

Appendix D

Radiological Survey Results

Appendix D: Radiological Survey Results

Systematic Sub-Surface Soil Sampling Survey

Subsurface soil samples were obtained using methods described within Appendix C. These subsurface samples were used for initial scoping and characterization data (see Appendix C, Drawing CPS-TI-0105C). The depth and extent of these samples were based in part on historical information obtained by Texas Instruments project management. Sampling depths ranged from near surface to depths of fifteen feet with nominal one foot intervals. Sampling methods, preparation, and analysis methods are further detailed within Appendix C.

In the process of sub-surface soil sampling, those areas exceeding the criteria were excavated. For the grid cells where systematic sub-surface soil sampling was conducted, the grid cell averages were calculated using simple arithmetic averaging of the sub-surface soil sample data within each grid at each depth. The highest calculated grid cell average (from each depth) was recorded as the grid cell average and is presented in Drawing CPS-TI-0105G included within this appendix.

The systematic sub-surface soil sampling survey results are presented within Appendix D-1.

Final Status Radiological Survey

Introduction

The final survey consisted of walk over near surface surveys, floor soil samples from the excavated area, and static exposure rate measurements. The walk over surveys were conducted to verify that exposure rates were below the acceptable levels outlined in the option 1 criteria of the NRC branch technical position. The excavation floor soil samples were taken in accordance with the remediation plan to assure that grid cell averages meet the 30 pCi/g limit established in the option 1 criteria.

Walk Over Survey

CPS conducted an extensive walkover survey of the excavation area. This survey was conducted using a Ludlum model 3 survey meter with a Ludlum model 44-2 one inch x one inch sodium iodide scintillation detector in accordance with procedures outlined within the "Supplement to the 1992 Remediation Plan". All readings for this portion of the survey were taken within two inches of the surface. Radiation levels in the excavation area were found to be between one and one and one-half times background.

Survey Results

The results presented in this appendix includes all systematic sub-surface soil sample grid cell averages, excavation floor soil sample grid cell averages, and exposure rate measurements performed on the floor of the excavation. The data is presented in the following sections: Appendix D-1: Systematic Sub-Surface Soil Sample Grid Cell Averages; Appendix D-2: Final Survey Excavation Floor Soil Sample Grid Cell Averages; Appendix D-3: Final Survey Exposure Rate Measurements; and Appendix D-4: Building 5 Grid System on Massachusetts Coordinate System.

Static Exposure Rate Measurements

In addition to the sodium iodide walkover survey an exposure rate survey was conducted at appropriate grid intersections within the defined excavation area. These measurements were performed using a Victoreen 450 P High Pressure Ionization Chamber in accordance with procedures outlined within the "Supplement to the 1992 Remediation Plan". Nominal background as determined in previous reports (ORAU, 1983) was between 10-11 $\mu\text{R/hr}$ (based on measurements with a pressurized ion chamber). According to Option 1 of the NRC branch technical position (BTP) an acceptable exposure level is 10 $\mu\text{R/hr}$ above background. In the conduct of these exposure rate surveys no measurements were found to exceed this criteria.

The results of the Exposure Rate Survey are included within Appendix D-3.

Excavation Floor Soil Sampling

The soil sampling plan for the excavated area consisted of excavation floor soil samples collected in a manner consistent with surface soil sampling as described within NUREG/CR-5849. Samples were obtained in a grid pattern fashion with a minimum sampling density consistent with that specified in the 1992 Remediation Plan (5 samples per 30' x 30' grid) however, in most cases, the sampling density far exceeded this minimum (typically 10 foot on center within the grid representing an ideal sample density of 16 per grid). Information related to sample collection, preparation and analysis is presented within Appendix C.

Grid cell averages were generated for the excavation area in order to allow for comparison against the NRC BTP Option 1 criteria of 30 pCi/g Total Uranium. The grid cell averages were generated by simple arithmetic averaging. The use of background soil concentrations for the data analysis were taken into account using the method as detailed in the "Supplement to the 1992 Remediation Plan". This method accounts for the over-response characteristics of the on-site gross alpha counting method for low soil concentrations of Uranium. Specifically, on-site gross alpha counting data of 14 counts/10 minutes is attributable to natural background uranium concentrations of 1-2 pCi/g. In comparing non-corrected data to corrected data for grid cell averaging, both methods were found to yield the same conclusions. A map showing the excavation floor grid cell averages is included in this appendix (CPS-TI-0105H).

The results of the final survey excavation floor soil sample grid cell averages are included within Appendix D-2.

Appendix D-1

Systematic Sub-Surface Soil Sample

Grid Cell Averages

**Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
180Nx150W		B5-215	16	2					
		B5-216	16	2					
		B5-240	2	2					
		B5-98	2	2					
		B5-70	24	2					
		B5-95	2	2					
		B5-94	2	2					
		B5-93	15	18					
		B5-92	18	16					
		B5-75	2	20	2				
		B5-91	2	18					
		B5-74	74	53	26				
		<u>AVERAGE</u>	<u>15</u>	<u>12</u>	<u>14</u>				
150Nx180W		B5-103	16	2					
		B5-104	60	2					
		B5-96	72	17					
		B5-105	2	20					
		B5-92	18	16					
		B5-75	2	20	2				
		B5-109	116	18					
		B5-108	2	20					
		B5-110	67	2					
		B5-112	26	2					
		B5-111	2	2					
		<u>AVERAGE</u>	<u>35</u>	<u>11</u>	<u>2</u>				
150Nx150W		B5-75	2	20	2				
		B5-92	18	16					
		B5-91	2	18					
		B5-74	74	53	26				
		B5-93	15	18					
		B5-112	26	2					
		<u>AVERAGE</u>	<u>23</u>	<u>21</u>	<u>14</u>				
150Nx90W		B5-72	92	174					
		B5-233	24	42					
		<u>AVERAGE</u>	<u>58</u>	<u>108</u>					
120Nx270W		B5-210	2	2					
		B5-258	26	2					
		B5-257	2	2					
		B5-217	2	2					
		B5-131	49	2	16	17			
		B5-211	18						
		<u>AVERAGE</u>	<u>17</u>	<u>2</u>	<u>16</u>	<u>17</u>			

**Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS					(pCi/g Total Uranium)		
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'	
120Nx240W		B5-211	18							
		B5-212	2	2						
		B5-217	2	2						
		B5-131	49	2	16	17				
		B5-128	34	16	2	16				
		<u>AVERAGE</u>	<u>21</u>	<u>6</u>	<u>9</u>	<u>17</u>				
120Nx150W		B5-112	26	2						
		B5-162	20	20						
		B5-44	26	26	24	24	2			
		B5-161	22	2						
		B5-37	32	20						
		<u>AVERAGE</u>	<u>25</u>	<u>14</u>	<u>24</u>	<u>24</u>	<u>2</u>			
90Nx270W EXTERIOR		B5-131	49	2	16	17				
		B5-130	2	2	2	2				
		<u>AVERAGE</u>	<u>26</u>	<u>2</u>	<u>9</u>	<u>10</u>				
90Nx240W		B5-131	49	2	16	17				
		B5-130	2	2	2	2				
		B5-129	40	2	2	2				
		B5-128	34	16	2	16				
		B5-126	258	2	2					
		<u>AVERAGE</u>	<u>77</u>	<u>5</u>	<u>5</u>	<u>9</u>				
90Nx210W		B5-128	34	16	2	16				
		B5-165	2	2						
		B5-127	844							
		B5-344	696	696	2	2				
		B5-126	258	2	2					
		B5-124	30	2	2	17				
		<u>AVERAGE</u>	<u>311</u>	<u>144</u>	<u>2</u>	<u>12</u>				
90Nx180W		B5-165	2	2						
		B5-161	22	2						
		B5-38	24	18						
		B5-42	2	2	2	2	2			
		B5-39	74	16						
		B5-160	228	20						
		B5-41	2	2	2	2				
		B5-35	2	10						
		B5-36	2	16						
		B5-124	30	2	2	17				
		B5-40	18	16						
		<u>AVERAGE</u>	<u>37</u>	<u>10</u>	<u>2</u>	<u>7</u>	<u>2</u>			

**Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
90Nx150W		B5-161	22	2					
		B5-43	2	2	2	2	2		
		B5-33	2	2					
		B5-20	236	130					
		B5-18	384	546					
		B5-17	172	270					
		B5-16	44	28					
		AVERAGE	123	140	2	2	2		
90Nx120W		B5-17	172	270					
		B5-13	36	20	2				
		B5-14	42	2					
		B5-1	52	24	2				
		AVERAGE	76	79	2				
90Nx90W		B5-1	52	24	2				
		AVERAGE	52	24	2				
60Nx300W INTERIOR		B5-267	2	2					
		AVERAGE	2	2					
60Nx300W EXTERIOR		SCRP-1	31						
		SCRP-2	31						
		SCRP-9	225	225	195				
		SCRP-25	581	96	58	341	254		
		SCRP-24	1680	500	48	1540	266		
		SCRP-3	31						
		SCRP-5	421	421	81				
		SCRP-4	31						
		SCRP-6	291	291	284	450	120		
		SCRP-7A	94	94	31				
		SCRP-10	57	57	39	31			
		AVERAGE	316	241	105	591	213		
60Nx270W		B5-274	2	2					
		B5-269	38	18					
		B5-268	20	2					
		AVERAGE	20	7					
60Nx240W INTERIOR		B5-269	38	18					
		B5-319	2	2					
		AVERAGE	20	10					
60Nx240W EXTERIOR		B5-126	258	2	2				
		AVERAGE	258	2	2				

**Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)							
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'	
60Nx210W		B5-126	258	2	2					
		B5-124	30	2	2	17				
		B5-125	163	33	2	63				
		B5-342	273	273	74	74				
		B5-122	307	149	18					
		B5-120	79	96	15					
		<u>AVERAGE</u>	<u>185</u>	<u>93</u>	<u>19</u>	<u>51</u>				
60Nx180W		B5-124	30	2	2	17				
		B5-123	82		2	2				
		B5-343	86	86	20	20	23	23	2	
		B5-120	79	96	15					
		B5-119	66	2	2	2				
		<u>AVERAGE</u>	<u>69</u>	<u>47</u>	<u>8</u>	<u>10</u>	<u>23</u>	<u>23</u>	<u>2</u>	
60Nx150W		B5-20	236	130						
		B5-21	700	400						
		B5-22	36	2						
		B5-119	66	2	2	2				
		B5-23	24	2						
		<u>AVERAGE</u>	<u>212</u>	<u>107</u>	<u>2</u>	<u>2</u>				
60Nx120W		B5-1	52	24	2					
		B5-14	42	2						
		B5-19	250	202						
		B5-2	58	18						
		<u>AVERAGE</u>	<u>101</u>	<u>62</u>	<u>2</u>					
60Nx90W		B5-1	52	24	2					
		<u>AVERAGE</u>	<u>52</u>	<u>24</u>	<u>2</u>					
30Nx300W		B5-17	172	270						
		B5-18	384	546						
		B5-11	26	2	2					
		SCRP-16	2	21						
		SCRP-16A								
		SCRP-8	45	45	145	92				
		SCRP-13	21	21	19					
		<u>AVERAGE</u>	<u>108</u>	<u>151</u>	<u>55</u>	<u>92</u>				
30Nx270W EXTERIOR		SCRP-12	225	225						
		SCRP-15	105	105						
		SCRP-15A			32	17				
		SCRP-14	27	27	36					
		SCRP-19	369	1080	140	112				
		<u>AVERAGE</u>	<u>182</u>	<u>359</u>	<u>69</u>	<u>65</u>				

Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
30Nx270W INTERIOR		B5-274	2	2					
		B5-269	38	18					
		<u>AVERAGE</u>	<u>20</u>	<u>10</u>					
30Nx240W		B5-269	38	18					
		B5-319	2	2					
		B5-320	16	2					
		B5-270	2	2					
		B5-327	2	2					
		B5-273	64	38					
		B5-322	17	2					
		B5-321	2	2					
	<u>AVERAGE</u>	<u>18</u>	<u>9</u>						
30Nx210W INTERIOR		B5-327	2	2					
		B5-271	34	394					
		B5-326	23	128					
		<u>AVERAGE</u>	<u>20</u>	<u>175</u>					
30Nx210W EXTERIOR		B5-122	307	149	18				
		B5-120	79	96	15				
		B5-121	158		82	17			
		B5-341	38	38	22	22	2	2	16
		<u>AVERAGE</u>	<u>146</u>	<u>94</u>	<u>34</u>	<u>20</u>	<u>2</u>	<u>2</u>	<u>16</u>
30Nx180W		B5-120	79	96	15				
		B5-119	66	2	2	2			
		B5-118	220	112	112	126			
		B5-340	96	96	17	17	37	20	18
		B5-116	70	2	2				
		B5-117	208	74	56				
		<u>AVERAGE</u>	<u>123</u>	<u>64</u>	<u>34</u>	<u>48</u>	<u>37</u>	<u>20</u>	<u>18</u>
30Nx150W		B5-119	66	2	2	2			
		B5-116	70	2	2				
		B5-25	24	2					
		B5-177	30	2					
		B5-178	2	2					
		B5-24	26	20					
		<u>AVERAGE</u>	<u>36</u>	<u>5</u>	<u>2</u>	<u>2</u>			

**Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
30Nx120W		B5-177	30	2					
		B5-3	2	2					
		B5-15		72					
		<u>AVERAGE</u>	<u>16</u>	<u>25</u>					
30Nx30W		B5-7	34	20	20				
		<u>AVERAGE</u>	<u>34</u>	<u>20</u>	<u>20</u>				
30Nx150E		B5-188	2	2					
		B5-241	36	36	2	2	2	2	2
		B5-189	2	2	2				
		B5-242	2	2	22	22	2	2	2
		<u>AVERAGE</u>	<u>11</u>	<u>11</u>	<u>9</u>	<u>12</u>	<u>2</u>	<u>2</u>	<u>2</u>
0x270W		SCRP-20	405	44	31				
		SCRP-21	28	32					
		SCRP-23	16	31					
		SCRP-22	31	216	352				
		SCRP-26	386						
		SCRP-26A		660	500	116	84		
		<u>AVERAGE</u>	<u>173</u>	<u>197</u>	<u>294</u>	<u>116</u>	<u>84</u>		
0x210W INTERIOR		B5-323	15	2					
		B5-326	23	128					
		B5-272	28	2					
		B5-325	22	19					
		B5-324	16	2					
		<u>AVERAGE</u>	<u>21</u>	<u>31</u>					
0x210W EXTERIOR		B5-339	32	2					
		B5-114	460	2	22	2			
		<u>AVERAGE</u>	<u>246</u>	<u>2</u>	<u>22</u>	<u>2</u>			
0x180W		B5-116	70	2		2			
		B5-117	208	74	56				
		B5-115	194	90	42	18			
		B5-328	90	2			16	2	2
		B5-113	22	16	2				
		B5-114	460	2	22	2			
		<u>AVERAGE</u>	<u>174</u>	<u>31</u>	<u>31</u>	<u>7</u>	<u>16</u>	<u>2</u>	<u>2</u>
0x150W		B5-116	70	2		2			
		B5-11	26	2	2				
		B5-113	22	16	2				
		<u>AVERAGE</u>	<u>39</u>	<u>7</u>	<u>2</u>	<u>2</u>			

Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
0x120W		B5-4	80	20	22				
		B5-5	274	2	2				
		<u>AVERAGE</u>	<u>177</u>	<u>11</u>	<u>12</u>				
0x60W		B5-8	140		26				
		<u>AVERAGE</u>	<u>140</u>		<u>26</u>				
0x30W		B5-8	140		26				
		<u>AVERAGE</u>	<u>140</u>		<u>26</u>				
0x0		B5-194	20	18					
		B5-197	46	16					
		<u>AVERAGE</u>	<u>33</u>	<u>17</u>					
0x30E		B5-194	20	18					
		B5-200	2	2					
		B5-197	46	16					
		B5-182	34	2					
		<u>AVERAGE</u>	<u>26</u>	<u>10</u>					
0x60E		B5-184	2	2					
		B5-183	2	30					
		B5-182	34	2					
		<u>AVERAGE</u>	<u>13</u>	<u>11</u>					
30Sx210W		B5-339	32	2					
		B5-114	460	2	22	2			
		B5-334	2	2					
		B5-333	26	2					
		B5-133	19						
		<u>AVERAGE</u>	<u>108</u>	<u>2</u>	<u>22</u>	<u>2</u>			
30Sx180W		B5-114	460	2	22	2			
		B5-113		22	16	2			
		B5-26		40					
		B5-31	16	2					
		B5-132	25	2		2			
		B5-133	19						
		B5-27	70	2					
		B5-32	2	2					
		B5-144	1148						
		<u>AVERAGE</u>	<u>249</u>	<u>10</u>	<u>19</u>	<u>2</u>			

Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
30Sx150W		B5-113		22	16		2		
		B5-179	66	14					
		B5-12	60	2	2				
		B5-145	118	2					
		B5-32	2	2					
		B5-144	1148						
		<u>AVERAGE</u>	<u>279</u>	<u>8</u>	<u>9</u>	<u>2</u>			
30Sx120W		B5-5	274	2	2				
		B5-179	66	2					
		B5-145	118	2					
		B5-29	86	2					
		B5-28	2						
		B5-6	22	2					
		<u>AVERAGE</u>	<u>95</u>	<u>2</u>	<u>2</u>				
30Sx60W		B5-9	20	18	2				
		B5-176	2	2					
		B5-8	140		26				
		<u>AVERAGE</u>	<u>54</u>	<u>10</u>	<u>14</u>				
30Sx30W		B5-8	140		26				
		B5-176	2	2					
		B5-69	42	18					
		B5-175	98	28					
		<u>AVERAGE</u>	<u>71</u>	<u>16</u>	<u>26</u>				
30Sx0		B5-175	98	28					
		B5-197	46	16					
		B5-60	48	18					
		B5-63	44	76					
		B5-61	60	84					
		B5-62	26	2					
		B5-100	18	15					
		<u>AVERAGE</u>	<u>49</u>	<u>34</u>					

Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
30Sx30E		B5-197	46	16					
		B5-182	34	2					
		B5-76	38	2					
		B5-65	50	26					
		B5-181	54	22					
		B5-77	24	2					
		B5-63	44	76					
		B5-47	84	18	24				
		B5-64	80	30					
		B5-66	50	48					
		B5-199	32	16					
		B5-100	18	15					
		B5-62	26	2					
		<u>AVERAGE</u>	<u>45</u>	<u>21</u>	<u>24</u>				
60Sx180W		B5-133	19						
		B5-134	19	2					
		B5-313	2	16					
		B5-143	2	2					
		B5-144	1148						
		<u>AVERAGE</u>	<u>238</u>	<u>7</u>					
60Sx150W		B5-144	1148						
		B5-143	2	2					
		B5-145	118	2					
		B5-275	20	20					
		B5-141	2	2					
		B5-30	2	2					
		<u>AVERAGE</u>	<u>215</u>	<u>6</u>					
60Sx120W		B5-145	118	2					
		B5-29	86	2					
		B5-148	18	2					
		B5-146	2	2					
		B5-289	20	22					
		B5-141	2	2					
		<u>AVERAGE</u>	<u>41</u>	<u>5</u>					
60Sx60W		B5-176	2	2					
		B5-171	62	24					
		B5-136	20	2	2				
		B5-10	2	2	2				
		<u>AVERAGE</u>	<u>22</u>	<u>8</u>	<u>2</u>				

Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
60Sx30W		B5-176	2	2					
		B5-171	62	24					
		B5-173	28	2					
		B5-175	98	28					
		B5-172	250	178					
		<u>AVERAGE</u>	<u>88</u>	<u>47</u>					
60Sx0		B5-175	98	28					
		B5-172	250	178					
		B5-174	34	2					
		B5-100	18	15					
		B5-193	30	16					
		<u>AVERAGE</u>	<u>86</u>	<u>48</u>					
60Sx30E		B5-100	18	15					
		B5-78	16	24					
		B5-199	32	16					
		B5-67	22	18					
		B5-202	18	2					
		B5-68	16	18					
		B5-193	30	16					
		<u>AVERAGE</u>	<u>22</u>	<u>16</u>					
90Sx180W		B5-134	19	2					
		B5-313	2	16					
		B5-143	2	2					
		B5-310	2	16					
		B5-312	16	2					
		B5-279	2	2					
		B5-135	35	15					
		B5-280	30	2					
		B5-311	26	2					
		B5-149	22						
		B5-278	28	2					
		B5-150	32	16					
		<u>AVERAGE</u>	<u>18</u>	<u>7</u>					

Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
90Sx150W	B5-143		2	2					
	B5-275		20	20					
	B5-141		2	2					
	B5-281		20	2					
	B5-280		30	2					
	B5-276		2	2					
	B5-277		2	2					
	B5-282		30	18					
	B5-283		16	2					
	B5-153		20	22					
	B5-284		22	2					
	B5-150		32	16					
	B5-140		20	18					
		<u>AVERAGE</u>		<u>17</u>	<u>8</u>				
90Sx120W	B5-141		2	2					
	B5-289		20	22					
	B5-285		64	2					
	B5-277		2	2					
	B5-288		16	2					
	B5-290		2	18					
	B5-147		30	18					
	B5-286		24	30					
	B5-140		20	18					
	B5-153		20	22					
	B5-287		32	16					
	B5-139		38	2					
	B5-292		18	2					
		<u>AVERAGE</u>		<u>22</u>	<u>12</u>				
90Sx90W	B5-297		2	16					
	B5-85		16	22					
	B5-89		2	2					
	B5-86		56	2					
	B5-136		20	2	2				
	B5-291		2	2					
	B5-290		2	18					
	B5-296		16	2					
	B5-298		184	2					
	B5-137		2	2					
	B5-293		84	2					
	B5-139		38	2					
	B5-294		26	32					
	B5-138		32	16					
	B5-300		60	30					
B5-295		2	18						
	<u>AVERAGE</u>		<u>34</u>	<u>11</u>	<u>2</u>				

**Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
90Sx60W		B5-136	20	2	2				
		B5-171	62	24					
		B5-168	262	340					
		B5-298	184	2					
		B5-138	32	16					
		B5-300	60	30					
		B5-167	38	32					
		B5-309	118	106					
		<u>AVERAGE</u>	<u>97</u>	<u>69</u>	<u>2</u>				
90Sx30W		B5-171	62	24					
		B5-172	250	178					
		B5-168	262	340					
		B5-169	26	26					
		B5-307	34	18					
		<u>AVERAGE</u>	<u>127</u>	<u>117</u>					
90Sx0		B5-172	250	178					
		B5-193	30	16					
		B5-192	2	40					
		<u>AVERAGE</u>	<u>94</u>	<u>78</u>					
90Sx30E		B5-193	30	16					
		B5-190	31	2					
		B5-192	2	40					
		B5-191	2	18					
		<u>AVERAGE</u>	<u>16</u>	<u>19</u>					
120Sx180W		B5-149	22						
		B5-278	28	2					
		B5-150	32	16					
		B5-151	82	22					
		<u>AVERAGE</u>	<u>41</u>	<u>13</u>					
120Sx150W		B5-150	32	16					
		B5-284	22	2					
		B5-153	20	22					
		B5-152	60	24					
		B5-253	184	28					
		B5-154	2	16					
		B5-151	82	22					
		<u>AVERAGE</u>	<u>57</u>	<u>19</u>					

Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
120Sx120W		B5-153	20	22					
		B5-287	32	16					
		B5-253	184	28					
		B5-156	64						
		B5-154	2	16					
		<u>AVERAGE</u>	<u>60</u>	<u>21</u>					
120Sx90W		B5-294	26	32					
		B5-138	32	16					
		B5-300	60	30					
		B5-157	356	32					
		B5-302	20	2					
		B5-158	2	16					
		B5-155	42	2					
	<u>AVERAGE</u>	<u>77</u>	<u>19</u>						
120Sx60W		B5-138	32	16					
		B5-300	60	30					
		B5-167	38	32					
		B5-309	118	106					
		B5-308	18	2					
		B5-304	34	2					
		B5-301	34	2					
		B5-302	20	2					
		B5-158	2	16					
		B5-159	28	2					
		FPA-3	33	30	26				
		<u>AVERAGE</u>	<u>38</u>	<u>22</u>	<u>26</u>				
120Sx30W		B5-169	26	26					
		B5-307	34	18					
		B5-303	22	2					
		B5-304	34	2					
		B5-159	28	2					
		FPA-3	33	30	26				
		FPA-2	2	2	22				
		FPA-1	18	17	20				
		B5-170	2	32					
		B5-306	26	56					
		B5-305	66	46					
		<u>AVERAGE</u>	<u>26</u>	<u>21</u>	<u>23</u>				
120Sx0		B5-170	2	32					
		B5-306	26	56					
		B5-192	2	40					
		FPA-1	18	17	20				
		<u>AVERAGE</u>	<u>12</u>	<u>36</u>	<u>20</u>				

**Sub-Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID	SAMPLE LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)						
			0'-1'	1'-2'	2'-3'	3'-4'	4'-6'	6'-8'	8'-10'
120Sx30E		B5-192	2	40					
		B5-191	2	18					
		<u>AVERAGE</u>	<u>2</u>	<u>29</u>					
150Sx180W		FPA-11	35	18	17				
		FPA-12	24	2	2				
		FPA-13	2	25					
		<u>AVERAGE</u>	<u>20</u>	<u>15</u>	<u>10</u>				
150Sx150W		FPA-9	18	2					
		FPA-10	32	2	16				
		FPA-11	35	18	17				
		<u>AVERAGE</u>	<u>28</u>	<u>7</u>	<u>17</u>				
150Sx60W		FPA-3	33	30	26				
		FPA-4	2	17	2				
		FPA-5	2	20	21				
		<u>AVERAGE</u>	<u>12</u>	<u>22</u>	<u>16</u>				
150Sx30W		FPA-1	18	17	20				
		FPA-2	2	2	22				
		FPA-3	33	30	26				
		<u>AVERAGE</u>	<u>18</u>	<u>16</u>	<u>23</u>				
90Nx60E		B5-79	24	2					
		B5-83	2	2					
		B5-84	20	16					
		B5-80	72	40					
		B5-198	2	2					
		<u>AVERAGE</u>	<u>24</u>	<u>12</u>					

Appendix D-2

Final Survey
Excavation Floor Soil Sample

Grid Cell Averages

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
150Nx180W	F5-223	2
	F5-197	2
	F5-194	36
	F5-175	17
	F5-174	2
	F5-156	20
	F5-155	2
	F5-181	2
	<u>AVERAGE</u>	<u>10</u>
	150Nx150W	F5-223
F5-181		2
F5-176		24
F5-155		2
F5-135		2
F5-157		36
F5-180		33
F5-196		29
F5-228		2
F5-195		2
F5-179		18
F5-177		2
F5-159		2
F5-142		20
<u>AVERAGE</u>		<u>13</u>
150Nx120W	F5-177	2
	F5-159	2
	F5-141	29
	F5-117	36
	F5-98	20
	F5-96	16
	F5-116	15
	F5-158	46
	F5-134	2
	F5-138	2
	F5-115	2
	F5-111	33
	F5-101	2
	F5-95	33
	F5-137	28
<u>AVERAGE</u>	<u>18</u>	

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
120Nx120W	F5-98	20
	F5-96	16
	F5-95	33
	F5-101	2
	F5-85	16
	F5-81	22
	F5-80	2
	F5-77	38
	F5-63	2
	F5-57	2
	F5-55	18
	F5-700	33
	F5-693	34
	F5-53	22
	F5-43	31
	F5-673	2
	F5-672	2
	F5-671	98
	F5-695	2
	F5-699	31
	<u>AVERAGE</u>	<u>21</u>
90Nx240W	F5-675	18
	F5-668	2
	F5-666	20
	F5-655	25
	F5-629	20
	F5-604	24
	F5-594	22
	F5-540	31
	F5-498	25
	F5-497	22
	<u>AVERAGE</u>	<u>21</u>
90Nx150W	F5-667	2
	F5-628	2
	F5-627	32
	F5-601	2
	F5-538	2
	F5-535	2
	F5-490	25
	F5-560	2
	F5-551	24
	<u>AVERAGE</u>	<u>10</u>

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
90Nx120W	F5-673	2
	F5-672	2
	F5-671	98
	F5-669	16
	F5-653	18
	F5-623	20
	F5-654	2
	F5-627	32
	F5-599	28
	F5-619	2
	F5-598	34
	F5-570	28
	F5-601	2
	F5-606	30
	F5-552	2
	F5-509	2
	F5-488	18
	F5-483	2
	F5-535	2
	F5-538	2
	F5-556	2
	F5-489	2
	F5-593	2
	F5-624	2
F5-559	2	
	<u>AVERAGE</u>	<u>14</u>
90Nx30W	F5-674	21
	F5-703	16
	F5-705	34
	F5-592	2
	F5-499	16
	F5-495	23
		<u>AVERAGE</u>
60Nx210W	F5-496	2
	F5-493	2
	F5-446	17
	F5-448	2
	F5-377	32
	F5-410	18
	F5-380	20
	F5-350	24
	F5-322	19
	F5-334	2
	F5-357	18
	<u>AVERAGE</u>	<u>14</u>

