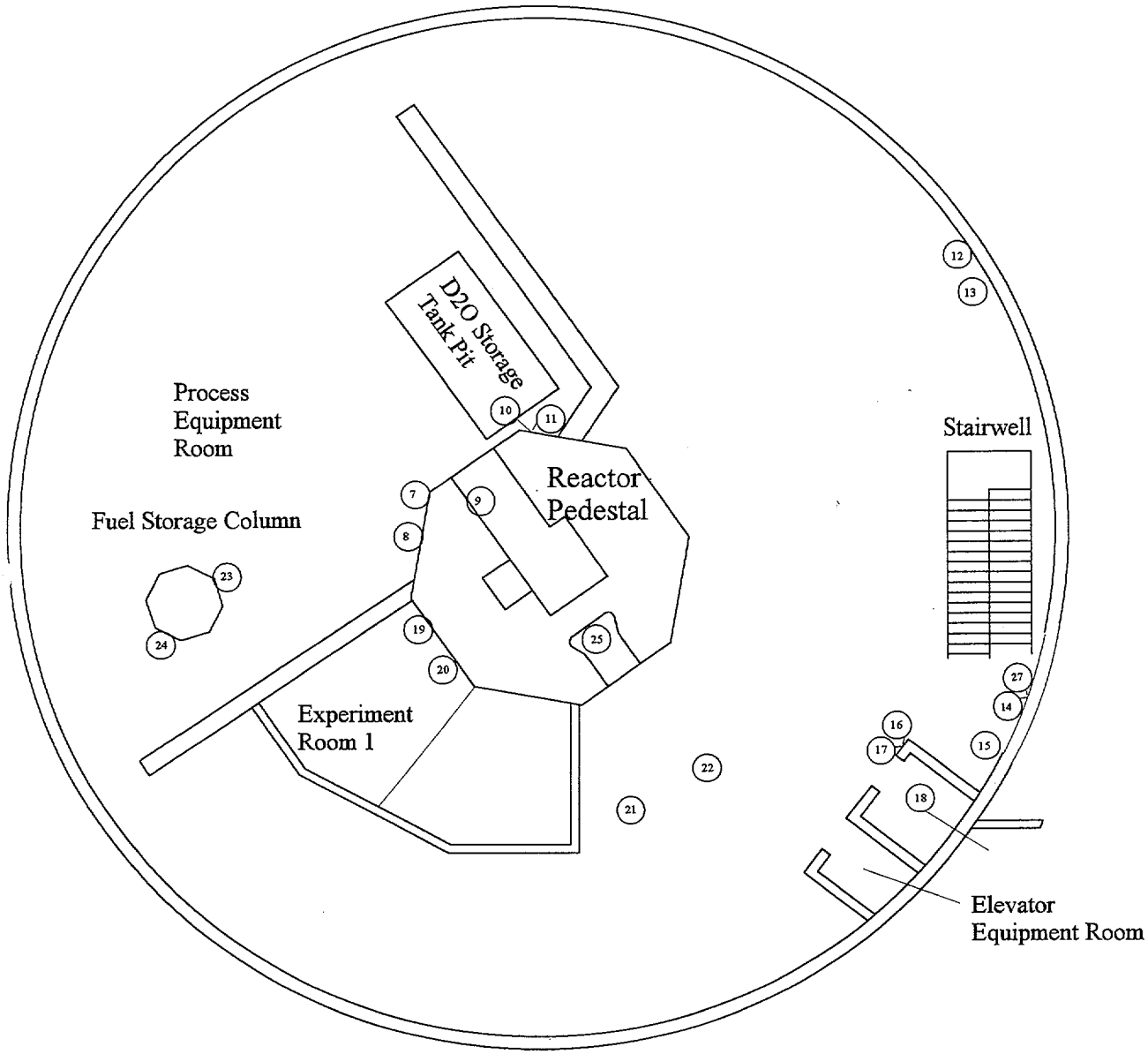
(#) - Denotes L8 number and approximate location of pipe or penetration.

GTRR 1st Floor Pipes and Penetrations
Package 22, 02P00



(#) - Denotes L8 number and approximate location of pipe or penetration.

GTRR Basement Pipes and Penetrations
Package 22, 02P00



(#) - Denotes L8 number and approximate location of pipe or penetration.

N →

Section 3

Package 22
Direct Beta Survey Report for the Suspect Affected Misc. Pipes and Penetrations
(including download reports)

Desc.	File	Sample Number	Gross Counts	Count Time (sec)	Material Type	Detector Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Activity (dpm/100cm^2)	Natural Background (dpm/100cm^2)	Net Activity (dpm/100cm^2)	MDA (dpm/100cm^2)
	215	1	302	60	B9999	100	01P00	FLDCT	ZZZZZ	00001	0.038	241	1605	0	1605	1481
	215	2	235	60	B9999	100	01P00	FLDCT	ZZZZZ	00002	0.038	241	-158	0	-158	1481
	215	3	257	60	B9999	100	01P00	FLDCT	ZZZZZ	00003	0.038	241	421	0	421	1481
	215	4	237	60	B9999	100	01P00	FLDCT	ZZZZZ	00004	0.038	241	-105	0	-105	1481
	215	5	233	60	B9999	100	01P00	FLDCT	ZZZZZ	00005	0.038	241	-211	0	-211	1481
	215	6	276	60	B9999	100	01P00	FLDCT	ZZZZZ	00006	0.038	241	921	0	921	1481
	215	7	256	60	B9999	100	01P00	FLDCT	ZZZZZ	00007	0.038	241	395	0	395	1481
	215	8	231	60	B9999	100	01P00	FLDCT	ZZZZZ	00008	0.038	241	-263	0	-263	1481
	215	9	248	60	B9999	100	01P00	FLDCT	ZZZZZ	00009	0.038	241	184	0	184	1481
	215	10	274	60	B9999	100	01P00	FLDCT	ZZZZZ	00010	0.038	241	868	0	868	1481
	215	11	252	60	B9999	100	01P00	FLDCT	ZZZZZ	00011	0.038	241	289	0	289	1481
	215	12	242	60	B9999	100	01P00	FLDCT	ZZZZZ	00012	0.038	241	26	0	26	1481
	215	13	231	60	B9999	100	01P00	FLDCT	ZZZZZ	00013	0.038	241	-263	0	-263	1481
	215	14	234	60	B9999	100	01P00	FLDCT	ZZZZZ	00014	0.038	241	-184	0	-184	1481
	215	15	240	60	B9999	100	01P00	FLDCT	ZZZZZ	00015	0.038	241	-26	0	-26	1481
	215	16	251	60	B9999	100	01P00	FLDCT	ZZZZZ	00016	0.038	241	263	0	263	1481
	215	17	255	60	B9999	100	01P00	FLDCT	ZZZZZ	00017	0.038	241	368	0	368	1481
	215	18	216	60	B9999	100	01P00	FLDCT	ZZZZZ	00018	0.038	241	-658	0	-658	1481
	215	20	208	60	B9999	100	01P00	FLDCT	ZZZZZ	00019	0.038	241	-868	0	-868	1481
	215	21	239	60	B9999	100	01P00	FLDCT	ZZZZZ	00020	0.038	241	-53	0	-53	1481
	215	22	233	60	B9999	100	01P00	FLDCT	ZZZZZ	00021	0.038	241	-211	0	-211	1481
	215	23	273	60	B9999	100	01P00	FLDCT	ZZZZZ	00022	0.038	241	842	0	842	1481
	215	24	288	60	B9999	100	01P00	FLDCT	ZZZZZ	00023	0.038	241	1237	0	1237	1481
	215	25	265	60	B9999	100	01P00	FLDCT	ZZZZZ	00024	0.038	241	632	0	632	1481
	215	26	228	60	B9999	100	01P00	FLDCT	ZZZZZ	00025	0.038	241	-342	0	-342	1481
	215	27	231	60	B9999	100	01P00	FLDCT	ZZZZZ	00026	0.038	241	-263	0	-263	1481
	215	28	247	60	B9999	100	01P00	FLDCT	ZZZZZ	00027	0.038	241	158	0	158	1481
	215	29	276	60	B9999	100	01P00	FLDCT	ZZZZZ	00028	0.038	241	921	0	921	1481
	215	30	254	60	B9999	100	01P00	FLDCT	ZZZZZ	00029	0.038	241	342	0	342	1481
	215	31	239	60	B9999	100	01P00	FLDCT	ZZZZZ	00030	0.038	241	-53	0	-53	1481
	215	32	298	60	B9999	100	01P00	FLDCT	ZZZZZ	00031	0.038	241	1500	0	1500	1481
	215	33	299	60	B9999	100	01P00	FLDCT	ZZZZZ	00032	0.038	241	1526	0	1526	1481
	215	34	298	60	B9999	100	01P00	FLDCT	ZZZZZ	00033	0.038	241	1500	0	1500	1481
	215	35	272	60	B9999	100	01P00	FLDCT	ZZZZZ	00034	0.038	241	816	0	816	1481
	215	36	240	60	B9999	100	01P00	FLDCT	ZZZZZ	00035	0.038	241	-26	0	-26	1481
	215	37	266	60	B9999	100	01P00	FLDCT	ZZZZZ	00036	0.038	241	658	0	658	1481
	215	38	255	60	B9999	100	01P00	FLDCT	ZZZZZ	00037	0.038	241	368	0	368	1481
	215	39	217	60	B9999	100	01P00	FLDCT	ZZZZZ	00038	0.038	241	-632	0	-632	1481
	215	40	242	60	B9999	100	01P00	FLDCT	ZZZZZ	00039	0.038	241	26	0	26	1481
	215	41	239	60	B9999	100	01P00	FLDCT	ZZZZZ	00040	0.038	241	-53	0	-53	1481
	215	42	280	60	B9999	100	01P00	FLDCT	ZZZZZ	00041	0.038	241	1026	0	1026	1481
	215	43	250	60	B9999	100	01P00	FLDCT	ZZZZZ	00042	0.038	241	237	0	237	1481
	215	44	258	60	B9999	100	01P00	FLDCT	ZZZZZ	00043	0.038	241	447	0	447	1481
	215	45	254	60	B9999	100	01P00	FLDCT	ZZZZZ	00044	0.038	241	342	0	342	1481
	215	46	278	60	B9999	100	01P00	FLDCT	ZZZZZ	00045	0.038	241	974	0	974	1481
	215	47	277	60	B9999	100	01P00	FLDCT	ZZZZZ	00046	0.038	241	947	0	947	1481
	215	48	250	60	B9999	100	01P00	FLDCT	ZZZZZ	00047	0.038	241	237	0	237	1481
	215	49	250	60	B9999	100	01P00	FLDCT	ZZZZZ	00048	0.038	241	237	0	237	1481
	215	50	259	60	B9999	100	01P00	FLDCT	ZZZZZ	00049	0.038	241	474	0	474	1481
	215	51	248	60	B9999	100	01P00	FLDCT	ZZZZZ	00050	0.038	241	184	0	184	1481
	215	52	269	60	B9999	100	01P00	FLDCT	ZZZZZ	00051	0.038	241	737	0	737	1481

