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OAK RIDGE NATIONAL LABORATORY
CENTRAL FILES NUMBER
49-10-226

Oak Ridge National Laboratory

Health Physics Division

Subject: Area Background Check for September 20, 1949

Report No.: ASI-581-49

Submitted By: W. D. Cottrell

Date: October 10, 1949

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4-15-59 [illegible]
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No. 1292

October 10, 1949

Area Background Check for September 20, 1949

Details and Procedures

The equipment used consisted of a Higginbotham Scaler, Scale of 64, equipped with a thin-walled GM Tube covered with one layer of carbon paper. The G.M. Tube was in a fixed position mounted on a 2" x 2" piece of lumber, extending about three feet from the rear of a pick-up truck and resting approximately three feet above the ground. The power supply was a six amp Carter Rotary Converter, which was connected to the six volt storage battery of the motor vehicle. Most of the counts were taken using regular 110 V line current.

Using a radium source, the calibration on the tube was 3900 c/m equal to 1 mr/hr.

Counts were taken at fifty different stations, forty-five of which were within the X-10 Area. The counts were taken for a period of time varying from two to five minutes with an average one minute count being recorded.

The average deviation of all stations within the X-10 Area from the previous months survey was -3.7% while the average deviation from the previous six months average was +45.4% for these same stations. For the five stations outside the X-10 Area, the deviation from the previous months average was -5.7% and the average deviation from the previous six months was +7.1%. These deviations are in keeping with previous results which usually show a larger variation in background values within the X-10 Area than at stations relatively remote from the Laboratory area.

RStepp:cs

Data Compiled By: R. G. Lawler
R. Stepp
C. E. Vaughn

Station Number	Location	September 20, 1949 c/m	mr/hr	% Sept. Dev. from Last Mo.	% Dev. 9-20-49 from Previous 6 Mo. Average
1	Solway Gate	61	.0156	- 6.0	+ 8.3
2	Y-12, East Portal	58	.0149	- 2.6	+12.9
3	Newcomb Rd., Oak Ridge	52	.0133	-20.8	- 3.6
4	Gallahar Gate	57	.0146	+ 6.6	+ 8.1
5	White Wing Gate	56	.0144	- 5.9	+ 9.9
6	19' East 104-B	224	.0574	+14.8	-26.4
7	20' East 101-D	150	.0385	+30.5	+51.0
8	A-10 Site	77	.0197	-29.4	- 3.9
9	15' West 703-C	61	.0156	-23.9	+ 9.9
10	55' East 703-C	87	.0223	-16.8	+22.6
11	15' S.W. 713-DD	91	.0233	+21.4	+29.4
12	19' N. 703-A Annex	84	.0215	+ 5.9	+ 4.4
13	15' West 719-B	242	.0621	+ 2.1	+60.5
14	11' South 717-DA	108	.0277	-31.6	- 0.4
15	10' North 717-D	166	.0426	-11.6	+43.4
16	35' S.W. 813	194	.0497	-10.5	+50.1
17	18' N.W. 717-C	234	.0600	+29.6	+106.0
18	15' S.E. 719-A	220	.0564	+15.8	+100.0
19	16' S.E. 708	132	.0338	- 4.2	+32.6
20	25' South 703-A	114	.0292	+ 1.7	+56.1
21	18' East 701-A	108	.0277	-28.8	+24.2
22	12' East 720	129	.0331	-19.9	+39.1
23	12' South 707-B	190	.0487	+ 3.4	+57.6
24	15' South 703-B	177	.0454	-19.1	+39.3
25	15' South 701-C	200	.0513	-13.8	+69.3
26	17' East 713-P	204	.0523	+ 9.9	+63.9