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
60Nx180W	F5-493	2
	F5-492	2
	F5-490	25
	F5-473	2
	F5-441	2
	F5-430	2
	F5-409	33
	F5-376	17
	F5-375	16
	F5-374	2
	F5-372	2
	F5-408	20
	F5-371	18
	F5-315	17
	F5-316	18
	F5-334	2
	F5-317	2
	F5-320	2
	F5-357	18
	F5-356	24
	<u>AVERAGE</u>	<u>11</u>
60Nx120W	F5-489	2
	F5-483	2
	F5-488	18
	F5-509	2
	F5-476	2
	F5-471	2
	F5-439	2
	F5-429	2
	F5-366	2
	F5-412	2
	F5-368	2
	F5-355	2
	F5-332	33
	F5-364	28
		<u>AVERAGE</u>

**Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
60Nx90W	F5-509	2
	F5-508	18
	F5-507	2
	F5-505	24
	F5-457	22
	F5-456	2
	F5-455	2
	F5-453	22
	F5-388	2
	F5-386	2
	F5-364	28
	F5-363	2
	F5-362	26
	F5-361	18
	F5-360	36
	F5-330	25
	F5-329	20
	<u>AVERAGE</u>	<u>15</u>
	60Nx60W	F5-505
F5-503		2
F5-501		2
F5-499		16
F5-453		22
F5-451		2
F5-450		2
F5-446		17
F5-386		2
F5-384		2
F5-382		28
F5-360		36
F5-359		2
F5-358		20
F5-329		20
F5-327		2
F5-326	24	
F5-324	18	
<u>AVERAGE</u>	<u>13</u>	

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
30Nx120W	F5-332	33
	F5-301	2
	F5-268	22
	F5-267	24
	F5-16	18
	F5-33	2
	F5-260	2
	F5-259	2
	F5-5	2
	F5-13	2
	<u>AVERAGE</u>	<u>11</u>
30Nx30W	F5-324	18
	F5-331	15
	F5-279	2
	F5-274	38
	F5-24	15
	F5-6	18
	F5-310	2
		<u>AVERAGE</u>
30Nx0	F5-314	18
	F5-323	2
	F5-266	2
	F5-270	2
	F5-273	2
	F5-278	17
	F5-213	22
	F5-21	36
	F5-310	2
	F5-1	2
	F5-27	2
		<u>AVERAGE</u>

**Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
0 x210W	F5-265	2
	F5-2	16
	F5-37	16
	F5-251	26
	F5-435	2
	F5-253	32
	F5-256	20
	F5-257	23
	F5-304	2
	F5-290	36
	F5-258	18
	F5-254	15
	<u>AVERAGE</u>	<u>17</u>
0x90W	F5-13	2
	F5-528	17
	F5-41	19
	F5-292	2
	F5-306	17
	F5-347	18
	F5-342	2
	F5-222	2
	F5-39	2
	F5-40	2
	F5-437	38
	F5-438	34
	F5-15	26
	F5-10	16
<u>AVERAGE</u>	<u>14</u>	
0x60W	F5-10	16
	F5-528	17
	F5-437	38
	F5-39	2
	F5-38	2
	F5-8	2
	F5-6	18
	F5-7	2
	F5-435	2
	F5-221	16
	F5-305	2
	<u>AVERAGE</u>	<u>11</u>
0x30W	F5-6	18
	F5-338	2
	F5-35	2
	F5-219	22
	F5-308	2
<u>AVERAGE</u>	<u>9</u>	

**Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
30Sx210W	F5-254	15
	F5-250	15
	F5-252	33
	F5-416	2
	F5-462	2
	F5-418	2
	F5-466	15
	F5-520	2
	F5-495	23
	F5-490	25
	<u>AVERAGE</u>	<u>13</u>
30Sx180W	F5-250	15
	F5-353	22
	F5-352	2
	F5-396	17
	F5-397	26
	F5-462	2
	F5-246	22
	F5-519	37
	<u>AVERAGE</u>	<u>18</u>
30Sx150W	F5-352	2
	F5-351	15
	F5-393	15
	F5-395	31
	F5-394	2
	F5-415	19
	F5-428	18
	F5-461	22
	F5-519	37
	F5-479	2
F5-474	2	
<u>AVERAGE</u>	<u>15</u>	

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
30Sx120W	F5-349	18
	F5-347	18
	F5-365	2
	F5-354	23
	F5-404	32
	F5-425	34
	F5-405	2
	F5-469	22
	F5-532	2
	F5-517	21
	F5-482	2
	F5-518	2
	F5-474	2
	F5-428	18
	F5-431	2
	F5-414	24
	F5-426	16
	F5-475	2
	F5-367	15
	F5-394	2
	<u>AVERAGE</u>	<u>13</u>
30Sx90W	F5-347	18
	F5-342	2
	F5-404	32
	F5-425	34
	F5-469	22
	F5-491	31
	F5-532	2
	F5-531	17
	F5-529	2
	F5-528	17
	F5-423	19
		<u>AVERAGE</u>
30Sx60W	F5-422	24
	F5-421	32
	F5-419	2
	F5-528	17
	F5-527	2
	F5-526	18
	F5-524	28
		<u>AVERAGE</u>

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)	
30Sx30W	F5-338	2	
	F5-419	2	
	F5-400	16	
	F5-417	2	
	F5-465	2	
	F5-524	28	
	F5-521	26	
	F5-391	2	
	F5-413	2	
	F5-460	31	
	F5-458	15	
	F5-511	31	
	F5-514	24	
	F5-389	18	
	<u>AVERAGE</u>	<u>14</u>	
		F5-389	18
		F5-458	15
	F5-511	31	
	F5-512	21	
	F5-459	18	
	F5-411	2	
	F5-460	32	
	F5-467	2	
	F5-339	24	
	F5-401	20	
	F5-398	16	
	F5-467	16	
	F5-523	19	
	F5-463	21	
	<u>AVERAGE</u>	<u>18</u>	
30Sx30E	F5-339	24	
	F5-340	2	
	F5-341	2	
	F5-401	20	
	F5-402	16	
	F5-467	16	
	F5-403	32	
	F5-523	19	
	F5-525	26	
<u>AVERAGE</u>	<u>17</u>		