215	53	238	60	B9999	100	01P00	FLDCT	ZZZZZ	00052	0.038	241	-79	0	-79	1481
215	55	237	60	B9999	100	01P00	FLDCT	ZZZZZ	00053	0.038	241	-105	0	-105	1481
215	56	233	60	B9999	100	01P00	FLDCT	ZZZZZ	00054	0.038	241	-211	0	-211	1481
215	57	226	60	B9999	100	01P00	FLDCT	ZZZZZ	00055	0.038	241	-395	0	-395	1481
215	58	214	60	B9999	100	01P00	FLDCT	ZZZZZ	00056	0.038	241	-711	0	-711	1481
215	59	261	60	B9999	100	01P00	FLDCT	ZZZZZ	00057	0.038	241	526	0	526	1481
215	60	239	60	B9999	100	01P00	FLDCT	ZZZZZ	00058	0.038	241	-53	0	-53	1481
215	61	254	60	B9999	100	01P00	FLDCT	ZZZZZ	00059	0.038	241	342	0	342	1481
215	62	260	60	B9999	100	01P00	FLDCT	ZZZZZ	00060	0.038	241	500	0	500	1481
215	63	259	60	B9999	100	01P00	FLDCT	ZZZZZ	00061	0.038	241	474	0	474	1481
215	64	214	60	B9999	100	01P00	FLDCT	ZZZZZ	00062	0.038	241	-711	0	-711	1481
215	65	223	60	B9999	100	01P00	FLDCT	ZZZZZ	00063	0.038	241	-474	0	-474	1481
215	66	238	60	B9999	100	01P00	FLDCT	ZZZZZ	00064	0.038	241	-79	0	-79	1481
215	67	241	60	B9999	100	01P00	FLDCT	ZZZZZ	00065	0.038	241	0	0	0	1481
215	68	278	60	B9999	100	01P00	FLDCT	ZZZZZ	00066	0.038	241	974	0	974	1481
215	69	248	60	B9999	100	01P00	FLDCT	ZZZZZ	00067	0.038	241	184	0	184	1481
215	70	261	60	B9999	100	01P00	FLDCT	ZZZZZ	00068	0.038	241	526	0	526	1481
215	71	244	60	B9999	100	01P00	FLDCT	ZZZZZ	00069	0.038	241	79	0	79	1481
215	72	270	60	B9999	100	01P00	FLDCT	ZZZZZ	00070	0.038	241	763	0	763	1481
215	73	268	60	B9999	100	01P00	FLDCT	ZZZZZ	00071	0.038	241	711	0	711	1481
215	74	278	60	B9999	100	01P00	FLDCT	ZZZZZ	00072	0.038	241	974	0	974	1481
215	75	261	60	B9999	100	01P00	FLDCT	ZZZZZ	00073	0.038	241	526	0	526	1481
215	76	258	60	B9999	100	01P00	FLDCT	ZZZZZ	00074	0.038	241	447	0	447	1481
215	77	235	60	B9999	100	01P00	FLDCT	ZZZZZ	00075	0.038	241	-158	0	-158	1481
215	78	261	60	B9999	100	01P00	FLDCT	ZZZZZ	00076	0.038	241	526	0	526	1481
215	79	247	60	B9999	100	01P00	FLDCT	ZZZZZ	00077	0.038	241	158	0	158	1481
215	80	224	60	B9999	100	01P00	FLDCT	ZZZZZ	00078	0.038	241	-447	0	-447	1481
215	81	265	60	B9999	100	01P00	FLDCT	ZZZZZ	00079	0.038	241	632	0	632	1481
215	82	223	60	B9999	100	01P00	FLDCT	ZZZZZ	00080	0.038	241	-474	0	-474	1481
215	83	220	60	B9999	100	01P00	FLDCT	ZZZZZ	00081	0.038	241	-553	0	-553	1481
215	84	181	60	B9999	100	01P00	FLDCT	ZZZZZ	00082	0.038	241	-1579	0	-1579	1481
215	85	210	60	B9999	100	01P00	FLDCT	ZZZZZ	00083	0.038	241	-816	0	-816	1481
215	87	240	60	B9999	100	01P00	FLDCT	ZZZZZ	00084	0.038	241	-26	0	-26	1481
215	88	256	60	B9999	100	01P00	FLDCT	ZZZZZ	00085	0.038	241	395	0	395	1481
215	89	282	60	B9999	100	01P00	FLDCT	ZZZZZ	00086	0.038	241	1079	0	1079	1481
215	90	255	60	B9999	100	01P00	FLDCT	ZZZZZ	00087	0.038	241	368	0	368	1481
215	92	210	60	B9999	100	01P00	FLDCT	ZZZZZ	00089	0.038	241	-816	0	-816	1481
215	93	215	60	B9999	100	01P00	FLDCT	ZZZZZ	00090	0.038	241	-684	0	-684	1481
215	94	240	60	B9999	100	01P00	FLDCT	ZZZZZ	00091	0.038	241	-26	0	-26	1481
215	95	278	60	B9999	100	01P00	FLDCT	ZZZZZ	00088	0.038	241	974	0	974	1481
212	3	1022	300	B9999	100	02P00	FLDCT	ZZZZZ	00001	0.017	212	-447	0	-447	1814
212	5	1000	300	B9999	100	02P00	FLDCT	ZZZZZ	00007	0.017	214	-835	0	-835	1823
214	7	226	60	B9999	100	02P00	FLDCT	ZZZZZ	00002	0.038	242	-421	0	-421	1976
214	8	229	60	B9999	100	02P00	FLDCT	ZZZZZ	00003	0.038	232	-79	0	-79	1936
214	9	203	60	B9999	100	02P00	FLDCT	ZZZZZ	00004	0.038	199	105	0	105	1799
214	10	214	60	B9999	100	02P00	FLDCT	ZZZZZ	00005	0.038	230	-421	0	-421	1928
214	11	192	60	B9999	100	02P00	FLDCT	ZZZZZ	00026	0.038	212	-526	0	-526	1854
214	13	206	60	B9999	100	02P00	FLDCT	ZZZZZ	00009	0.038	187	500	0	500	1746
214	15	238	60	B9999	100	02P00	FLDCT	ZZZZZ	00011	0.038	243	-132	0	-132	1980
214	19	241	60	B9999	100	02P00	FLDCT	ZZZZZ	00016	0.038	211	789	0	789	1850
214	20	214	60	B9999	100	02P00	FLDCT	ZZZZZ	00017	0.038	191	605	0	605	1763
214	22	226	60	B9999	100	02P00	FLDCT	ZZZZZ	00020	0.038	225	26	0	26	1908

014

	214	24	209	60	B9999	100	02P00	FLDCT	ZZZZZ	00019	0.038	213	-105	0	-105	1858
	216	6	190	120	B9999	100	02P00	FLDCT	ZZZZZ	00015	0.048	83	250	0	250	653
	216	9	120	120	B9999	100	02P00	FLDCT	ZZZZZ	00023	0.048	59	21	0	21	555
	216	10	139	120	B9999	100	02P00	FLDCT	ZZZZZ	00024	0.048	59	219	0	219	555
	217	3	128	60	B9999	100	02P00	FLDCT	ZZZZZ	00014	0.055	43	1538	0	1538	607
	217	4	134	60	B9999	100	02P00	FLDCT	ZZZZZ	00027	0.055	43	1647	0	1647	607
	217	5	80	60	B9999	100	02P00	FLDCT	ZZZZZ	00018	0.055	77	58	0	58	791
	218	5	332	120	B9999	100	02P00	FLDCT	ZZZZZ	00025	0.03	113	1767	0	1767	1211
	218	8	222	120	B9999	100	02P00	FLDCT	ZZZZZ	00012	0.03	119	-267	0	-267	1241
	218	9	247	120	B9999	100	02P00	FLDCT	ZZZZZ	00013	0.03	118	200	0	200	1234
	218	12	225	120	B9999	100	02P00	FLDCT	ZZZZZ	00008	0.03	101	400	0	400	1145
	218	13	240	120	B9999	100	02P00	FLDCT	ZZZZZ	00010	0.03	94	883	0	883	1106
	219	14	153	60	B9999	46.5	02P00	FLDCT	ZZZZZ	00006	0.069	151	62	0	62	1866
	219	18	162	60	B9999	46.5	02P00	FLDCT	ZZZZZ	00022	0.069	142	623	0	623	1813
	219	19	159	60	B9999	46.5	02P00	FLDCT	ZZZZZ	00021	0.069	158	31	0	31	1907
														# Measurements	118	
														Average	225	
														Maximum	1767	
														STD DEV	608	
														95% CL on Mean	335	

015

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #212

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

wnload Print
Technician: Name: D. Schumacher Signature: [signature] Station: 2 File: 212
Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: D. Schumacher User ID DS 4133 Signature: [signature] Date: 2/27/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0022: ~~Area~~ RX Penetrations #1 & 7 3"
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/16/01 Detector: 1-23-02

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			
☒ Beta	123601	43-98	.017	1169/170	212	212

Local Area Background Measurements — MEAN Value in cpm

β Beta	1	2	3	4	5	6	0
α Alpha	1	2	3	4	5	6	

COMMENTS: Background readings were taken at each penetration for this file because many of these penetrations were in different locations throughout the building.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 212	Survey Description: A0022: RX PENETRATIONS # 1, # 7 (3")		
Survey Reason: TERMINATION	User ID: DPS4133	Technician name: Don Schumaker	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-98	Detector S/N: 123601	Type: Pipe Probe	
Background: 0 cpm	Beta Efficiency: .017		Survey Date: 7/26/01

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: Don Schumaker / [signature] Date: 7/27/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: Pam Jones / [signature] Date: 8/22/01
Print name Signature

Survey Date: 7/26/01 Report Date: 7/27/01 Page: 1
File: 212 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number	4
	A0022	02P00	TAT01	02311	Det Cal Due:	1/23/~~02~~ 1/23/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B9999	ZZZZZ	00001	2	300	1060	12471	*
FLDBK	B9999	ZZZZZ	00007	4	300	1071	12600	*
						Group Average:	12535	
FLDCT	B9999	ZZZZZ	00001	3	300	1022	12024	*
FLDCT	B9999	ZZZZZ	00007	5	300	1000	11765	*
						Group Average:	11894	

Survey Code	L1	L2	L3	L4	Setup Number	4
	ZZZZZ	A3762	TAT01	02311	Det Cal Due:	1/23/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRB00	ZZZZZ	ZZZZZ	00000	1	60	1339	78765	*
PRB00	ZZZZZ	ZZZZZ	00000	7	60	1361	80059	*
						Group Average:	79412	

Survey Code	L1	L2	L3	L4	Setup Number	4
	ZZZZZ	ZZZZZ	TAT01	02311	Det Cal Due:	1/23/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	1703	10018	*
						Group Average:	10018	
PTBBK	ZZZZZ	ZZZZZ	00000	6	600	1870	11000	*
						Group Average:	11000	

Total Number of Measurements on this Report: 8

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 2400 dpm/100 cm2

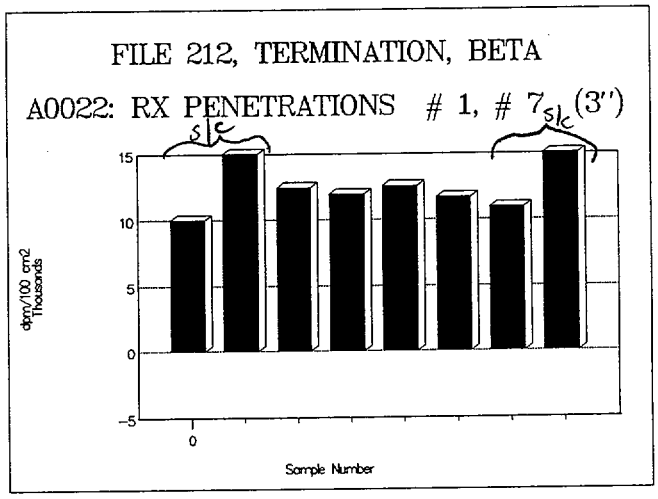
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/27/2001 Graph of File 212 Station: 2

Survey Date: 7/26/2001 Survey Start Time: 14:43:50

Description: A0022: RX PENETRATIONS # 1, # 7 (3")



Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #215

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 215
Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ 5034 Signature: [signature] Date: 7/31/01

Print Name: User ID Signature: Date:

Survey Unit Description: A-0022,01P00 Reactor Penetrations (Plug Holes)
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 1/21/02

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			
Beta	123601	43-98	.038	2659 / 141	214	215

Local Area Background Measurements — MEAN Value in cpm

β Beta	1 2548	2 2244	3 2422	4 2436	5	6	241
α Alpha	1	2	3	4	5	6	

COMMENTS: Locations 92 & 93 were obstructed ~~from~~ 7/31/01 due to secondary cooling water pipes. These readings were not taken. [signature] 7/31/01

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 215	Survey Description: A0022: RX BLDG. PENETRATIONS (PLUG HOLES)		
Survey Reason: TERMINATION	User ID: PAJ5034	Technician name: Paul Jones	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-98	Detector S/N: 123601	Type: Pipe Probe	
Background: 241 cpm	Beta Efficiency: .038		Survey Date: 7/31/01

Pre and Post source checks are included on this download: Yes ___ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 214 Post File #: 215

Technician Review:

I have reveiwed this cover sheet and 3 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: PAUL JONES / [signature] Date: 7/31/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 7/31/01
Print name Signature