Station Number	Location	September 20, 1949 c/m	mr/hr	% Sept. Dev. from Last Mo.	% Dev. 9-20-49 from Previous 6 Mo. Average
27	15' East 717-H	376	.0964	- 7.0	+54.5
28	18' West 717-F	288	.0738	- 4.0	+70.4
29	16' South 735-A	228	.0585	- 9.3	+55.2
30	15' East 723	480	.1231	- 0.9	+80.5
31	20' N.E. 725	1024	.2626	- 3.8	+74.8
32	20' N.E. Incinerator	1948	.4995	-47.9	+18.6
33	15' From S.W. Corner of Settling Basin mr/hr		1.7*	-80.0	-71.9
34	17' N.W. 713-B	558	.1431	-29.0	+68.6
35	12' West 717-B	345	.0885	+27.0	+109.7
36	15' West 717-A	235	.0603	- 2.4	+46.0
37	18' Restricted Area Gate	697	.1787	+22.3	+74.2
38	10' N.E. 706-B	232	.0595	- 2.9	+32.8
39	13' N.W. 115	502	.1287	-24.2	- 7.5
40	30' N.W. 205	361	.0926	+ 5.9	+38.2
41	25' S.E. 205	2560	.6564	+21.2	+ 8.5
42	20' South 105	836	.2144	- 4.4	+40.1
43	10' S.E. 101	497	.1274	-10.3	+32.3
44	10' South 807	771	.1977	+21.6	+65.2
45	20' South 735-B	759	.1946	-12.6	+59.6
46	27' West 706-C	1278	.3277	-35.3	-70.8
47	5' South 706-D	2797	.7172	+169.5	+328.9
48	10' North 706-D Fanhouse mr/hr		20.0*	-31.0	+96.1
49	25' N.E. 706-A	569	.1459	- 3.4	+56.0
50	30' S.W. 706-A	1994	.5113	-49.4	-47.2
Average Deviation of all stations (6-50) within the X-10 Area				- 3.7	+45.4
Average Deviation of all stations (1-5) outside the X-10 Area				- 5.7	+ 7.1

*Reading taken with Electroscope

RF

Oak Ridge National Laboratory

Health Physics Division

CENTRAL FILES NUMBER
49-9-220

Subject: Area Background Counts for July 29 and August 12, 1949

Report No.: ASI-572-49

Submitted By: W. D. Cottrell

Date: September 12, 1949

Distribution:

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1-15-59
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Station Number	Location	July 29, 1949 c/m	July 29, 1949 mr/hr	August 12, 1949 c/m	August 12, 1949 mr/hr	% Dev. 8-12-49 fm. 7-29-49	% Dev. 8-12-49 fm. 6-30-49	% Dev. 8-12-49 from 5 Mo. Ave. Feb. - June
1	Kerr Hollow Gate	52	.0137	63	.0166	+21.2	----	----
2	Y-12, East Portal	48	.0126	58	.0153	+21.4	+11.7	+17.7
3	Newcomb Rd., Oak Ridge	47	.0124	64	.0168	+35.5	+30.2	+26.3
4	Gallahar Gate	50	.0100	52	.0137	+37.0	0.0	+ 3.0
5	White Wing Gate	51	.0102	58	.0153	+50.0	+23.4	+15.9
6	19' East 104-B	193	.0508	190	.0500	- 1.6	-25.8	-37.6
7	20' East 101-D	76	.0200	112	.0295	+47.5	-13.0	+23.9
8	A-10 Site	113	.0297	106	.0279	- 6.0	+38.1	+36.1
9	15' West 703-C	63	.0166	78	.0205	+23.5	+41.4	+45.4
10	55' East 703-C	89	.0234	102	.0268	+14.5	+34.0	+50.6
11	15' S.W. 713-DD	85	.0224	73	.0192	-14.3	+ 7.3	+ 6.1
12	19' N. 703-A Annex	84	.0221	77	.0203	- 8.1	+ 8.6	- 3.3
13	15' West 719-B	94	.0247	231	.0608	+146.2	+188.2	+44.1
14	11' South 717-DA	131	.0262	154	.0405	+54.6	+46.7	+45.7
15	10' North 717-D	153	.0403	183	.0482	+19.6	+59.1	+63.4
16	35' S.W. 813	194	.0511	211	.0555	+ 8.6	+82.0	+64.7
17	18' N.W. 717-C	140	.0368	176	.0463	+25.8	+51.8	+61.9
18	15' S.E. 719-A	106	.0279	185	.0487	+74.6	+99.6	+67.9
19	16' S.E. 708	92	.0242	134	.0353	+45.9	+36.8	+38.4
20	25' South 703-A	88	.0232	109	.0287	+23.7	+57.7	+52.7

September 12, 1949

Area Background Counts for July 29 and August 12, 1949

Details and Procedures

The equipment used consisted of a Higginbotham Scaler, Scale of 64, equipped with a thin-walled GM Tube covered with one layer of carbon paper. The GM Tube was in a fixed position mounted on the rear of a pick-up truck as described in previous reports on area background counts. The power supply was a six amp Carter Rotary Converter which was connected to the six volt storage battery of the motor vehicle. Regular 110 line current was used for taking most of the counts.

Using a radium source the calibration on the GM Tube was 3800 c/m equal to 1 mr/hr.