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
60Sx180W	F5-581	2
	F5-652	2
	F5-682	2
	F5-663	23
	F5-641	21
	F5-544	2
	F5-596	2
	F5-519	37
	F5-580	20
	F5-610	15
	F5-640	2
	F5-639	22
	F5-662	21
	<u>AVERAGE</u>	<u>13</u>
	60Sx150W	F5-519
F5-579		15
F5-597		2
F5-609		2
F5-595		20
F5-578		28
F5-637		2
F5-661		22
F5-619		2
<u>AVERAGE</u>	<u>14</u>	
60Sx30W	F5-524	28
	F5-521	26
	F5-514	24
	F5-511	31
	F5-613	2
	F5-612	2
	F5-607	2
	F5-571	26
	F5-606	30
	F5-631	30
	F5-658	20
	F5-677	34
	F5-659	32
	F5-664	20
	F5-685	23
	<u>AVERAGE</u>	<u>22</u>

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
60Sx0	F5-511	31
	F5-512	21
	F5-523	19
	F5-571	26
	F5-631	30
	F5-638	27
	F5-658	20
	F5-677	34
	F5-678	2
	F5-691	2
	F5-606	30
	F5-683	2
	F5-684	15
	<u>AVERAGE</u>	<u>20</u>
90Sx30W	F5-685	23
	F5-677	34
	F5-697	16
	F5-698	2
	F5-49	16
	F5-72	25
	F5-70	26
	F5-61	16
	F5-68	32
	F5-82	2
	F5-102	38
	F5-108	28
	F5-109	21
	F5-4	22
<u>AVERAGE</u>	<u>22</u>	

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
90Sx0	F5-677	34
	F5-679	2
	F5-691	2
	F5-683	2
	F5-684	15
	F5-4	22
	F5-46	15
	F5-47	20
	F5-48	17
	F5-68	32
	F5-60	33
	F5-69	18
	F5-71	23
	F5-107	2
	F5-83	20
	F5-84	16
	F5-103	18
	F5-102	38
	<u>AVERAGE</u>	<u>18</u>
	120Sx180W	F5-130
F5-129		2
F5-128		36
F5-127		2
F5-166		2
F5-167		18
F5-168		2
F5-169		2
F5-206		2
F5-205		2
F5-204		2
F5-203		15
<u>AVERAGE</u>		<u>7</u>
120Sx30W	F5-109	21
	F5-108	28
	F5-102	38
	F5-149	36
	F5-143	2
	F5-190	2
	F5-187	2
	<u>AVERAGE</u>	<u>18</u>

Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
120Sx0	F5-102	38
	F5-103	18
	F5-107	2
	F5-143	2
	F5-120	38
	F5-147	17
	F5-151	2
	F5-185	2
	F5-189	2
	F5-187	2
	<u>AVERAGE</u>	<u>12</u>
150Sx90W	F5-227	2
	F5-226	2
	F5-238	30
	F5-236	18
	F5-235	36
	F5-234	34
	F5-233	22
	F5-232	30
	<u>AVERAGE</u>	<u>22</u>
60Nx300W	F5-706	26
	F5-707	40
	F5-708	24
	F5-709	24
	F5-710	16
	F5-711	22
	F5-712	36
	F5-713	50
	F5-714	28
	F5-715	16
	<u>AVERAGE</u>	<u>28</u>
30Nx300W	F5-715	16
	F5-716	24
	F5-717	54
	F5-718	20
	<u>AVERAGE</u>	<u>29</u>

**Surface Soil Sample Grid Cell Averages
Metals Recovery Area Excavation**

GRID LOCATION	SAMPLE I.D.	SAMPLE RESULTS (pCi/g Total Uranium)
30Nx270W	F5-719	36
	F5-720	2
	F5-721	28
	F5-722	28
	F5-723	58
	<u>AVERAGE</u>	<u>30</u>
0x240W	F5-724	30
	F5-725	28
	F5-726	30
	<u>AVERAGE</u>	<u>29</u>
30Sx240W	F5-727	32
	F5-728	26
	F5-729	88
	<u>AVERAGE</u>	<u>49</u>

Appendix D-3

Exposure Rate Measurements

Exposure Rate Measurements -- Metals Recovery Excavation Floor

Metals Recovery Area Grid Location	Exposure Rate Measure (uR/hr)
0 X 105 W	7
0 X 120 W	16
0 X 135 W	11
0 X 160 W	3
0 X 45 W	9
0 X 75 W	4
10 N X 195 W	9
10 N X 5 W	14
10 S X 10 E	7
10 S X 110 W	6
10 S X 25 W	13
10 S X 5 W	12
100 N X 105 W	6
100 N X 25 W	11
100 S X 10 E	6
100 S X 20 E	9
100 S X 25 W	6
100 S X 42 W	8
100 S X 60 W	6
105 N X 40 W	11
105 N X 70 W	12
105 N X 80 W	4
108 S X 10 W	16
110 N X 115 W	3
110 N X 50 W	12
110 N X 95 W	4
110 S X 10 E	5
110 S X 20 E	12
110 S X 78 W	5
115 N X 70 W	4
115 S X 44 W	3
115 S X 60 W	14
12 S X 130 W	5
12 S X 150 W	6
120 S X 0	6
120 S X 30 W	3
123 N X 85 W	5
125 S X 40 W	6
130 N X 100 W	8
130 S X 100 W	12
130 S X 110 W	11
130 S X 130 W	6
130 S X 140 W	4
130 S X 160 W	5
130 S X 170 W	11
130 S X 70 W	11

Exposure Rate Measurements -- Metals Recovery Excavation Floor

Metals Recovery Area Grid Location	Exposure Rate Measure (uR/hr)
130 S X 80 W	10
135 N X 110 W	8
135 N X 125 W	4
135 N X 135 W	3
135 S X 12 E	8
135 S X 15 W	8
135 S X 20 E	14
140 N X 140 W	8
140 N X 160 W	8
140 S X 100 W	8
140 S X 110 W	6
140 S X 130 W	3
140 S X 140 W	10
140 S X 160 W	7
140 S X 170 W	6
140 S X 38 W	7
140 S X 55 W	8
145 S X 70 W	14
145 S X 80 W	3
15 N X 135 W	16
15 N X 15 E	8
15 N X 170 W	4
15 N X 185 W	5
15 N X 215 W	6
15 N X 90 W	6
15 S X 165 W	9
15 S X 185 W	11
15 S X 45 W	11
15 S X 60 W	11
155 S X 105 W	7
155 S X 75 W	17
20 N X 105 W	2
20 N X 155 W	5
20 N X 40 W	8
20 N X 60 W	12
20 S X 15 W	11
20 S X 75 W	8
22N X 207 W	4
25 N X 195 W	9
25 N X 5 E	9
25 S X 12 E	5
25 S X 175 W	4
25 S X 195 W	14
27 N X 20 E	11
30 N X 10 E	12
30 N X 10 E	6