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 1
File: 215 Station: 2

Comments

Survey Code	L1	L2	L3	L4
	A0022	01P00	TAT01	02310

Setup Number 4
Det Cal Due: 1/23/02

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDBK	B9999	ZZZZZ	00001	0	600	2548	363	
FLDBK	B9999	ZZZZZ	00018	19	600	2244	-437	
FLDBK	B9999	ZZZZZ	00052	54	600	2422	32	
FLDBK	B9999	ZZZZZ	00091	96	600	2436	68	
						Group Average:	7	
FLDCT	B9999	ZZZZZ	00001	1	60	302	1605	
FLDCT	B9999	ZZZZZ	00002	2	60	235	-158	
FLDCT	B9999	ZZZZZ	00003	3	60	257	421	
FLDCT	B9999	ZZZZZ	00004	4	60	237	-105	
FLDCT	B9999	ZZZZZ	00005	5	60	233	-211	
FLDCT	B9999	ZZZZZ	00006	6	60	276	921	
FLDCT	B9999	ZZZZZ	00007	7	60	256	395	
FLDCT	B9999	ZZZZZ	00008	8	60	231	-263	
FLDCT	B9999	ZZZZZ	00009	9	60	248	184	
FLDCT	B9999	ZZZZZ	00010	10	60	274	868	
FLDCT	B9999	ZZZZZ	00011	11	60	252	289	
FLDCT	B9999	ZZZZZ	00012	12	60	242	26	
FLDCT	B9999	ZZZZZ	00013	13	60	231	-263	
FLDCT	B9999	ZZZZZ	00014	14	60	234	-184	
FLDCT	B9999	ZZZZZ	00015	15	60	240	-26	
FLDCT	B9999	ZZZZZ	00016	16	60	251	263	
FLDCT	B9999	ZZZZZ	00017	17	60	255	368	
FLDCT	B9999	ZZZZZ	00018	18	60	216	-658	
FLDCT	B9999	ZZZZZ	00019	20	60	208	-868	
FLDCT	B9999	ZZZZZ	00020	21	60	239	-53	
FLDCT	B9999	ZZZZZ	00021	22	60	233	-211	
FLDCT	B9999	ZZZZZ	00022	23	60	273	842	
FLDCT	B9999	ZZZZZ	00023	24	60	288	1237	
FLDCT	B9999	ZZZZZ	00024	25	60	265	632	
FLDCT	B9999	ZZZZZ	00025	26	60	228	-342	
FLDCT	B9999	ZZZZZ	00026	27	60	231	-263	
FLDCT	B9999	ZZZZZ	00027	28	60	247	158	
FLDCT	B9999	ZZZZZ	00028	29	60	276	921	
FLDCT	B9999	ZZZZZ	00029	30	60	254	342	
FLDCT	B9999	ZZZZZ	00030	31	60	239	-53	
FLDCT	B9999	ZZZZZ	00031	32	60	298	1500	
FLDCT	B9999	ZZZZZ	00032	33	60	299	1526	
FLDCT	B9999	ZZZZZ	00033	34	60	298	1500	
FLDCT	B9999	ZZZZZ	00034	35	60	272	816	
FLDCT	B9999	ZZZZZ	00035	36	60	240	-26	
FLDCT	B9999	ZZZZZ	00036	37	60	266	658	
FLDCT	B9999	ZZZZZ	00037	38	60	255	368	
FLDCT	B9999	ZZZZZ	00038	39	60	217	-632	
FLDCT	B9999	ZZZZZ	00039	40	60	242	26	
FLDCT	B9999	ZZZZZ	00040	41	60	239	-53	
FLDCT	B9999	ZZZZZ	00041	42	60	280	1026	
FLDCT	B9999	ZZZZZ	00042	43	60	250	237	
FLDCT	B9999	ZZZZZ	00043	44	60	258	447	
FLDCT	B9999	ZZZZZ	00044	45	60	254	342	
FLDCT	B9999	ZZZZZ	00045	46	60	278	974	
FLDCT	B9999	ZZZZZ	00046	47	60	277	947	
FLDCT	B9999	ZZZZZ	00047	48	60	250	237	
FLDCT	B9999	ZZZZZ	00048	49	60	250	237	
FLDCT	B9999	ZZZZZ	00049	50	60	259	474	
FLDCT	B9999	ZZZZZ	00050	51	60	248	184	
FLDCT	B9999	ZZZZZ	00051	52	60	269	737	
FLDCT	B9999	ZZZZZ	00052	53	60	238	-79	
FLDCT	B9999	ZZZZZ	00053	55	60	237	-105	
FLDCT	B9999	ZZZZZ	00054	56	60	233	-211	
FLDCT	B9999	ZZZZZ	00055	57	60	226	-395	
FLDCT	B9999	ZZZZZ	00056	58	60	214	-711	
FLDCT	B9999	ZZZZZ	00057	59	60	261	526	

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 2
File: 215 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 4
	A0022	01P00	TAT01	02310	Det Cal Due: 1/23/02

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDCT	B9999	ZZZZZ	00058	60	60	239	-53	
FLDCT	B9999	ZZZZZ	00059	61	60	254	342	
FLDCT	B9999	ZZZZZ	00060	62	60	260	500	
FLDCT	B9999	ZZZZZ	00061	63	60	259	474	
FLDCT	B9999	ZZZZZ	00062	64	60	214	-711	
FLDCT	B9999	ZZZZZ	00063	65	60	223	-474	
FLDCT	B9999	ZZZZZ	00064	66	60	238	-79	
FLDCT	B9999	ZZZZZ	00065	67	60	241	0	
FLDCT	B9999	ZZZZZ	00066	68	60	278	974	
FLDCT	B9999	ZZZZZ	00067	69	60	248	184	
FLDCT	B9999	ZZZZZ	00068	70	60	261	526	
FLDCT	B9999	ZZZZZ	00069	71	60	244	79	
FLDCT	B9999	ZZZZZ	00070	72	60	270	763	
FLDCT	B9999	ZZZZZ	00071	73	60	268	711	
FLDCT	B9999	ZZZZZ	00072	74	60	278	974	
FLDCT	B9999	ZZZZZ	00073	75	60	261	526	
FLDCT	B9999	ZZZZZ	00074	76	60	258	447	
FLDCT	B9999	ZZZZZ	00075	77	60	235	-158	
FLDCT	B9999	ZZZZZ	00076	78	60	261	526	
FLDCT	B9999	ZZZZZ	00077	79	60	247	158	
FLDCT	B9999	ZZZZZ	00078	80	60	224	-447	
FLDCT	B9999	ZZZZZ	00079	81	60	265	632	
FLDCT	B9999	ZZZZZ	00080	82	60	223	-474	
FLDCT	B9999	ZZZZZ	00081	83	60	220	-553	
FLDCT	B9999	ZZZZZ	00082	84	60	181	-1579	
FLDCT	B9999	ZZZZZ	00083	85	60	210	-816	
FLDCT	B9999	ZZZZZ	00084	87	60	240	-26	
LDCT	B9999	ZZZZZ	00085	88	60	256	395	
FLDCT	B9999	ZZZZZ	00086	89	60	282	1079	
FLDCT	B9999	ZZZZZ	00087	90	60	255	368	
FLDCT	B9999	ZZZZZ	00089	92	60	210	-816	
FLDCT	B9999	ZZZZZ	00090	93	60	215	-684	
FLDCT	B9999	ZZZZZ	00091	94	60	240	-26	
FLDCT	B9999	ZZZZZ	00088	95	60	278	974	
						Group Average:	221	

Survey Code	L1	L2	L3	L4	Setup Number 4
	ZZZZZ	ZZZZZ	TAT01	02310	Det Cal Due: 1/23/02

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PTB00	ZZZZZ	ZZZZZ	00000	98	60	2812	67658	*
						Group Average:	67658	
PTBBK	ZZZZZ	ZZZZZ	00000	97	600	2154	-674	
						Group Average:	-674	

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 3
File: 215 Station: 2

Comments

Total Number of Measurements on this Report: 97

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 2400 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/31/01 Comments Report for File 215 Station: 2

Comment Number	Comment
1	Deleted sample number 86. BECAUSE DETECTOR WAS OUT OF PLACE AT START OF READING. SEE RESURVEY SAMPLE # 87.
2	Deleted sample number 91. BECAUSE DETECTOR WAS NOT IN PLUG HOLE AT START OF READING. SEE SAMPLE # 95 FOR RESURVEY.

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

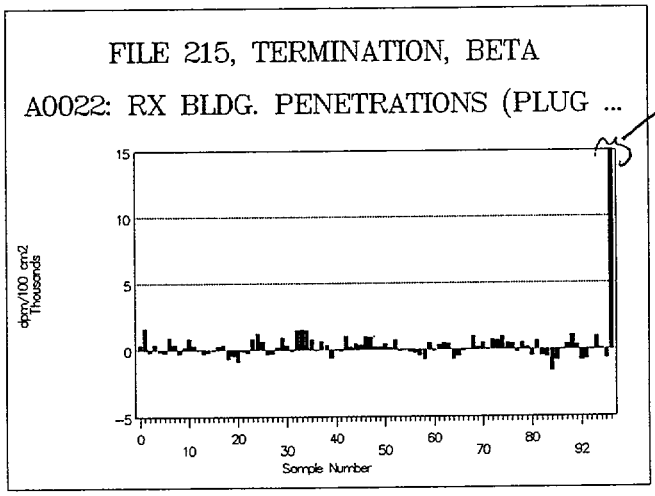
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/31/2001 Graph of File 215 Station: 2

Survey Date: 7/31/2001 Survey Start Time: 14:34:58

Description: A0022: RX BLDG. PENETRATIONS (PLUG HOLES)



Post s/c

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #214

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

030

wnload Print
Technician: Name: PAUL JONES Signature: Station: 2 File: 214
Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ 5034 Signature: Date: 7/31/01

Print Name: User ID Signature: Date:

Survey Unit Description: A0022: Rx Bldg. Penetrations 2-5, 26, 9, 11, 16, 17, 19 & 20
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 1/21/02

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of easurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			
Beta	123601	43-98	.038	2659/141	214	215

Local Area Background Measurements							MEAN Value in cpm !
β Beta	1	2	3	4	5	6	Ø
α Alpha	1	2	3	4	5	6	

COMMENTS: Background readings were taken at each penetration for this file because many of these penetrations were in different locations throughout the building.

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 214	Survey Description: A0022: RX BLDG. PENETRATIONS 2-5,26,9,11,16,17,19, & 20		
Survey Reason: TERMINATION	User ID: PAJ5034	Technician name: Paul Jones	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-98	Detector S/N: 123601	Type: Pipe Probe	
Background: 0 cpm	Beta Efficiency: .038		Survey Date: 7/31/01

Pre and Post source checks are included on this download: Yes ___ No ✓
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: 214 Post File #: 215

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, Ø pages of comments, and 1 graph.

I performed this survey: PAUL JONES / [signature] Date: 7/31/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 7/31/01
Print name Signature

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 1
File: 214 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 4
	A0022	02P00	TAT01	02310	Det Cal Due: 1/23/02

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B9999	ZZZZZ	00002	2	60	242	6368	*
FLDBK	B9999	ZZZZZ	00003	3	60	232	6105	*
FLDBK	B9999	ZZZZZ	00004	4	60	199	5237	*
FLDBK	B9999	ZZZZZ	00005	5	60	230	6053	*
FLDBK	B9999	ZZZZZ	00026	6	60	212	5579	*
FLDBK	B9999	ZZZZZ	00009	12	60	187	4921	*
FLDBK	B9999	ZZZZZ	00011	14	60	243	6395	*
FLDBK	B9999	ZZZZZ	00016	16	60	240	6316	*
FLDBK	B9999	ZZZZZ	00017	17	60	191	5026	*
FLDBK	B9999	ZZZZZ	00016	18	60	211	5553	*
FLDBK	B9999	ZZZZZ	00020	21	60	225	5921	*
FLDBK	B9999	ZZZZZ	00019	23	60	213	5605	*
						Group Average:	5757	
FLDCT	B9999	ZZZZZ	00002	7	60	226	5947	*
FLDCT	B9999	ZZZZZ	00003	8	60	229	6026	*
FLDCT	B9999	ZZZZZ	00004	9	60	203	5342	*
FLDCT	B9999	ZZZZZ	00005	10	60	214	5632	*
FLDCT	B9999	ZZZZZ	00026	11	60	192	5053	*
FLDCT	B9999	ZZZZZ	00009	13	60	206	5421	*
FLDCT	B9999	ZZZZZ	00011	15	60	238	6263	*
FLDCT	B9999	ZZZZZ	00016	19	60	241	6342	*
FLDCT	B9999	ZZZZZ	00017	20	60	214	5632	*
FLDCT	B9999	ZZZZZ	00020	22	60	226	5947	*
FLDCT	B9999	ZZZZZ	00019	24	60	209	5500	*
						Group Average:	5737	

