



October 24, 2017

Mr. David Misenhimer, P.E.
Nuclear Material Safety and Safeguards
Division of Decommissioning, Uranium Recovery, and Waste Programs
Materials Decommissioning Branch
U.S. Nuclear Regulatory Commission
11545 Rockville Pike, MS T8-F05
Rockville, MD 20852

**SUBJECT: SITE STATUS REPORT FOR THE FORMER AEROSPACE
INNOVATIONS PROPERTY AT 28919 WEST SEVEN MILE ROAD IN
LIVONIA, MICHIGAN
CONTRACT NO. NRC-HQ-50-17-A-0001; DCN 5307-SR-16-1**

Dear Mr. Misenhimer:

Oak Ridge Associated Universities (ORAU) is pleased to provide the attached site status report and field forms for the site visit to the former Aerospace Innovations property at 28919 West Seven Mile Road in Livonia, Michigan. This report follows the outline given in the Temporary Instruction 2800/043, Appendix C.

Please feel free to contact me at 865.574.0685 or Tim Vitkus at 865.576.5073 if you have any questions.

Sincerely,

David A. King, CHP, PMP
Sr. Health Physicist/Project Manager
ORAU

DAK:KE:lw

Attachments

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EXECUTIVE SUMMARY

The U.S. Nuclear Regulatory Commission (NRC) requested that Oak Ridge Associated Universities (ORAU) perform a radiation survey of the property at 28919 West Seven Mile Road in Livonia, Michigan. This property was formerly Aerospace Innovations, which specialized in manufacturing and performing repairs on aircraft gauges and aircraft flight instruments. Radium may have been present at the facility if gauges with luminous radium dials were repaired at the site. The objective of this survey was to locate possible discrete sources of radium, if any, that would be associated with the former Aerospace Innovations operations.

ORAU performed the radiation survey of the exterior land area and accessible portions of the building interior on August 8, 2017, and did not identify elevated levels of radiation. Because no elevated levels of radiation were identified, ORAU concludes that discrete sources of radium are not present at the site. Based on these results, it is recommended that the NRC not pursue additional action at the 28919 West Seven Mile Road property.

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SITE STATUS REPORT

Property: Former Aerospace Innovations
28919 West Seven Mile Road
Livonia, Michigan 48152

Docket Number: 03038935

Current Property Name(s): C&L Development Corporation

Current Property Owner(s): Aldo Liveratore

Inspection Dates: August 8, 2017

Inspector(s): Christine Lipa and Bill Lin/U.S. Nuclear Regulatory Commission (NRC), supported by Kaitlin Engel/Oak Ridge Associated Universities (ORAU)

1.0 INTRODUCTION

The Energy Policy Act of 2005 amended section 11e.(3) of the Atomic Energy Act of 1954 to place discrete sources of radium-226 (Ra-226) under NRC regulatory authority as byproduct material. The property at 28919 West Seven Mile Road in Livonia, Michigan, was identified as the site of the former Aerospace Innovations, which manufactured and repaired aircraft gauges and flight instruments from 2007 to 2010. Radium may have been present at this facility if gauges with luminous radium dials were repaired at the site (ORNL 2015). The objectives of the initial site visit were to determine if discrete sources of Ra-226 and/or distributed Ra-226 contamination are present, to identify the areas of highest contamination, to determine if there are any current health and safety concerns, and to determine if a scoping survey is needed. Surveys were performed as described within NRC's procedure, Temporary Instruction (TI) 2800/043, "Inspection of Facilities Potentially Contaminated with Discrete Radium-226 Sources" (NRC 2017).

Data collected during the August 8, 2017, site visit, which includes gamma radiation scans and exposure rate measurements, are used to plan future actions that may be needed to reduce Ra-226 exposure to current or future site occupants to levels that do not exceed the applicable regulatory requirement. It is important to note that destructive testing is not generally performed as described within TI 2800/043.