Counts were taken at fifty different stations, forty-five of which were within the X-10 Area. The counts were taken for a period of time varying from two to five minutes with an average one minute count being recorded.

Due to equipment failure on 7-29-49 only thirty-eight stations were checked. The equipment was not put in operating condition within a reasonable time; therefore on 8-12-49 counts were obtained on all of the fifty stations, with the exception of Solway Gate, by using a long extension cord and plugging it in to 110 volt line current near each station. The count at Solway Gate could not be obtained because there was no female receptacle near this station. Kerr Hollow Gate, located approximately one mile west of the Solway entrance, was substituted for the Solway station.

The average deviation of the check made on 8-12-49 from that made on 7-29-49 was +39.0% for the stations (6 - 38) within the X-10 Area and +33.0% for the stations (1 - 5) outside the X-10 Area. The complete check made on 8-12-49, when compared with the June 30 check and the five months average (February - June), shows increases of 78.2% and 57.3%, respectively, for the stations within the Laboratory area and 16.3% and 15.7%, respectively, for the stations outside the area.

While the average deviation for all stations was positive, the stations within the Laboratory area seem to show an increase out of proportion to that shown by the stations outside the area. This is in agreement with the increase in the general air activity in the Laboratory area as shown by the constant air monitors during this period.

RGLawler:cs

Data Compiled By: R. G. Lawler
R. Stepp
W. D. Neely

Station Number	Location	July 29, 1949 c/m	July 29, 1949 mr/hr	August 12, 1949 c/m	August 12, 1949 mr/hr	% Dev. 8-12-49 fm. 7-29-49	% Dev. 8-12-49 fm. 6-30-49	% Dev. 8-12-49 from 5 Mo. Ave. Feb. - June
21	18' East 701-A	98	.0258	148	.0389	+50.8	+78.4	+73.7
22	12' East 720	93	.0245	157	.0413	+68.6	+72.8	+73.5
23	12' South 707-B	174	.0458	179	.0471	+ 2.8	+46.7	+53.4
24	15' South 703-B	153	.0403	213	.0561	+39.2	+46.9	+78.1
25	15' South 701-C	138	.0363	226	.0595	+63.9	+83.6	+99.7
26	17' East 713-P	163	.0429	181	.0476	+10.9	+17.5	+58.1
27	15' East 717-H	322	.0847	394	.1037	+22.4	+29.1	+76.3
28	18' West 717-F	235	.0618	292	.0768	+24.3	+36.9	+88.2
29	16' South 735-A	203	.0534	245	.0645	+20.8	+41.8	+78.2
30	15' East 723	366	.0963	472	.1242	+29.0	+57.8	+87.9
31	20' N.E. 725	784	.2063	1037	.2729	+32.3	+55.7	+87.9
32	20' N.E. Incinerator	1684	.4432	3642	.9584	+116.2	+172.6	+120.0
33	15' from S.W. Corner of Settling Basin mr/hr	--	2.5*	--	8.5	+240.0	+431.3	+ 6.2
34	17' N.W. 713-B	438	.1153	766	.2016	+74.8	+123.5	+140.6
35	12' West 717-B	212	.0558	265	.0697	+24.9	+63.6	+65.2
36	15' West 717-A	203	.0534	235	.0618	+15.7	+38.3	+52.2
37	18' Restricted Area Gate	689	.1813	555	.1461	-19.4	+33.2	+44.5
38	10' N.E. 706-B	204	.0537	233	.0613	+14.2	+ 9.3	+44.2

Station Number	Location	July 29, 1949 c/m	July 29, 1949 mr/hr	August 12, 1949 c/m	August 12, 1949 mr/hr	% Dev. 8-12-49 fm. 7-29-49	% Dev. 8-12-49 fm. 6-30-49	% Dev. 8-12-49 from 5 Mo. Ave. Feb. - June
39	13' N.W. 115			645	.1697		- 3.6	+28.9
40	30' N.W. 205			332	.0874		+ 6.8	+36.3
41	25' S.E. 205			2058	.5416		- 5.8	-11.3
42	20' South 105			852	.2242		+100.9	+39.0
43	10' S.E. 101			540	.1421		+66.6	+44.3
44	10' South 807			618	.1626		- 2.2	+47.3
45	20' South 735-B			847	.2227		+102.6	+79.3
46	27' West 706-C			1926	.5068		+113.5	-61.0
47	5' South 706-D			1011	.2661		+68.5	+57.4
48	10' North 706-D Fanhouse mr/hr			---	29.0*		+530.4	+158.9
49	25' N.E. 706-A			574	.1511		+90.1	+56.9
50	30' S.W. 706-A			3844	1.0116		+221.4	+159.4

Average deviation of all stations (6 - 50) within the X-10 Area +78.2 +57.3

Average deviation of all stations (1 - 5) outside the X-10 Area +16.3 +15.7

Average deviation (32 stations within X-10 Area) +39.0

Average deviation (5 stations outside X-10 Area) +33.0

*Readings taken with Electroscope.