Survey Code	L1	L2	L3	L4	Setup Number 4
	ZZZZZ	C389	TAT01	02310	Det Cal Due: 1/23/02

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRB00	ZZZZZ	ZZZZZ	00000	1	60	2800	73684	*
						Group Average:	73684	

Survey Code	L1	L2	L3	L4	Setup Number 4
	ZZZZZ	ZZZZZ	TAT01	02310	Det Cal Due: 1/23/02

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	1407	3703	*
						Group Average:	3703	

* Hi flag set at 2400 dpm/100 cm2

Survey Date: 7/31/01 Report Date: 7/31/01 Page: 2
File: 214 Station: 2

Comments

Total Number of Measurements on this Report: 25

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 2400 dpm/100 cm2

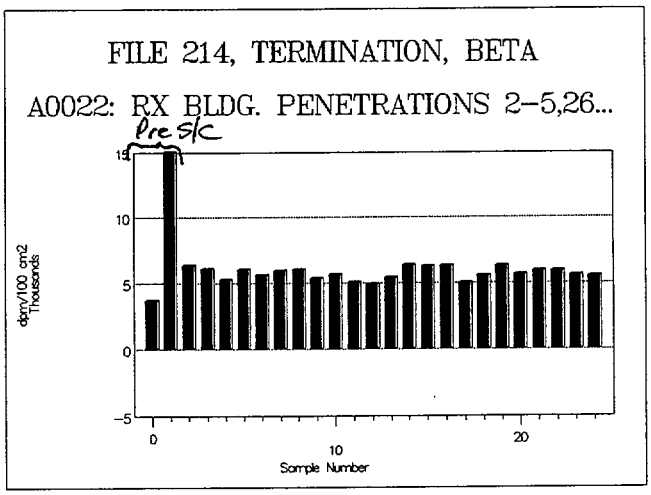
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

7/31/2001 Graph of File 214 Station: 2

Survey Date: 7/31/2001 Survey Start Time: 09:00:20

Description: A0022: RX BLDG. PENETRATIONS 2-5,26,9,11,16,17,19, & 20



Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #216

036

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 216
Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ5034 Signature: [signature] Date: 8/2/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0022, 02P00, Penetrations 15, 23, & 24.
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 9/2/01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			
Beta	124111	43-94	.048	3215/114	216	216

Local Area Background Measurements 2 min counts. MEAN Value in cpm ↓

β Beta	1 166	2 118	3 118	4	5	6	Ø
α Alpha	1	2	3	4	5	6	

COMMENTS:

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

PJ 8/22/01

File Number: 216	Survey Description: A0022: RX BLDG. PENETRATIONS #'s ~~14~~,15,23, & 24.		
Survey Reason: TERMINATION	User ID: PAJ5034	Technician name: Paul Jones	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-94	Detector S/N: 124111	Type: PIPE	
Background: 0 cpm	Beta Efficiency: .048		Survey Date: 8/01/01

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 2 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: PAUL JONES / [signature] Date: 8/22/01
Print name / Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name / Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 8/29/01
Print name / Signature

Survey Date: 8/01/01 Report Date: 8/22/01 Page: 1
File: 216 Station: 2

Comments

Sample #13 taken with detector in wrong position. See sample #14 for recount.
P. Jones 8/22/01

Survey Code	L1	L2	L3	L4	Setup Number 5
	A0022	02P00	TAT01	02301	Det Cal Due: 9/02/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
FLDBK	B9999	ZZZZZ	00015	5	120	166	1729	
FLDBK	B9999	ZZZZZ	00023	8	120	118	1229	
FLDBK	B9999	ZZZZZ	00024	11	120	118	1229	
						Group Average:	1396	
FLDCT	B9999	ZZZZZ	00015	6	120	190	1979	
FLDCT	B9999	ZZZZZ	00023	9	120	120	1250	
FLDCT	B9999	ZZZZZ	00024	10	120	139	1448	
						Group Average:	1559	

Survey Code	L1	L2	L3	L4	Setup Number 5
	ZZZZZ	A3404	TAT01	02301	Det Cal Due: 9/02/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRB00	ZZZZZ	ZZZZZ	00000	1	60	3329	69354	*
						Group Average:	69354	
PTB00	ZZZZZ	ZZZZZ	00000	13	60	3675	76563	*
PTB00	ZZZZZ	ZZZZZ	00000	14	60	3574	74458	*
						Group Average:	75510	

Survey Code	L1	L2	L3	L4	Setup Number 5
	ZZZZZ	ZZZZZ	TAT01	02301	Det Cal Due: 9/02/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	H i
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	1141	2377	
						Group Average:	2377	
PTB00	ZZZZZ	ZZZZZ	00000	12	600	827	1723	
						Group Average:	1723	

Total Number of Measurements on this Report: 11

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 2400 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/22/01 Comments Report for File 216 Station: 2

Comment Number	Comment
1	Deleted sample number 7. Because detector was moved during background count. See sample # 8 for resurvey.
2	Deleted sample numbers from 2 to 4. Because penetrations 14 & 27 required the sleeves to be removed. See file # 217 for resurvey of these penetrations.

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

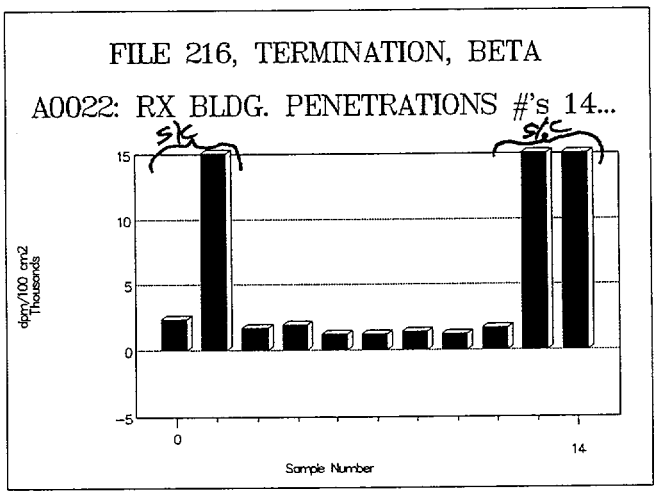
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/22/2001 Graph of File 216 Station: 2

Survey Date: 8/01/2001 Survey Start Time: 12:35:00

Description: A0022: RX BLDG. PENETRATIONS #'s 14,15,23, & 24.



Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #217

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

042

Download Technician: Print Name: PAUL JONES Signature: Paul Jones Station: 2 File: 217

Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ 5034 Signature: Paul Jones Date: 8/21/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: Survey Package 22, Penetrations 14, 18 & 27
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒: 126170

Instrument and Detector Calibration Due Dates: Survey Meter: 12/19/01 Detector: 11/24/01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			
Beta	007A	PSL-3R	.055	1831/77	217	217

Local Area Background Measurements (LB) 14 & 27 (10 minutes) (LB) #18 MEAN Value in cpm

β Beta	1 434	2 768	3	4	5	6	60.1
α Alpha	1	2	3	4	5	6	

COMMENTS: LB survey locations 27 & 14 are of similar geometry and location. The 10 minute background taken at location #14 is for both penetrations. P. Jones

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 217	Survey Description: A0022, Penetrations 14, 18, and 27.		
Survey Reason: TERMINATION	User ID: PAJ5034	Technician name: Paul Jones	
Instrument Model: 2350-1	S/N: 126170	Calibration Due: 12/19/01	Group: 2
Detector Model: PSL-3R	Detector S/N: 007A	Type: PIPE PROBE GAS PROPORTIONAL	
Background: 0 cpm	Beta Efficiency: .055		Survey Date: 8/20/01

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, 0 pages of comments, and 1 graph.

I performed this survey: PAUL JONES / Paul Jones Date: 8/21/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / Paul Jones Date: 8/21/01
Print name Signature

Survey Date: 8/20/01 Report Date: 8/21/01 Page: 1
File: 217 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 14
	A0022	02P00	TAT01	02500	Det Cal Due: 11/24/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDBK	B9999	ZZZZZ	00014	2	600	434	1754	
FLDBK	B9999	ZZZZZ	00018	6	600	768	3103	*
						Group Average:	2428	
FLDCT	B9999	ZZZZZ	00014	3	60	128	5172	*
FLDCT	B9999	ZZZZZ	00027	4	60	134	5414	*
FLDCT	B9999	ZZZZZ	00018	5	60	80	3232	*
						Group Average:	4606	

Survey Code	L1	L2	L3	L4	Setup Number 14
	ZZZZZ	12681	TAT01	02500	Det Cal Due: 11/24/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PRB00	ZZZZZ	ZZZZZ	00000	1	60	1913	77293	*
						Group Average:	77293	
PTB00	ZZZZZ	ZZZZZ	00000	8	60	1908	77091	*
						Group Average:	77091	

Survey Code	L1	L2	L3	L4	Setup Number 14
	ZZZZZ	ZZZZZ	TAT01	02500	Det Cal Due: 11/24/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	731	2954	*
						Group Average:	2954	
PTBBK	ZZZZZ	ZZZZZ	00000	7	600	766	3095	*
						Group Average:	3095	

Total Number of Measurements on this Report: 9

NOTE: This report is grouped by:
Package (L1) (Package number)
Setup number (Detector parameters)
Det Type (L4) (GM pancake-flat surface, Beta 3.5-12" pipe, gamma at 1 m, etc.)
Reason (L3-345) (Char survey, source check, final survey, etc.)
Surface Cat (L2) (Wall, floor, drain, penetration, etc.)
Count Type (L5) (Field count, bkg, pre-, post-, etc.)
Bkgd Sub (L6) (Material code, i.e., wood, iron, concr, etc.)

* Hi flag set at 2400 dpm/100 cm2

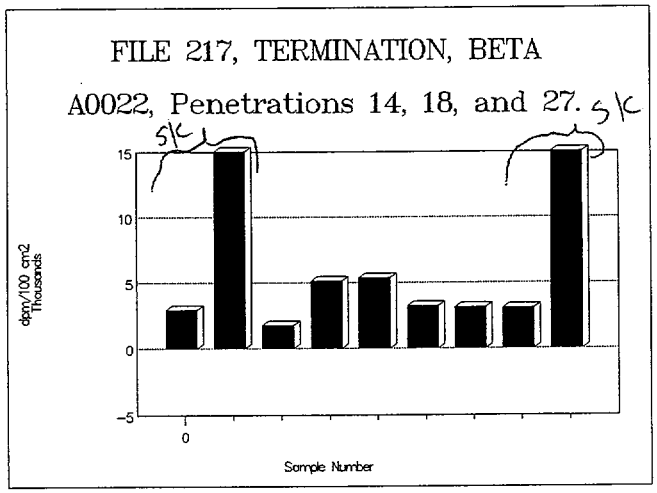
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/21/2001 Graph of File 217 Station: 2

Survey Date: 8/20/2001 Survey Start Time: 15:41:28

Description: A0022, Penetrations 14, 18, and 27.



Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #218

047

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

Download Technician: Print Name: PAUL JONES Signature: [signature] Station: 2 File: 218
Serial No. Verification: Model 2350: ☐ Detector: ☐ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ 5034 Signature: [signature] Date: 8/21/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0022 02P00 Penetrations 8, 10, 12, 13 & 25
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒ 129429

Instrument and Detector Calibration Due Dates: Survey Meter: 12/6/01 Detector: 9/2/01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			
Beta	12411	43-94	0.030	2038/101	218	218

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1 222	2 247	3 332	4 225	5 240	6	Ø
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 218	Survey Description: A0022, 02P00, Penetrations 8, 10, 12, 13, and 25.		
Survey Reason: TERMINATION	User ID: PAJ5034	Technician name: Paul Jones	
Instrument Model: 2350-1	S/N: 129429	Calibration Due: 12/06/01	Group: 2
Detector Model: 43-94	Detector S/N: 124111	Type: PIPE	
Background: 0 cpm	Beta Efficiency: .030		Survey Date: 8/21/01

Pre and Post source checks are included on this download: Yes ✓ No ____
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, Ø pages of comments, and 1 graph.