2.0 PROPERTY DESCRIPTION AND INITIAL SITE VISIT CONSIDERATIONS

2.1 Property Description and History

Aerospace Innovations, established in 2007, manufactured and repaired aircraft gauges and flight instruments. Based on experience with other aircraft flight instrument repair shops, if gauges with luminous radium dials were repaired at the site, radium may have been present at this facility. The date Aerospace Innovations went out of business is unknown; however, #One Tax Solutions (the tenant) moved into the property in 2010 (ORNL 2015). The site at 28919 West Seven Mile Road is in a building with ten total business spaces. The entire building

(which includes the tenant) is approximately 780 square meters and was built in 1988 (City of Livonia 2017). The building's exterior walls are red brick, and a concrete walkway surrounds the building. The entire land area associated with the property is approximately 2,900 square meters. A brick wall, located to the south of the building, bounds the property. Past the concrete walkway, surrounding the building is a parking lot followed by a grassy area and sidewalk to the north and east. Several drains are located in the parking lot and on the edge of West Seven Mile Road.

The tenant occupies approximately 78 square meters of the building at 28919. The interior walls are drywall, and the floors are either carpet or tile/laminate. The north side is a waiting area with chairs and a small office. The south side is an office area with two desks, a bathroom, and small break area, and the middle area has a closet and couch. According to the owner, the tenant is present three to four months a year.



Figure 1. 28919 West Seven Mile Road

The site summary included in the *Historical Non-Military Radium Sites Research Effort Addendum* report provides additional site details about the type, form, history, potential locations, and other information related to discrete sources of Ra-226 used at the site (ORNL 2015). An extensive internet search of public records did not reveal any further information related to Ra-226 contamination or radiation levels associated with the site.

2.2 Initial Site Visit Considerations

Prior to commencing survey activities, the general building layout was examined for consistency with historical information and to identify impediments to conducting the survey and/or health and safety considerations. No health or safety issues were noted.

3.0 SITE OBSERVATIONS AND FINDINGS

3.1 Summary of Activities

The inspection team conducted an initial site visit at the 28919 West Seven Mile Road property on August 8, 2017. A pre-inspection meeting was held with Aldo Liveratore (property owner), Christine Lipa and Bill Lin (NRC), and Kaitlin Engel (ORAU). Participants discussed the inspection team's intention to perform general area surveys inside the 28919 section of the building and outside in the surrounding land area. The team was granted access to all areas of the property related to the former Aerospace Innovations operations.

Radiological surveys performed by the inspection team consisted of gamma radiation scans using a Ludlum model 44-10 2-inch by 2-inch (2x2) sodium iodide detector connected to a Ludlum model 2221 ratemeter/scaler and radiation exposure rate measurements using a Ludlum model 192 sodium iodide-based microRoentgen (μR) ratemeter¹. Table 1 presents the specific instruments used during the site visit.

Radiation Type (units)	Detector Type	Detector Model (Number)	Ratemeter (Number)
Gross gamma (cpm)	Sodium Iodide	44-10 (1148)	2221 (395)
Gross gamma ($\mu\text{R}/\text{h}$)	Exposure Meter	192 (1128)	N/A

N/A = not applicable

Number = ORAU equipment barcode

cpm = counts per minute

$\mu\text{R}/\text{h}$ = microRoentgen per hour

The inspection team arrived at the site at 10:00 a.m. and met with the site contact, who provided access to the business space at 28919. Surveys began in the land area using the 2x2 sodium iodide detector and model 192 exposure ratemeter to measure gamma radiation levels and included the grassy area, parking lot, and sidewalk to the north of the business space formerly occupied by Aerospace Innovations. The grassy area and concrete walkway to the south of the building were surveyed, as well as any accessible drains in the parking lot. Approximately 40 percent of the total land area was surveyed. No discrete areas of elevated radiation were identified.

Following completion of inspection activities outside, the inspection team surveyed inside the 28919 business space using the 2x2 sodium iodide detector and model 192 exposure ratemeter to measure gamma radiation levels. Approximately 70 percent of the area was surveyed, including all accessible areas not covered by office items (desks, chairs, filing cabinets, etc.). No discrete areas of elevated radiation were identified. The inspection team departed the site at 11:20 a.m.