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OAK RIDGE NATIONAL LABORATORY
CENTRAL FILES NUMBER
49-1-89

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20. E. C. Cunningham
21. J. T. Sutherland
22. C. Files (2)
23. R. Files

CLASSIFICATION CANCELLED
DATE APR 16 1959

April 7, 1949

MONTHLY AREA BACKGROUND COUNT FOR MARCH, 1949

Details and Procedures

Equipment used included a Higginbotham Scaler, Scale of 64, equipped with a thin wall GM Tube covered with one layer of carbon paper. The GM Tube was in a fixed position mounted on a 2" x 2" piece of lumber, extending about three feet from the rear of a pick-up truck and resting approximately three feet above the ground. The power supply was a six amp Carter Rotary Converter, which was connected to the six volt storage battery of the pick-up truck. Two of the counts were taken using regular 110 volt line current. The GM Tube was calibrated with a radium source. One mr/hr was equal to 4,100 c/m on this particular tube.

Fifty counts were taken, with all but five being taken within the X-10 Area. The counts were taken for five minutes, with an average one minute count being recorded. Background values for February and March are given in both c/m and mr/hr, and comparisons between these two months are made on the basis of mr/hr. Comparison with the previous six months average is made on the basis of c/m as the GM Tubes used previous to February 1949 were not calibrated. This comparison with the previous six months average is of doubtful value since different GM Tubes were used for different months and no calibrations were made on the tubes. The difference in senitivity of the GM Tubes used, often is of sufficient magnitude to change the deviation from a positive to a negative value, and viceversa, when a comparison is made on the basis of mr/hr instead of c/m.

W. D. Cottrell
W. D. Cottrell

RStepp:ac

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BY PATENT BRANCH
4-16-59 DATE
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Monthly Area Background Count (con't)

RESTRICTED

STATION	Sept.	Oct.	Nov.	Dec.	Jan.	Feb. c/m	Feb. **mr/hr	Prev. 6 Mo. Ave. c/m	Mar. 29,49 c/m	Mar. 29,49 mr/hr	% March Dev.*** From Prev. 6 Mo. Ave.	% March Dev. From Feb.****
Solway Gate	48	44	43	41	44	82	.0161	50	63	.0154	26.0	-4.3
Y-12 East Portal	47	42	44	42	49	51	.0100	46	64	.0156	39.1	56.0
Newcomb Rd. Oak Ridge	52	36	42	41	44	56	.0110	45	62	.0151	37.8	37.3
Gallahar Gate	46	46	44	43	44	46	.0090	45	69	.0168	53.3	86.7
White Wing Gate	49	46	41	45	39	48	.0098	45	60	.0146	33.3	48.9
19' East 104-B	170	226	148	161	115	177	.0347	166	306	.0746	84.3	115.0
20' East 101-D	61	62	85	152	76	68	.0133	84	78	.0190	-7.1	42.9
A-10 Site	--	66	98	90	63	74	.0145	78	96	.0234	23.1	61.4
15' West 703-C	52	56	47	78	66	56	.0110	59	47	.0115	-20.3	4.5
55' East 703-C	81	82	71	83	62	58	.0114	73	67	.0163	-8.2	43.0
15' S.W.713-DD	101	88	110	150	72	72	.0141	99	64	.0156	-35.3	10.6
19' North 703-A Annex	155	140	139	218	89	96	.0188	123	88	.0215	-28.4	14.4
15' West 719-B	64	58	48	68	155	202	.0396	99	90	.0219	-9.0	-44.7
11' South 717-DA	101	108	92	176	103	91	.0178	112	107	.0261	-4.5	46.6
10' North 717-D	117	116	73	177	116	111	.0217	118	86	.0210	-27.1	-3.2
35' S.W. 813	154	131	99	160	139	120	.0235	134	92	.0224	-31.3	-4.7
18' N.W. 717-C	129	116	65	119	104	92	.0180	104	78	.0190	-25.0	5.6
15' S.E. 719-A	122	120	79	115	114	92	.0180	107	73	.0178	-31.8	-1.1
16' S.E. 708	92	92	56	96	87	82	.0161	84	67	.0163	-20.2	1.2