I performed this survey: PAUL JONES / Paul Jones Date: 8/21/01
Print name Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / Paul Jones Date: 8/21/01
Print name Signature

Survey Date: 8/21/01 Report Date: 8/21/01 Page: 1
File: 218 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 5
	A0022	02P00	TAT01	02302	Det Cal Due: 9/02/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDBK	B9999	ZZZZZ	00025	4	120	226	3767	*
FLDBK	B9999	ZZZZZ	00012	6	120	238	3967	*
FLDBK	B9999	ZZZZZ	00013	7	120	235	3917	*
FLDBK	B9999	ZZZZZ	00008	10	120	201	3350	*
FLDBK	B9999	ZZZZZ	00010	11	120	187	3117	*
						Group Average:	3623	
FLDCT	B9999	ZZZZZ	00025	5	120	332	5533	*
FLDCT	B9999	ZZZZZ	00012	8	120	222	3700	*
FLDCT	B9999	ZZZZZ	00013	9	120	247	4117	*
FLDCT	B9999	ZZZZZ	00008	12	120	225	3750	*
FLDCT	B9999	ZZZZZ	00010	13	120	240	4000	*
						Group Average:	4220	

Survey Code	L1	L2	L3	L4	Setup Number 5
	ZZZZZ	A3402	TAT01	02302	Det Cal Due: 9/02/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PRB00	ZZZZZ	ZZZZZ	00000	1	60	2173	72433	*
PRB00	ZZZZZ	ZZZZZ	00000	3	60	2139	71300	*
						Group Average:	71867	
PTB00	ZZZZZ	ZZZZZ	00000	15	60	2207	73567	*
						Group Average:	73567	

Survey Code	L1	L2	L3	L4	Setup Number 5
	ZZZZZ	ZZZZZ	TAT01	02302	Det Cal Due: 9/02/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PRBBK	ZZZZZ	ZZZZZ	00000	0	600	780	2600	*
PRBBK	ZZZZZ	ZZZZZ	00000	2	600	1006	3353	*
						Group Average:	2977	
PTBBK	ZZZZZ	ZZZZZ	00000	14	600	854	2847	*
						Group Average:	2847	

* Hi flag set at 2400 dpm/100 cm2

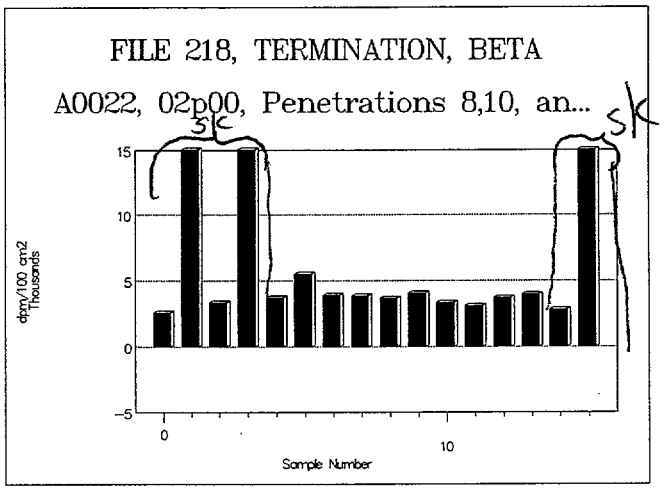
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/21/2001 Graph of File 218 Station: 2

Survey Date: 8/21/2001 Survey Start Time: 13:48:38

Description: A0022, 02p00, Penetrations 8,10, and 25.



Flag set for 2400 dpm/100 cm2. Review values greater than this value.

Review this graph for visual outliers.

Mark outliers, source checks and backgrounds on the graph on this page.

The "net activity" (dpm/100 cm^2) presented on the following download report is raw data. It has not been corrected, if required, for the natural radioactivity that may be present in materials of construction. In addition the background used to correct for ambient exposure rates, instrument noise, etc. may need to be adjusted if more than one surface type was included in the download.

See the enclosed spreadsheets for the corrected results.

File #219

ATTACHMENT 6.14
SURVEY DOWNLOAD DATA SHEET

052

Download Technician: Print Name: PAUL JONES Signature: Pal Jones Station: 2 File: 219
Serial No. Verification: Model 2350: ☒ Detector: ☒ Problems: ☐ (See Comments)

Survey Technician(s):
Print Name: PAUL JONES User ID PAJ5034 Signature: Pal Jones Date: 8/21/01

Print Name: _____ User ID _____ Signature: _____ Date: _____

Survey Unit Description: A0022, 02P00, Penetrations # 6, 21 & 22.
(Example: Survey Package + description i.e. D16, Building 43, Area 09, Room 100, Floor - Grid Locations A1 through A7)

Instrument Model and Serial No.: Model 2350 ☐ Model 2350-1 ☒ 126170

Instrument and Detector Calibration Due Dates: Survey Meter: 12/19/01 Detector: 8/28/01

Type Of Survey: ☒ Term Survey ☐ Characterization ☐ Information Only
☐ Other (explain):

Type of Measurement	Detector Serial Number	Detector Model Number	Detector Efficiency	Source Mean BKG Value	Pre & Post Use Info	
					Pre File No.	Post File No.
☐ Beta β		43-106B				
☐ Beta β		43-68B				
☐ Alpha α		43-68A				
☐ Gamma γ		44-2	N/A			
Beta	096141	175-3M	0.069	1764/181	219	219

Local Area Background Measurements — MEAN Value in cpm !

β Beta	1	2	3	4	5	6	
α Alpha	1	2	3	4	5	6	

COMMENTS: _____

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

Direct Beta Survey Report, dpm/100 cm2

File Number: 219	Survey Description: A0022, 02P00, Penetrations 6, 21, & 22		
Survey Reason: TERMINATION	User ID: PAJ5034	Technician name: Paul Jones	
Instrument Model: 2350-1	S/N: 126170	Calibration Due: 12/19/01	Group: 2
Detector Model: SP-175-3M	Detector S/N: 096141	Type: Pipe Probe	
Background: 0 cpm	Beta Efficiency: .069		Survey Date: 8/21/01

Pre and Post source checks are included on this download: Yes ✓ No ___
If No is answered, then list the Download Files which include the Pre and Post source checks.
Pre File #: _____ Post File #: _____

Technician Review:

I have reveiwed this cover sheet and 1 pages of the report, 1 pages of comments, and 1 graph.

I performed this survey: PAUL JONES / [signature] Date: 8/21/01
Print name / Signature

and,

I performed this survey: _____ / _____ Date: _____
Print name / Signature

Corrections and Reasons:

Comment Resolution:

Survey Reviewed and Approved by: PAUL JONES / [signature] Date: 8/21/01
Print name / Signature

Survey Date: 8/21/01 Report Date: 8/21/01 Page: 1
File: 219 Station: 2

Comments

Survey Code	L1	L2	L3	L4	Setup Number 9
	A0022	02P00	TAT01	02101	Det Cal Due: 8/28/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
FLDBK	B9999	ZZZZZ	00006	13	60	151	4706	*
FLDBK	B9999	ZZZZZ	00021	15	60	158	4924	*
FLDBK	B9999	ZZZZZ	00022	16	60	142	4426	*
						Group Average:	4685	
FLDCT	B9999	ZZZZZ	00006	14	60	153	4769	*
FLDCT	B9999	ZZZZZ	00022	18	60	162	5049	*
FLDCT	B9999	ZZZZZ	00021	19	60	159	4956	*
						Group Average:	4924	

Survey Code	L1	L2	L3	L4	Setup Number 9
	ZZZZZ	EZ260	TAT01	02101	Det Cal Due: 8/28/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PRB00	ZZZZZ	ZZZZZ	00000	10	60	1912	59592	*
PRB00	ZZZZZ	ZZZZZ	00000	11	60	1885	58750	*
PRB00	ZZZZZ	ZZZZZ	00000	12	60	1957	60994	*
						Group Average:	59779	
PTB00	ZZZZZ	ZZZZZ	00000	21	60	1988	61960	*
PTB00	ZZZZZ	ZZZZZ	00000	22	60	1870	58283	*
PTB00	ZZZZZ	ZZZZZ	00000	23	60	1979	61680	*
						Group Average:	60641	

Survey Code	L1	L2	L3	L4	Setup Number 9
	ZZZZZ	ZZZZZ	TAT01	02101	Det Cal Due: 8/28/01

L5 CntTy	L6 BkgSu	L7 Grid	L8 LocNm	Sample Number	Count Time	Gross Counts	Net dpm/100cm2	Hi
PRBBK	ZZZZZ	ZZZZZ	00000	9	600	1893	5900	*
						Group Average:	5900	
PTBBK	ZZZZZ	ZZZZZ	00000	20	600	1807	5632	*
						Group Average:	5632	

* Hi flag set at 2400 dpm/100 cm2

GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/21/01 Comments Report for File 219 Station: 2

Comment Number	Comment
1	Deleted sample numbers from 0 to 8. Because these samples were from a previous download. Meter was not cleared prior to beginning survey.
2	Deleted sample number 17. Because the detector was moved by accident during field count. See resurvey sample # 19.

GTS:0143 :C:\PDOX35\M2350\COMMENTS:R1

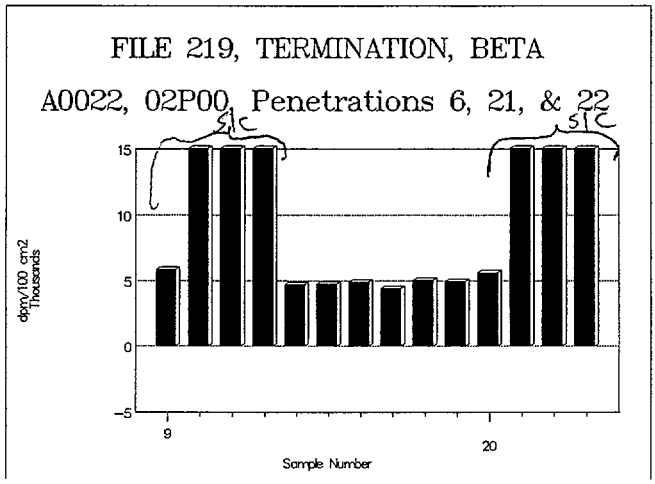
GTS DURATEK RADIOLOGICAL ENGINEERING & FIELD SERVICES

GEORGIA INSTITUTE OF TECHNOLOGY

8/21/2001 Graph of File 219 Station: 2

Survey Date: 8/21/2001 Survey Start Time: 16:23:02

Description: A0022, 02P00, Penetrations 6, 21, & 22



Section 4

Package 22
Removable Beta Contamination for the Misc. Pipes and Penetrations (including lab reports)