¹ NOTE: Roentgen is a unit of exposure (energy absorbed in air), whereas a rem is a unit of dose delivered to a person (resulting from the radiation energy absorbed in that person). While Roentgen and rem are related, these are different units. Because they are similar for gamma ray energies from Ra-226, NRC makes the simplifying assumption in this case that these units are equivalent (1 Roentgen = 1 rem).

3.2 Summary of Results

Appendix A presents tabulated results from the site visit. Tables A-1 and A-2 present the 2x2 sodium iodide gross responses in counts per minute (cpm), and the gross exposure rates in $\mu\text{R/h}$ at 1 meter. Figures A-1 and A-2 present maps containing the radiological survey data generated during the site visit.

A summary of the survey results is presented in Table 2. Gamma radiation levels varied based on proximity with materials known to contain naturally occurring radioactive material (i.e., red bricks). No discrete areas of elevated radiation were identified.

Table 2. Summary of Survey Results for Aerospace Innovations		
Floor/Area	2x2 Sodium Iodide Response (cpm)	Exposure Rate ($\mu\text{R/h}$ at 1 meter)^a
Outside	5,700-13,000	6-12
Inside	5,000-7,700	4-7

^aMaximum values were collected near brick walls and are not associated with Ra-226 contamination.

3.3 Summary of Dose Assessment Results

To date, a site specific dose assessment has not been performed for the former Aerospace Innovations site. Because no elevated radiation levels were detected above background and no contamination was encountered, a dose calculation attributed to discrete sources of Ra-226 is not necessary.

4.0 OBSERVATIONS AND RECOMMENDATIONS

Based on the data collected, the former Aerospace Innovations property at 28919 West Seven Mile Road does not contain discrete sources of Ra-226 in excess of regulatory requirements, as determined by the following observation:

- Gamma radiation levels across the site were consistent with background; the absence of gamma radiation anomalies suggests there are no sources of Ra-226 present in surface soils or within the former Aerospace Innovations facility.

Based on this observation, it is recommended that the NRC not perform a more detailed scoping survey. The rationale behind this recommendation is that the initial site visit generated a robust data set that already meets the scoping survey purpose. Furthermore, it is recommended that the NRC staff should not pursue additional action at the former Aerospace Innovations property given no elevated radiation levels (relative to background) were identified.

5.0 REFERENCES

City of Livonia 2017. Online Property Inquiry for 28919 West Seven Mile Road, <https://accessmygov.com/SiteSearch/SiteSearchDetails?SearchFocus=All+Records&SearchCategory=Address&SearchText=28919+seven+mile&uid=521&PageIndex=1&ReferenceKey=046+99+0021+000&ReferenceType=0&SortBy=&SearchOrigin=0&RecordKeyDisplayString=28919+SEVEN+MILE&RecordKey=7%3d03363fe2-a584-46ec-aa12-6da47afb56af&RecordKeyType=7%3d2>, accessed 08/09/2017.

NRC 2017. *Inspection of Facilities Potentially Contaminated with Discrete Radium-226 Sources*, Temporary Instruction 2800/043, Revision 1, U.S. Nuclear Regulatory Commission, Office of Nuclear Material Safety and Safeguards, Washington, D.C., October. (Agencywide Documents Access and Management System [ADAMS] Accession No. ML16330A678).

ORNL 2015. *Historical Non-Military Radium Sites Research Effort Addendum*, "Aerospace Innovations: Site Summary," pp. 3-5, Oak Ridge National Laboratory, Oak Ridge, Tennessee, November 24. (ADAMS Accession No. ML16291A488).

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APPENDIX A
SURVEY RESULTS FROM THE FORMER AEROSPACE INNOVATIONS SITE VISIT