STATION	Sept.	Oct.	Nov.	Dec.	Jan.	Feb. c/m	Feb. **mr/hr	Prev. 6 Mo. Ave. c/m	March 29,49 c/m	March 29,49 mr/hr	% March Dev.*** From Prev. 6 Mo. Ave.	% March Dev. From Feb.****
25' South 703-A	67	70	57	89	80	66	.0129	71	62	.0151	-12.7	17.1
18' East 701-A	70	70	93	101	94	70	.0137	83	70	.0171	-15.7	24.8
12' East 720	85	90	62	83	87	79	.0155	81	79	.0193	-2.5	24.5
12' South 707-B	139	120	84	109	116	104	.0204	112	99	.0241	-11.6	18.1
15' South 703-B	138	152	129	124	139	102	.0200	131	80	.0195	-38.9	-2.5
15' South 701-C	112	140	82	100	112	94	.0184	107	70	.0171	-34.6	-7.1
17' East 713-P	132	182	83	127	112	103	.0202	123	72	.0176	-41.5	-12.9
15' East 717-H	311	362	158	242	248	174	.0341	249	149	.0363	-40.2	6.5
18' West 717-F	178	216	98	159	178	120	.0235	158	97	.0236	-38.6	0.4
16' South 735-A	148	156	83	150	138	112	.0219	131	93	.0227	-29.0	3.7
15' East 723	310	312	122	232	226	172	.0337	229	135	.0329	-41.0	-2.4
20' N.E. 725	631	678	176	561	591	368	.0722	501	313	.0763	-37.5	5.7
20'N.E.Incinerator	1154	1886	533	1306	1299	916	.1796	1182	761	.1856	-35.6	3.3
15' From S.W.Corner of Settling Basin mr/hr	4.9	3.3	--	3.9	2.1	--	2.1	3.3	--	2.5	-24.2	19.0
17' N.W. 713-B	252	287	118	253	377	224	.0439	252	128	.0312	-49.2	-28.9
12' West 717-B	169	200	97	160	198	125	.0245	158	93	.0227	-41.1	-7.3
15' West 717-A	147	164	82	124	146	118	.0231	130	80	.0195	-38.5	-15.6
18' Restricted Area Gate	401	426	313	716	951	422	.0827	538	171	.0417	-68.2	-49.6

STATION	Sept.	Oct.	Nov.	Dec.	Jan.	Feb. c/m	Feb. **mr/hr	Prev. 6 Mo. Ave. c/m	March 29,49 c/m	March 29,49 mr/hr	% March Dev.*** From Prev. 6 Mo. Ave.	% March Dev. From Feb.****
10' N.E. 706-B	125	142	146	281	150	152	.0298	166	110	.0268	-33.7	-10.1
13' N.W. 115	---	---	1493	---	565	651	.1276	903	658	.1605	-27.1	25.8
30' N.W. 205	150	184	213	395	273	243	.0476	243	99	.0241	-59.2	-49.4
25' S.E. 205	1120	713	2065	1099	1422	3352	.6572	1628	3214	.7839	9.7	19.3
20' South 105	421	528	579	638	843	563	.1104	595	655	.1597	10.0	44.7
10' S.E. 101	349	358	166	338	519	423	.0829	359	400	.0976	11.4	17.7
10' South 807	365	676	387	318	419	548	.1074	452	412	.1005	-8.8	-6.4
20' South 735-B	344	336	667	748	581	484	.0949	526	251	.0612	52.3	-35.5
27' West 706-C	638	1250	747	1568	1029	1081	.02119	1052	---	5.4*	251.8	253.9
5' South 706-D	660	706	559	417	528	473	.0927	557	326	.0795	-41.5	-14.2
10' North 706-D Fanhouse mr/hr	4.0	216	2.9	2.8	5.6	---	6.80	4.1	---	3.70	-9.7	-45.6
25' N.E. 706-A	320	270	168	264	423	283	.0555	288	217	.0529	-28.6	-4.7
30' S.W. 706-A	1028	1057	464	951	1401	960	.1882	977	705	.1719	-27.8	-8.7

* Taken with electroscope

** Feb. values calculated from c/m using conversion factor 1 mr/hr = 5100 c/m

*** Calculated on basis of c/m. GM Tubes used previous to Feb. 1949 were not calibrated

**** Calculated on basis of mr/hr