Desc.	Gross Counts	Count Time (sec)	Sample Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Activity (dpm/100cm^2)	Natural Background (dpm/100cm^2)	Net Activity (dpm/100cm^2)	MDA (dpm/100cm^2)
	1	90	100	01P00	FLDCT	ZZZZZ	00001	0.3425	1	-1	0	-1	14
	4	90	100	01P00	FLDCT	ZZZZZ	00002	0.3425	1	5	0	5	14
	5	90	100	01P00	FLDCT	ZZZZZ	00003	0.3425	1	7	0	7	14
	2	90	100	01P00	FLDCT	ZZZZZ	00004	0.3425	1	1	0	1	14
	0	90	100	01P00	FLDCT	ZZZZZ	00005	0.3425	1	-3	0	-3	14
	1	90	100	01P00	FLDCT	ZZZZZ	00006	0.3425	1	-1	0	-1	14
	4	90	100	01P00	FLDCT	ZZZZZ	00007	0.3425	1	5	0	5	14
	6	90	100	01P00	FLDCT	ZZZZZ	00008	0.3425	2	6	0	6	17
	9	90	100	01P00	FLDCT	ZZZZZ	00009	0.3425	1	15	0	15	14
	3	90	100	01P00	FLDCT	ZZZZZ	00010	0.3425	1	3	0	3	14
	1	90	100	01P00	FLDCT	ZZZZZ	00011	0.3425	1	-1	0	-1	14
	1	90	100	01P00	FLDCT	ZZZZZ	00012	0.3425	1	-1	0	-1	14
	0	90	100	01P00	FLDCT	ZZZZZ	00013	0.3425	1	-3	0	-3	14
	2	90	100	01P00	FLDCT	ZZZZZ	00014	0.3425	1	1	0	1	14
	1	90	100	01P00	FLDCT	ZZZZZ	00015	0.3425	1	-1	0	-1	14
	2	90	100	01P00	FLDCT	ZZZZZ	00016	0.3425	1	0	0	0	14
	2	90	100	01P00	FLDCT	ZZZZZ	00017	0.3425	1	1	0	1	14
	3	90	100	01P00	FLDCT	ZZZZZ	00018	0.3425	1	3	0	3	14
	4	90	100	01P00	FLDCT	ZZZZZ	00019	0.3425	1	5	0	5	14
	0	90	100	01P00	FLDCT	ZZZZZ	00020	0.3425	1	-3	0	-3	14
	6	90	100	01P00	FLDCT	ZZZZZ	00021	0.3425	1	9	0	9	14
	11	90	100	01P00	FLDCT	ZZZZZ	00022	0.3425	1	18	0	18	14
	28	90	100	01P00	FLDCT	ZZZZZ	00023	0.3425	1	50	0	50	14
	9	90	100	01P00	FLDCT	ZZZZZ	00024	0.3425	1	14	0	14	14
	20	90	100	01P00	FLDCT	ZZZZZ	00025	0.3425	1	35	0	35	14
	3	90	100	01P00	FLDCT	ZZZZZ	00026	0.3425	1	3	0	3	14
	0	90	100	01P00	FLDCT	ZZZZZ	00027	0.3425	1	-3	0	-3	14
	1	90	100	01P00	FLDCT	ZZZZZ	00028	0.3425	1	-1	0	-1	14
	4	90	100	01P00	FLDCT	ZZZZZ	00029	0.3425	1	5	0	5	14
	4	90	100	01P00	FLDCT	ZZZZZ	00030	0.3425	1	4	0	4	14
	5	90	100	01P00	FLDCT	ZZZZZ	00031	0.3425	1	7	0	7	14
	5	90	100	01P00	FLDCT	ZZZZZ	00032	0.3425	1	7	0	7	14
	1	90	100	01P00	FLDCT	ZZZZZ	00033	0.3425	1	-2	0	-2	14
	4	90	100	01P00	FLDCT	ZZZZZ	00034	0.3425	1	5	0	5	14
	13	90	100	01P00	FLDCT	ZZZZZ	00035	0.3425	1	22	0	22	14
	7	90	100	01P00	FLDCT	ZZZZZ	00036	0.3425	1	11	0	11	14
	21	90	100	01P00	FLDCT	ZZZZZ	00037	0.3425	1	38	0	38	14
	13	90	100	01P00	FLDCT	ZZZZZ	00038	0.3425	1	22	0	22	14
	17	90	100	01P00	FLDCT	ZZZZZ	00039	0.3425	1	30	0	30	14
	3	90	100	01P00	FLDCT	ZZZZZ	00040	0.3425	1	3	0	3	14
	12	90	100	01P00	FLDCT	ZZZZZ	00041	0.3425	1	20	0	20	14
	4	90	100	01P00	FLDCT	ZZZZZ	00042	0.3425	1	5	0	5	14
	2	90	100	01P00	FLDCT	ZZZZZ	00043	0.3425	1	1	0	1	14
	5	90	100	01P00	FLDCT	ZZZZZ	00044	0.3425	1	7	0	7	14

058

Desc.	Gross Counts	Count Time (sec)	Sample Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Activity (dpm/100cm^2)	Natural Background (dpm/100cm^2)	Net Activity (dpm/100cm^2)	MDA (dpm/100cm^2)
	3	90	100	01P00	FLDCT	ZZZZZ	00045	0.3425	1	3	0	3	14
	4	90	100	01P00	FLDCT	ZZZZZ	00046	0.3425	1	5	0	5	14
	23	90	100	01P00	FLDCT	ZZZZZ	00047	0.3425	1	37	0	37	14
	8	90	100	01P00	FLDCT	ZZZZZ	00048	0.3425	1	11	0	11	14
	14	90	100	01P00	FLDCT	ZZZZZ	00049	0.3425	1	22	0	22	14
	3	90	100	01P00	FLDCT	ZZZZZ	00050	0.3425	1	3	0	3	14
	6	90	100	01P00	FLDCT	ZZZZZ	00051	0.3425	1	9	0	9	14
	0	90	100	01P00	FLDCT	ZZZZZ	00052	0.3425	1	-3	0	-3	14
	6	90	100	01P00	FLDCT	ZZZZZ	00053	0.3425	1	9	0	9	14
	2	90	100	01P00	FLDCT	ZZZZZ	00054	0.3425	1	0	0	0	14
	1	90	100	01P00	FLDCT	ZZZZZ	00055	0.3425	1	-2	0	-2	14
	0	90	100	01P00	FLDCT	ZZZZZ	00056	0.3425	1	-3	0	-3	14
	2	90	100	01P00	FLDCT	ZZZZZ	00057	0.3425	1	1	0	1	14
	3	90	100	01P00	FLDCT	ZZZZZ	00058	0.3425	1	3	0	3	14
	1	90	100	01P00	FLDCT	ZZZZZ	00059	0.3425	1	-1	0	-1	14
	10	90	100	01P00	FLDCT	ZZZZZ	00060	0.3425	1	17	0	17	14
	17	90	100	01P00	FLDCT	ZZZZZ	00061	0.3425	1	30	0	30	14
	54	90	100	01P00	FLDCT	ZZZZZ	00062	0.3425	1	102	0	102	14
	25	90	100	01P00	FLDCT	ZZZZZ	00063	0.3425	1	46	0	46	14
	2	90	100	01P00	FLDCT	ZZZZZ	00064	0.3425	1	0	0	0	14
	1	90	100	01P00	FLDCT	ZZZZZ	00065	0.3425	1	-2	0	-2	14
	6	90	100	01P00	FLDCT	ZZZZZ	00066	0.3425	1	9	0	9	14
	24	90	100	01P00	FLDCT	ZZZZZ	00067	0.3425	1	44	0	44	14
	2	90	100	01P00	FLDCT	ZZZZZ	00068	0.3425	1	1	0	1	14
	9	90	100	01P00	FLDCT	ZZZZZ	00069	0.3425	1	15	0	15	14
	20	90	100	01P00	FLDCT	ZZZZZ	00070	0.3425	1	36	0	36	14
	4	90	100	01P00	FLDCT	ZZZZZ	00071	0.3425	1	5	0	5	14
	7	90	100	01P00	FLDCT	ZZZZZ	00072	0.3425	1	10	0	10	14
	5	90	100	01P00	FLDCT	ZZZZZ	00073	0.3425	1	7	0	7	14
	4	90	100	01P00	FLDCT	ZZZZZ	00074	0.3425	1	5	0	5	14
	9	90	100	01P00	FLDCT	ZZZZZ	00075	0.3425	1	14	0	14	14
	21	90	100	01P00	FLDCT	ZZZZZ	00076	0.3425	1	36	0	36	14
	16	90	100	01P00	FLDCT	ZZZZZ	00077	0.3425	1	27	0	27	14
	8	90	100	01P00	FLDCT	ZZZZZ	00078	0.3425	1	13	0	13	14
	3	90	100	01P00	FLDCT	ZZZZZ	00079	0.3425	1	2	0	2	14
	18	90	100	01P00	FLDCT	ZZZZZ	00080	0.3425	1	32	0	32	14
	3	90	100	01P00	FLDCT	ZZZZZ	00081	0.3425	1	3	0	3	14
	2	90	100	01P00	FLDCT	ZZZZZ	00082	0.3425	1	0	0	0	14
	3	90	100	01P00	FLDCT	ZZZZZ	00083	0.3425	1	3	0	3	14
	9	90	100	01P00	FLDCT	ZZZZZ	00084	0.3425	1	15	0	15	14
	3	90	100	01P00	FLDCT	ZZZZZ	00085	0.3425	1	3	0	3	14
	4	90	100	01P00	FLDCT	ZZZZZ	00086	0.3425	1	5	0	5	14
	3	90	100	01P00	FLDCT	ZZZZZ	00087	0.3425	1	3	0	3	14
	4	90	100	01P00	FLDCT	ZZZZZ	00089	0.3425	1	4	0	4	14

Desc.	Gross Counts	Count Time (sec)	Sample Area (cm^2)	Surface	Count Type	Row	Location	Efficiency (dpm/cpm)	Background (cpm)	Activity (dpm/100cm^2)	Natural Background (dpm/100cm^2)	Net Activity (dpm/100cm^2)	MDA (dpm/100cm^2)
	4	90	100	01P00	FLDCT	ZZZZZ	00090	0.3425	1	4	0	4	14
	4	90	100	01P00	FLDCT	ZZZZZ	00091	0.3425	1	5	0	5	14
	3	90	100	01P00	FLDCT	ZZZZZ	00088	0.3425	1	3	0	3	14
	4	90	100	01P00	FLDCT	ZZZZZ	92	0.3425	1	5	0	5	14
	4	90	100	01P00	FLDCT	ZZZZZ	93	0.3425	1	4	0	4	14
	16	90	100	02P00	FLDCT	ZZZZZ	00001	0.3425	2	26	0	26	17
	0	90	100	02P00	FLDCT	ZZZZZ	00007	0.3425	2	-5	0	-5	17
	1	90	100	02P00	FLDCT	ZZZZZ	00002	0.3425	2	-3	0	-3	22
	2	90	100	02P00	FLDCT	ZZZZZ	00003	0.3425	2	-1	0	-1	22
	17	90	100	02P00	FLDCT	ZZZZZ	00004	0.3425	2	28	0	28	22
	5	90	100	02P00	FLDCT	ZZZZZ	00005	0.3425	2	4	0	4	22
	1	90	100	02P00	FLDCT	ZZZZZ	00026	0.3425	2	-3	0	-3	22
	9	90	100	02P00	FLDCT	ZZZZZ	00009	0.3425	2	12	0	12	22
	6	90	100	02P00	FLDCT	ZZZZZ	00011	0.3425	2	6	0	6	22
	11	90	100	02P00	FLDCT	ZZZZZ	00016	0.3425	2	16	0	16	22
	2	90	100	02P00	FLDCT	ZZZZZ	00017	0.3425	2	-1	0	-1	22
	2	90	100	02P00	FLDCT	ZZZZZ	00020	0.3425	2	-1	0	-1	22
	1	90	100	02P00	FLDCT	ZZZZZ	00019	0.3425	2	-4	0	-4	22
	6	90	100	02P00	FLDCT	ZZZZZ	00015	0.3425	2	6	0	6	19
	4	90	100	02P00	FLDCT	ZZZZZ	00023	0.3425	2	3	0	3	19
	2	90	100	02P00	FLDCT	ZZZZZ	00024	0.3425	2	-1	0	-1	19
	7	90	100	02P00	FLDCT	ZZZZZ	00014	0.3425	2	8	0	8	22
	3	90	100	02P00	FLDCT	ZZZZZ	00027	0.3425	2	1	0	1	22
	2	90	100	02P00	FLDCT	ZZZZZ	00018	0.3425	2	-1	0	-1	22
	2	90	100	02P00	FLDCT	ZZZZZ	00025	0.3425	2	-1	0	-1	19
	4	90	100	02P00	FLDCT	ZZZZZ	00012	0.3425	2	2	0	2	19
	1	90	100	02P00	FLDCT	ZZZZZ	00013	0.3425	2	-3	0	-3	19
	4	90	100	02P00	FLDCT	ZZZZZ	00008	0.3425	2	3	0	3	19
	3	90	100	02P00	FLDCT	ZZZZZ	00010	0.3425	2	1	0	1	19
	9	90	100	02P00	FLDCT	ZZZZZ	00006	0.3425	2	12	0	12	22
	13	90	100	02P00	FLDCT	ZZZZZ	00022	0.3425	2	20	0	20	22
	2	90	100	02P00	FLDCT	ZZZZZ	00021	0.3425	2	-2	0	-2	22
											# Measurements	120	
											Average	9	
											Maximum	102	
											STD DEV	15	
											95% CL on Mean	12	