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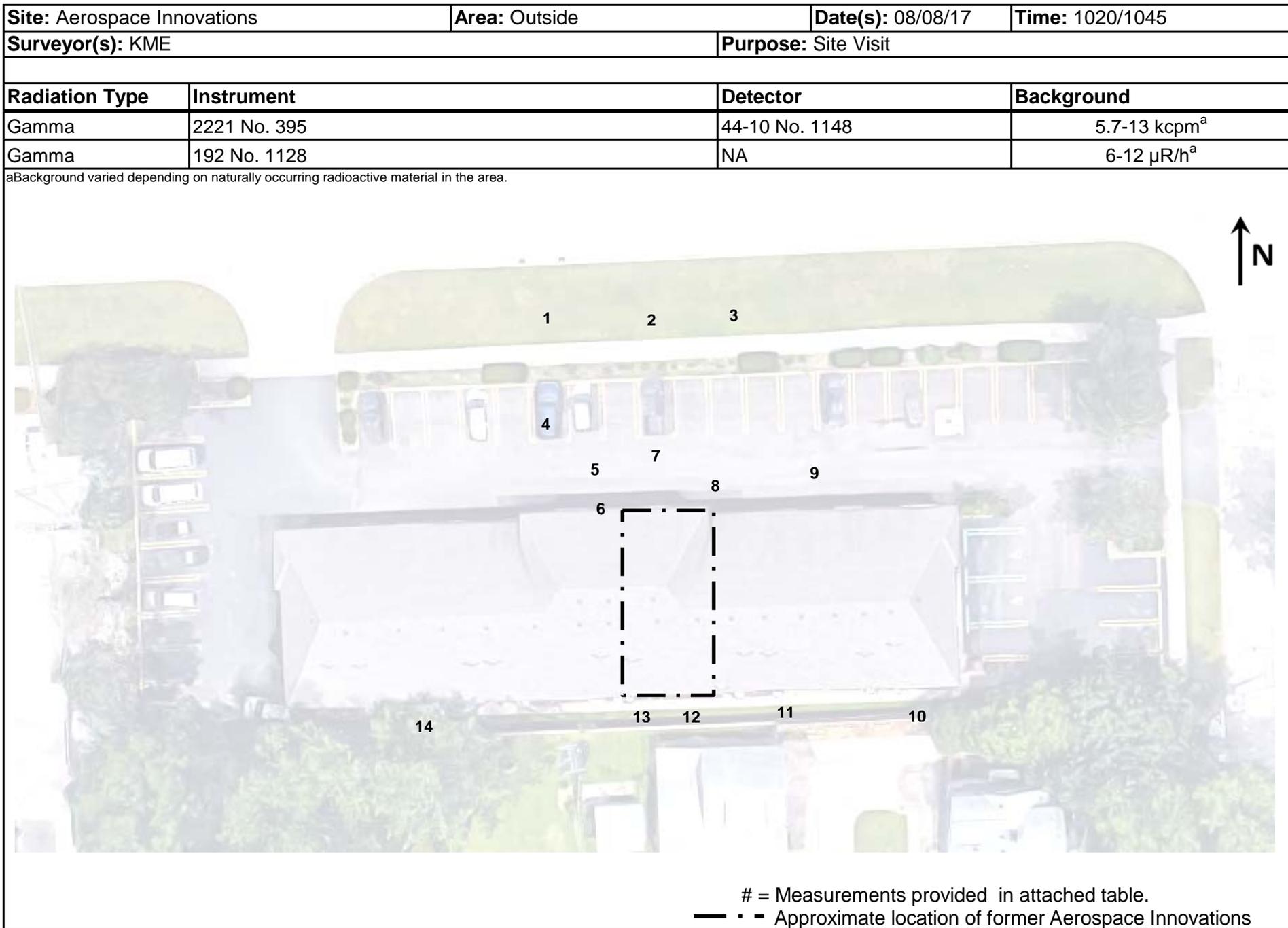