Exposure Rate Measurements -- Metals Recovery Excavation Floor

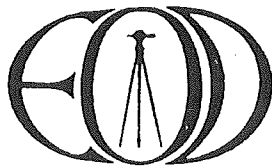
Metals Recovery Area Grid Location	Exposure Rate Measure (uR/hr)
30 N X 150 W	15
30 N X 30 W	7
30 N X 45 W	13
30 N X 75 W	3
30 N X 8 W	11
30 S X 100 W	4
30 S X 120 W	3
30 S X 135 W	13
30 S X 150 W	2
30 S X 30 E	9
30 S X 30 W	8
30 S X 45 W	7
30 S X 5 W	9
30 S X 60 E	8
30 S X 60 W	6
30 S X 75 W	7
32 N X 122 W	10
35 N X 115 W	2
35 N X 160 W	7
35 N X 170 W	5
35 N X 85 W	2
35 S X 10 E	6
36 N X 25 W	7
40 N X 10 W	6
40 N X 135 W	7
40 N X 180 W	9
40 N X 30 W	5
40 N X 95 W	3
40 S X 170 W	11
40 S X 190 W	12
43 N X 45 W	5
45 N X 20 E	10
45 N X 200 W	8
45 N X 5 E	8
45 N X 65 W	3
45 S X 105 W	8
45 S X 130 W	8
45 S X 140 W	7
45 S X 200 W	8
45 S X 25 E	4
45 S X 45 E	8
45 S X 70 W	11
45 S X 90 W	13
5 N X 15 E	7
5 N X 190 W	7
5 S X 195 W	8

Exposure Rate Measurements -- Metals Recovery Excavation Floor

Metals Recovery Area Grid Location	Exposure Rate Measure (uR/hr)
5 S X 90 W	4
50 N X 100 W	5
50 N X 115 W	4
50 N X 140 W	9
50 N X 190 W	7
50 N X 20 W	8
50 S X 155 W	10
50 S X 190 W	6
50 S X 20 W	12
50 S X 50 W	3
50 S X 70 W	10
55 N X 70 W	6
55 N X 75 W	6
55 N X 80 W	4
55 S X 10 E	4
55 S X 95 W	10
60 N X 0	4
60 N X 150 W	9
60 N X 165 W	4
60 N X 210 W	11
60 N X 32 W	5
60 N X 50 W	5
60 S X 10 W	6
60 S X 110 W	14
60 S X 135 W	5
60 S X 150W	6
60 S X 30 E	7
60 S X 30 W	4
60 S X 60 E	8
60 S X 60 W	4
60 S X 85 W	8
65 N X 102 W	6
65 N X 125 W	8
65 N X 73 W	8
70 N X 175 W	2
70 N X 225 W	3
70 S X 10 E	3
70 S X 15 W	3
70 S X 195 W	5
70 S X 45 W	4
72 N X 42 W	6
75 N X 0	12
75 N X 115 W	8
75 N X 15 W	9
75 N X 175 W	6
75 N X 93 W	11

Appendix D-4

Building 5 Grid System on Massachusetts Grid Coordinates



E. OTIS DYER

368 FAIRVIEW AVENUE
BOX 5
REHOBOTH, MASS. 02769
Telephone: (508) 252-4363

*Registered Professional Engineer and Land Surveyor
in Massachusetts, Rhode Island and North Carolina*

MARCH 28, 1995
TEXAS INSTRUMENTS, INC.
IN ATTLEBORO, MASSACHUSETTS
BUILDING 5 GRID
ON MASSACHUSETTS GRID COORDINATES

IN FEET

60S, 60E
60S, 0E
60S, 60W
60S, 120W
60S, 180W
60S, 240W

IN FEET

345, 045.43, 662, 977.99
345, 051.08, 662, 918.27
345, 056.73, 662, 858.52
345, 062.38, 662, 789.79
345, 068.03, 662, 739.06
345, 073.68, 662, 679.32

0N, 60E
0N, 0E
0N, 60W
0N, 120W
0N, 180W
0N, 240W

345, 105.16, 662, 983.64
345, 110.81, 662, 923.91
345, 116.46, 662, 864.17
345, 112.11, 662, 804.44
345, 127.76, 662, 744.71
345, 133.41, 662, 684.97

120S, 60E
120S, 0E
120S, 60W
120S, 120W
120S, 180W
120S, 240W

344, 985.70, 662, 972.34
344, 991.35, 662, 912.61
344, 996.99, 662, 852.87
345, 002.65, 662, 793.14
345, 008.29, 662, 733.41
345, 013.94, 662, 673.67

T.I.
BUILDING 5 GRID
PAGE 2 OF 2

<u>IN FEET</u>	<u>IN FEET</u>
60N, 60E	345, 164.89, 662, 989.29
60N, 0E	345, 170.54, 662, 929.56
60N, 60W	345, 176.19, 662, 869.82
60N, 120W	345, 181.84, 662, 810.09
60N, 180W	345, 187.49, 662, 750.36
60N, 240W	345, 193.14, 662, 690.62

120N, 60E	345, 224.62, 662, 994.94
120N, 0E	345, 230.27, 662, 935.21
120N, 60W	345, 235.92, 662, 875.47
120N, 120W	345, 241.57, 662, 815.74
120N, 180W	345, 247.22, 662, 756.01
120N, 240W	345, 252.87, 662, 696.27

Appendix E

Water Discharge Filtering and Sampling

Methods and Results