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
PIC IPC9025 216712 7/26/01

BN	RPT	ID	ALPHA COUNTS	ALPHA NET CPM	ALPHA DPM	ALPHA LIMITS	BETA COUNTS	BETA NET CPM	BETA DPM	BETA LIMITS	DATE	TIME
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm					
001	00	1	0	0.00	0.00		1	-0.33	-0.97		07-26-2001	12:49:40
002	00	2	1	0.67	1.91		4	1.47	4.29		07-26-2001	12:51:39
003	00	3	0	0.00	0.00		5	2.33	6.81		07-26-2001	12:53:38
004	00	4	0	0.00	0.00		2	0.33	0.97		07-26-2001	12:55:37
005	00	5	0	0.00	0.00		0	-1.00	-2.92		07-26-2001	12:57:36
006	00	6	0	0.00	0.00		1	-0.33	-0.97		07-26-2001	12:59:35
007	00	7	0	0.00	0.00		4	1.67	4.87		07-26-2001	13:01:34
008	00	8	3	2.00	5.72		3	0.40	1.18		07-26-2001	13:03:33
009	00	9	0	0.00	0.00		9	5.00	14.60		07-26-2001	13:05:32
010	00	10	0	0.00	0.00		3	1.00	2.92		07-26-2001	13:07:31
011	00	11	0	0.00	0.00		1	-0.33	-0.97		07-26-2001	13:09:30
012	00	12	0	0.00	0.00		1	-0.33	-0.97		07-26-2001	13:11:29
013	00	13	0	0.00	0.00		0	-1.00	-2.92		07-26-2001	13:13:28
014	00	14	0	0.00	0.00		2	0.33	0.97		07-26-2001	13:15:27
015	00	15	0	0.00	0.00		1	-0.33	-0.97		07-26-2001	13:17:26
016	00	16	1	0.67	1.91		2	0.13	0.39		07-26-2001	13:19:25
017	00	17	0	0.00	0.00		2	0.33	0.97		07-26-2001	13:21:24
018	00	18	0	0.00	0.00		3	1.00	2.92		07-26-2001	13:23:23
019	00	19	0	0.00	0.00		4	1.67	4.87		07-26-2001	13:25:22
020	00	20	0	0.00	0.00		0	-1.00	-2.92		07-26-2001	13:27:21
021	00	21	0	0.00	0.00		6	3.00	8.76		07-26-2001	13:29:20
022	00	22	0	0.00	0.00		11	6.33	18.49		07-26-2001	13:31:19
023	00	23	2	1.33	3.81		28	17.27	50.42		07-26-2001	13:33:18
024	00	24	1	0.67	1.91		9	4.80	14.02		07-26-2001	13:35:17
025	00	25	1	0.67	1.91		20	12.13	35.43		07-26-2001	13:37:16
026	00	26	0	0.00	0.00		3	1.00	2.92		07-26-2001	13:39:15

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
PIC IPC9025 216712 8/6/01

BN	RPT	ID	ALPHA COUNTS	ALPHA NET CPM	ALPHA DPM	ALPHA LIMITS	BETA COUNTS	BETA NET CPM	BETA DPM	BETA LIMITS	DATE	TIME
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm					
027	00	27	0	0.00	0.00		0	-1.00	-2.92		07-26-2001	13:43:21
028	00	28	0	0.00	0.00		1	-0.33	-0.97		07-26-2001	13:45:20
029	00	29	0	0.00	0.00		4	1.67	4.87		07-26-2001	13:47:19
030	00	30	1	0.67	1.91		4	1.47	4.29		07-26-2001	13:49:18
031	00	31	0	0.00	0.00		5	2.33	6.81		07-26-2001	13:51:17
032	00	32	0	0.00	0.00		5	2.33	6.81		07-26-2001	13:53:16

Performed By: [signature] Date: 7/26/01

Reviewed By: [signature] Date: 8/6/01

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
PIC IPC9025 216712 9M 7/26/01

062

Performed By: [signature] Date: 7/26/01
Reviewed By: [signature] Date: 8/6/01

SN	RPT	ID	ALPHA COUNTS	ALPHA NET CPM	ALPHA DPM	ALPHA LIMITS	BETA COUNTS	BETA NET CPM	BETA DPM	BETA LIMITS	DATE	TIME
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm					
033	00	33	1	0.67	1.91		1	-0.53	-1.55		07-26-2001	13:56:58
034	00	34	0	0.00	0.00		4	1.67	4.87		07-26-2001	13:58:57
035	00	35	0	0.00	0.00		13	7.67	22.38		07-26-2001	14:00:56
036	00	36	0	0.00	0.00		7	3.67	10.71		07-26-2001	14:02:55
037	00	37	0	0.00	0.00		21	13.00	37.96		07-26-2001	14:04:54
038	00	38	1	0.67	1.91		13	7.47	21.80		07-26-2001	14:06:53
039	00	39	1	0.67	1.91		17	10.13	29.39		07-26-2001	14:08:52
040	00	40	0	0.00	0.00		3	1.00	2.92		07-26-2001	14:10:51
041	00	41	0	0.00	0.00		12	7.00	20.44		07-26-2001	14:12:50
042	00	42	0	0.00	0.00		4	1.67	4.87		07-26-2001	14:14:49
043	00	43	0	0.00	0.00		2	0.33	0.97		07-26-2001	14:16:48
044	00	44	0	0.00	0.00		5	2.33	6.81		07-26-2001	14:18:47
045	00	45	0	0.00	0.00		3	1.00	2.92		07-26-2001	14:20:46
046	00	46	0	0.00	0.00		4	1.67	4.87		07-26-2001	14:22:45
047	00	47	9	6.00	17.16		23	12.54	36.62		07-26-2001	14:24:44
048	00	48	3	2.00	5.72		8	3.74	10.91		07-26-2001	14:26:43
049	00	49	4	2.67	7.63		14	7.54	22.01		07-26-2001	14:28:42
050	00	50	0	0.00	0.00		3	1.00	2.92		07-26-2001	14:30:41
051	00	51	0	0.00	0.00		6	3.00	8.76		07-26-2001	14:32:40
052	00	52	0	0.00	0.00		0	-1.00	-2.92		07-26-2001	14:34:39
053	00	53	0	0.00	0.00		6	3.00	8.76		07-26-2001	14:36:38
054	00	54	1	0.67	1.91		2	0.13	0.39		07-26-2001	14:38:37
055	00	55	1	0.67	1.91		1	-0.53	-1.55		07-26-2001	14:40:36
056	00	56	0	0.00	0.00		0	-1.00	-2.92		07-26-2001	14:42:35
057	00	57	0	0.00	0.00		2	0.33	0.97		07-26-2001	14:44:34
058	00	58	0	0.00	0.00		3	1.00	2.92		07-26-2001	14:46:33
059	00	59	0	0.00	0.00		1	-0.33	-0.97		07-26-2001	14:48:32
~~060~~	~~00~~	~~60~~	~~0~~	~~0.00~~	~~0.00~~		~~175~~	~~117.67~~	~~343.55~~	~~*WARNING*~~	~~07-26-2001~~	~~14:50:31~~

FINAL SURVEY 01P00 [Z] PIN ~~1~~ 22
PIC IPC9025 216712 PG 8/3/01

SN	RPT	ID	ALPHA COUNTS	ALPHA NET CPM	ALPHA DPM	ALPHA LIMITS	BETA COUNTS	BETA NET CPM	BETA DPM	BETA LIMITS	DATE	TIME
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm					
061	00	61	1	0.67	1.91		17	10.13	29.59		07-26-2001	14:55:10
062	00	62	0	0.00	0.00		54	35.00	102.19		07-26-2001	14:57:09
063	00	63	1	0.67	1.91		25	15.47	45.16		07-26-2001	14:59:08
064	00	64	2	1.33	3.81		2	-0.06	-0.19		07-26-2001	15:01:07
065	00	65	1	0.67	1.91		1	-0.53	-1.55		07-26-2001	15:03:06
066	00	66	0	0.00	0.00		6	3.00	8.76		07-26-2001	15:05:06
067	00	67	0	0.00	0.00		24	15.00	43.80		07-26-2001	15:07:06
068	00	68	0	0.00	0.00		2	0.33	0.97		07-26-2001	15:09:05
069	00	69	0	0.00	0.00		9	5.00	14.60		07-26-2001	15:11:04
070	00	70	0	0.00	0.00		20	12.33	36.01		07-26-2001	15:13:03
071	00	71	0	0.00	0.00		4	1.67	4.87		07-26-2001	15:15:02
072	00	72	1	0.67	1.91		7	3.47	10.12		07-26-2001	15:17:01
073	00	73	0	0.00	0.00		5	2.33	6.81		07-26-2001	15:19:00
074	00	74	0	0.00	0.00		4	1.67	4.87		07-26-2001	15:20:59
075	00	75	1	0.67	1.91		9	4.80	14.02		07-26-2001	15:22:58
076	00	76	3	2.00	5.72		21	12.40	36.21		07-26-2001	15:24:57
077	00	77	2	1.33	3.81		16	9.27	27.06		07-26-2001	15:26:56
078	00	78	0	0.00	0.00		8	4.33	12.65		07-26-2001	15:28:55
079	00	79	2	1.33	3.81		3	0.60	1.76		07-26-2001	15:30:54
080	00	80	0	0.00	0.00		18	11.00	32.12		07-26-2001	15:32:53
081	00	81	0	0.00	0.00		3	1.00	2.92		07-26-2001	15:34:52
082	00	82	1	0.67	1.91		2	0.13	0.39		07-26-2001	15:36:51
083	00	83	0	0.00	0.00		3	1.00	2.92		07-26-2001	15:38:50
084	00	84	0	0.00	0.00		9	5.00	14.60		07-26-2001	15:40:49
085	00	85	0	0.00	0.00		3	1.00	2.92		07-26-2001	15:42:48

087	00	87	0	0.00	0.00	3	1.00	2.92		07-26-2001 15:46:46
088	00	88	0	0.00	0.00	3	1.00	2.92		07-26-2001 15:48:45
089	00	89	1	0.67	1.91	4	1.47	4.29	063	07-26-2001 15:50:44
090	00	90	1	0.67	1.91	4	1.47	4.29		07-26-2001 15:52:43
091	00	91	0	0.00	0.00	4	1.67	4.87		07-26-2001 15:54:42
092	00	92	0	0.00	0.00	4	1.67	4.87		07-26-2001 15:56:41
093	00	93	1	0.67	1.91	4	1.47	4.29		07-26-2001 15:58:40

★ Instrument ERROR caused a miscount. Smear 60 will be recounted. Results of recount on following page

Performed By: [signature] Date: 7/26/01

Reviewed By: [signature] Date: 8/6/01

FINAL SURVEY 01P00 [Z] PIN ~~11~~ 22
HIC 1PC9025 216712 PG 8/6/01

064

			ALPHA				BETA			
			Eff: 34.97% Bkg: 0.00 cpm MDA: 5.17 dpm				Eff: 34.25% Bkg: 1.00 cpm MDA: 16.36 dpm			
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	60	0	0.00	0.00		10	5.67	16.55		07-26-2001	16:13:43

Performed By: [signature] Date: 7/26/01

Reviewed By: [signature] Date: 8/6/01

FINAL SURVEY 02P00 [I] PIN 22

PIC IPC9025 216712

			ALPHA				BETA					
			Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm				Eff: 34.25% Bkg: 1.80 cpm MDA: 20.15 dpm					
SN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS	COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	1	0	-0.10	-0.29		16	8.87	25.89		08-22-2001	07:29:38
002	00	2	0	-0.10	-0.29		1	-1.13	-3.31		08-22-2001	07:31:38
003	00	3	0	-0.10	-0.29		2	-0.47	-1.36		08-22-2001	07:33:37
004	00	4	0	-0.10	-0.29		17	9.53	27.83		08-22-2001	07:35:36
005	00	5	0	-0.10	-0.29		5	1.53	4.48		08-22-2001	07:37:35
006	00	6	1	0.57	1.62		9	4.03	11.77		08-22-2001	07:39:34
007	00	7	0	-0.10	-0.29		0	-1.80	-5.26		08-22-2001	07:41:33
008	00	8	0	-0.10	-0.29		4	0.87	2.53		08-22-2001	07:43:32
009	00	9	0	-0.10	-0.29		9	4.20	12.26		08-22-2001	07:45:31
010	00	10	0	-0.10	-0.29		3	0.20	0.58		08-22-2001	07:47:30
011	00	11	1	0.57	1.62		6	2.03	5.93		08-22-2001	07:49:29
012	00	12	1	0.57	1.62		4	0.70	2.04		08-22-2001	07:51:28
013	00	13	0	-0.10	-0.29		1	-1.13	-3.31		08-22-2001	07:53:27
014	00	14	0	-0.10	-0.29		7	2.87	8.37		08-22-2001	07:55:26
015	00	15	0	-0.10	-0.29		6	2.20	6.42		08-22-2001	07:57:25
016	00	16	0	-0.10	-0.29		11	5.53	16.16		08-22-2001	07:59:24
017	00	17	0	-0.10	-0.29		2	-0.47	-1.36		08-22-2001	08:01:23
018	00	18	0	-0.10	-0.29		2	-0.47	-1.36		08-22-2001	08:03:22
019	00	19	1	0.57	1.62		1	-1.30	-3.80		08-22-2001	08:05:21
020	00	20	0	-0.10	-0.29		2	-0.47	-1.36		08-22-2001	08:07:20
021	00	21	1	0.57	1.62		2	-0.64	-1.86		08-22-2001	08:09:19
022	00	22	0	-0.10	-0.29		13	6.87	20.05		08-22-2001	08:11:18
023	00	23	0	-0.10	-0.29		4	0.87	2.53		08-22-2001	08:13:17
024	00	24	0	-0.10	-0.29		2	-0.47	-1.36		08-22-2001	08:15:16
025	00	25	0	-0.10	-0.29		2	-0.47	-1.36		08-22-2001	08:17:15
026	00	26	0	-0.10	-0.29		1	-1.13	-3.31		08-22-2001	08:19:14
027	00	27	0	-0.10	-0.29		3	0.20	0.58		08-22-2001	08:21:13

Performed By: _____ Date: 8/22/01

Reviewed By: _____ Date: 8/22/01

FINAL SURVEY 01P00 [Z] PIN 2Z
PIC IPC9025 216712

			ALPHA					BETA					
			Eff: 34.97% Bkg: 0.10 cpm MDA: 8.60 dpm					Eff: 34.25% Bkg: 1.80 cpm MDA: 20.15 dpm					
BN	RPT	ID	COUNTS	NET CPM	DPM	LIMITS		COUNTS	NET CPM	DPM	LIMITS	DATE	TIME
001	00	B	0	-0.10	-0.29			6	2.20	6.42		08-23-2001	08:04:50

This smear recounted to verify alpha result <MDA.

P. Jones 8/23/01

Section 5

Package 22
H-3 Removable Beta Contamination Summary Data Table (including lab reports)

H-3 Removable Beta Contamination Summary Data Table PKG 22

Carrier No.	CPM	Count Time (sec)	Sample Area (cm^2)	Surface	Row	Location	Beta Efficiency	Beta Background (cpm)	Activity ($dpm/100cm^2$)	Net Activity ($dpm/100cm^2$)	MDA ($dpm/100cm^2$)
1	28	60	100	01P00	ZZZZZ	00002	0.236	0.00	119	119	11
2	46	60	100	01P00	ZZZZZ	00012	0.272	0.00	169	169	10
3	32	60	100	01P00	ZZZZZ	00018	0.280	0.00	114	114	10
4	41	60	100	01P00	ZZZZZ	00023	0.251	0.00	163	163	11
5	26	60	100	01P00	ZZZZZ	00034	0.262	0.00	99	99	10
6	38	60	100	01P00	ZZZZZ	00043	0.259	0.00	147	147	10
7	37	60	100	01P00	ZZZZZ	00049	0.234	0.00	158	158	12
8	28	60	100	01P00	ZZZZZ	00059	0.241	0.00	116	116	11
9	39	60	100	01P00	ZZZZZ	00069	0.251	0.00	155	155	11
10	32	60	100	01P00	ZZZZZ	00073	0.173	0.00	185	185	16
11	42	60	100	01P00	ZZZZZ	00076	0.272	0.00	154	154	10
12	45	60	100	01P00	ZZZZZ	00082	0.291	0.00	155	155	9
1	37	60	100	01P00	ZZZZZ	00086	0.264	0.00	140	140	10
2	35	60	100	01P00	ZZZZZ	00090	0.145	0.00	242	242	19
3	26	60	100	01P00	ZZZZZ	00091	0.192	0.00	135	135	14
4	54	60	100	02P00	ZZZZZ	00001	0.177	0.00	305	305	15
5	57	60	100	02P00	ZZZZZ	00002	0.347	0.00	165	165	8
6	44	60	100	02P00	ZZZZZ	00003	0.344	0.00	128	128	8
7	14	60	100	02P00	ZZZZZ	00004	0.025	0.00	571	571	110
8	30	60	100	02P00	ZZZZZ	00005	0.210	0.00	143	143	13
9	45	60	100	02P00	ZZZZZ	00006	0.241	0.00	187	187	11
10	49	60	100	02P00	ZZZZZ	00007	0.300	0.00	164	164	9
11	58	60	100	02P00	ZZZZZ	00008	0.294	0.00	197	197	9
12	65	60	100	02P00	ZZZZZ	00010	0.205	0.00	316	316	13
1	47	60	100	02P00	ZZZZZ	00015	0.288	0.00	163	163	9
2	34	60	100	02P00	ZZZZZ	00017	0.052	0.00	650	650	52
3	57	60	100	02P00	ZZZZZ	00018	0.332	0.00	172	172	8
4	29	60	100	02P00	ZZZZZ	00021	0.066	0.00	437	437	41
5	40	60	100	02P00	ZZZZZ	00024	0.127	0.00	314	314	21
6	52	60	100	02P00	ZZZZZ	00026	0.368	0.00	141	141	7
									# Measurements	30	
									Average	210	
									Maximum	650	
									STD DEV	129	
									95% CL on Mean	264	

068

R: 1 ID:SMEARS PRESET TIME: 1.00 WED 22 AUG 2001 10:16
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.328559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
1	8- 1	1	28.00	37.80	1.00	1.31	155.0	
		2	56.00	26.73				
		3	81.00	22.22				
					%EFF:23.61	ISO1 DPM	:118.5764	
2	8- 2	1	46.00	29.49	1.00	3.03	141.0	
		2	73.00	23.41				
		3	90.00	21.08				
					%EFF:27.21	ISO1 DPM	:169.0410	
3	8- 3	1	32.00	35.36	1.00	4.52	138.0	
		2	67.00	24.43				
		3	98.00	20.20				
					%EFF:28.02	ISO1 DPM	:114.1973	
4	8- 4	1	41.00	31.23	1.00	6.01	149.0	
		2	76.00	22.94				
		3	102.00	19.80				
					%EFF:25.12	ISO1 DPM	:163.2175	
5	8- 5	1	26.00	39.22	1.00	7.49	145.0	
		2	65.00	24.81				
		3	89.00	21.20				
					%EFF:26.15	ISO1 DPM	:99.41057	
6	8- 6	1	38.00	32.44	1.00	8.97	146.0	
		2	66.00	24.62				
		3	93.00	20.74				
					%EFF:25.89	ISO1 DPM	:146.7565	
7	8- 7	1	37.00	32.88	1.00	10.44	156.0	
		2	69.00	24.08				
		3	98.00	20.20				
					%EFF:23.37	ISO1 DPM	:158.3362	
8	8- 8	1	28.00	37.80	1.00	11.92	153.0	
		2	65.00	24.81				
		3	90.00	21.08				
					%EFF:24.11	ISO1 DPM	:116.1362	
9	8- 9	1	39.00	32.03	1.00	13.38	149.0	
		2	74.00	23.25				
		3	99.00	20.10				
					%EFF:25.12	ISO1 DPM	:155.2557	

Performed By: [signature] Date: 8-22-01

Reviewed By: [signature] Date: 8-22-01

.R: 1 ID:SMEARS PRESET TIME: 1.00 WED 22 AUG 2001 10:42
SAMPLE REPEAT: 1 CYCLE REPEAT: 1 SCR:N RS232:N
H#: 1 AQC:N QCF:N RCM:N 2 PHASE MONITOR:N
CHANNEL 1-LL: 0 UL: 400 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 2-LL: 0 UL: 670 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0
CHANNEL 3-LL: 0 UL:1000 2SIGMA: 2.00 BKG SUB: 0.00 BKG 2SIG: 0.00 LSR: 0

SINGLE LABEL DPM, SET UP ON SUN 24 JUN 2001 16:19
UNKNOWN ID:SMEARS UNKNOWN REPLICATES: 1
UNKNOWN NORM FACTOR:Q 1.00000 UNKNOWN UNITS:DPM
QUENCH MODE:H CALCULATE COEFF:N HALF LIFE(DAYS):N
QUENCH COEFF A: 4.328559 B:-0.0051270 C:-0.0000122 D:-0.0000000212
STANDARD ID:
QUENCH LIMITS LOW:90.00 HIGH:390.0

SAM	POS	CH	CPM	2SIG%	TIME	EL TIME	AVG H#		ERR
1	8- 9	1	29.00	37.14	1.00	1.32	149.0		
		2	53.00	25.20					
		3	86.00	21.57					
					%EFF:25.12	ISO1	DPM	:115.4465	
2	8-10	1	32.00	35.36	1.00	2.80	183.0		
		2	66.00	24.62					
		3	81.00	22.22					
					%EFF:17.32	ISO1	DPM	:184.7638	
3	8-11	1	42.00	30.86	1.00	4.28	141.0		
		2	74.00	23.25					
		3	102.00	19.80					
					%EFF:27.21	ISO1	DPM	:154.3418	
4	8-12	1	45.00	29.81	1.00	6.18	134.0		
		2	87.00	21.44					
		3	115.00	18.65					
					%EFF:29.12	ISO1	DPM	:154.5266	
5	3- 1	1	37.00	32.88	1.00	7.73	144.0		
		2	67.00	24.43					
		3	90.00	21.08					
					%EFF:26.42	ISO1	DPM	:140.0634	
6	3- 2	1	35.00	33.81	1.00	9.18	198.0		
		2	71.00	23.74					
		3	89.00	21.20					
					%EFF:14.45	ISO1	DPM	:242.2481	
7	3- 3	1	26.00	39.22	1.00	10.67	174.0		
		2	67.00	24.43					
		3	89.00	21.20					
					%EFF:19.21	ISO1	DPM	:135.3483	
8	3- 4	1	54.00	27.22	1.00	12.14	181.0		
		2	85.00	21.69					
		3	105.00	19.52					
					%EFF:17.73	ISO1	DPM	:304.5920	
9	3- 5	1	57.00	26.49	1.00	13.64	115.0		
		2	97.00	20.31					
		3	123.00	18.03					
					%EFF:34.65	ISO1	DPM	:164.4908	

Recount. See result at bottom of previous page. P. Jones 8/22/01

Performed By: [signature] Date: 8-22-01

Reviewed By: [signature] Date: 8-22-01

POS	CH		CPM	2SIG%	TIME	EL TIME	AVG H#	ERR
10	3- 6	1	44.00	30.15	1.00	15.13	116.0	
		2	73.00	23.41				
		3	107.00	19.33				
					%EFF:	34.35	ISO1 DPM	:128.0963
11	3- 7	1	14.00	53.45	1.00	16.92	312.0	
		2	28.00	37.80				
		3	28.00	37.80				
					%EFF:	2.453	ISO1 DPM	:570.6443
12	3- 8	1	30.00	36.51	1.00	18.74	166.0	
		2	59.00	26.04				
		3	87.00	21.44				
					%EFF:	21.00	ISO1 DPM	:142.8858
13	3- 9	1	45.00	29.81	1.00	20.22	153.0	
		2	74.00	23.25				
		3	92.00	20.85				
					%EFF:	24.11	ISO1 DPM	:186.6475
14	3-10	1	49.00	28.57	1.00	21.72	131.0	
		2	83.00	21.95				
		3	113.00	18.81				
					%EFF:	29.96	ISO1 DPM	:163.5460
15	3-11	1	58.00	26.26	1.00	23.21	133.0	
		2	87.00	21.44				
		3	108.00	19.25				
					%EFF:	29.40	ISO1 DPM	:197.2807
	3-12	1	65.00	24.81	1.00	24.70	168.0	
		2	96.00	20.41				
		3	118.00	18.41				
					%EFF:	20.54	ISO1 DPM	:316.4586
17	6- 1	1	47.00	29.17	1.00	26.24	135.0	
		2	86.00	21.57				
		3	111.00	18.98				
					%EFF:	28.84	ISO1 DPM	:162.9450
18	6- 2	1	34.00	34.30	1.00	27.73	269.0	
		2	61.00	25.61				
		3	78.00	22.65				
					%EFF:	5.227	ISO1 DPM	:650.4066
19	6- 3	1	57.00	26.49	1.00	29.22	120.0	
		2	78.00	22.65				
		3	105.00	19.52				
					%EFF:	33.15	ISO1 DPM	:171.9516
20	6- 4	1	29.00	37.14	1.00	30.70	254.0	
		2	59.00	26.04				
		3	70.00	23.90				
					%EFF:	6.631	ISO1 DPM	:437.3200
21	6- 5	1	40.00	31.62	1.00	32.18	208.0	
		2	75.00	23.09				
		3	97.00	20.31				
					%EFF:	12.72	ISO1 DPM	:314.3504
22	6- 6	1	52.00	27.74	1.00	33.66	108.0	
		2	81.00	22.22				
		3	111.00	18.98				
					%EFF:	36.81	ISO1 DPM	:141.2570

Performed By: [signature] Date: 8-22-01

Reviewed By: [signature] Date: 8-22-01