Figure A-1. Survey Map Outside Area

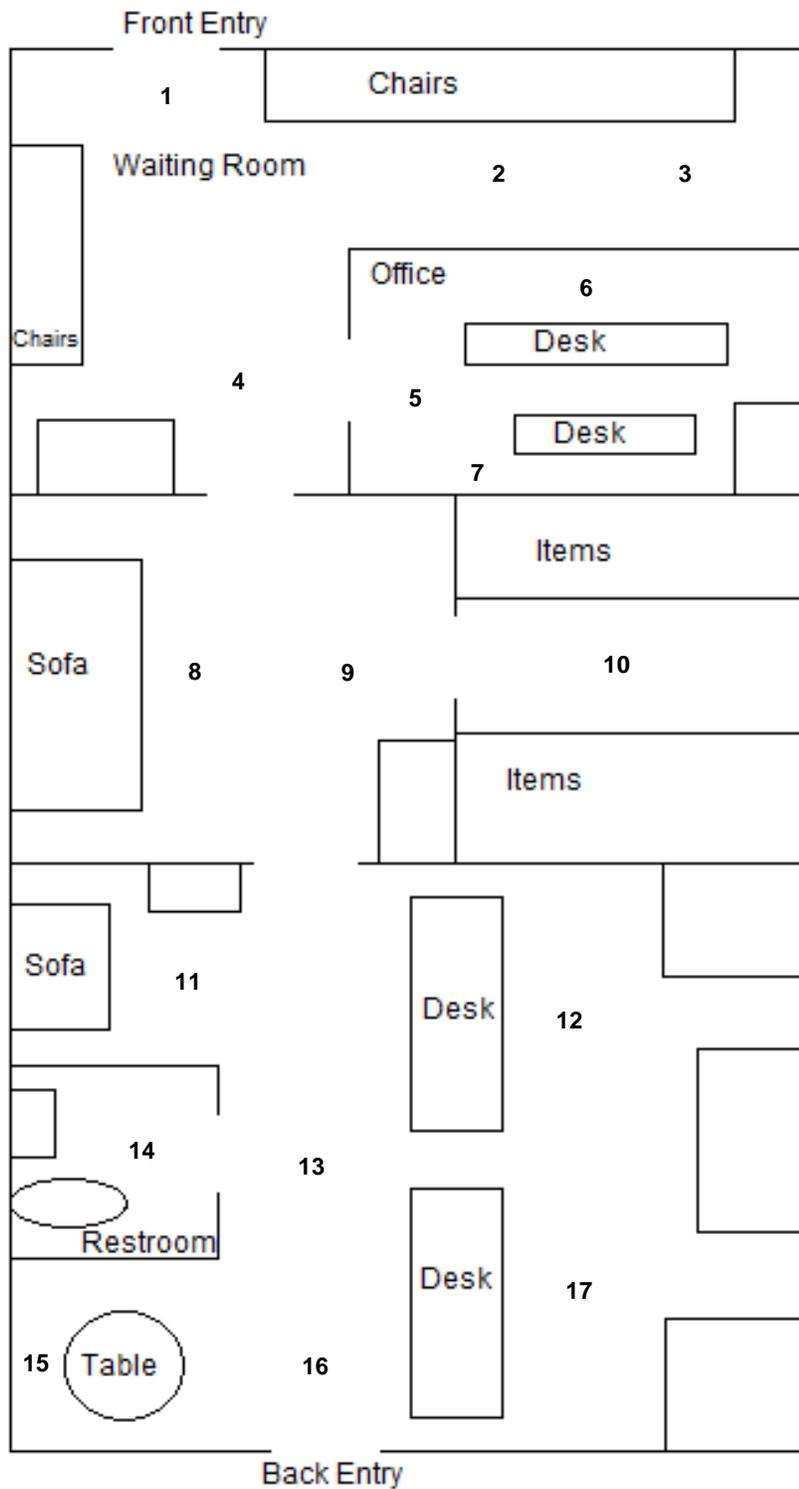
Table A-1. Aerospace Innovations - Outside

Location No.	Gamma ^a		Comments
	Contact	1 meter	
	cpm	μR/h	
1	8,000	7	
2	8,300	7	
3	7,900	7	
4	6,100	6	
5	5,700	6	
6	13,000	12	Near brick
7	6,600	6	
8	6,400	6	
9	9,300	8	
10	9,000	9	Near brick
11	10,800	10	Near brick
12	10,800	10	Near brick
13	11,400	11	Near brick
14	10,100	9	Near brick

a) Ludlum 44-10 NaI with Ludlum 2221 ratemeter; Ludlum 192 NaI

Site: Aerospace Innovations		Area: Inside		Date(s): 08/08/17		Time: 1045/1115	
Surveyor(s): KME				Purpose: Site Visit			
Radiation Type		Instrument		Detector		Background	
Gamma		2221 No. 395		44-10 No. 1148		5-7.7 kcpm ^a	
Gamma		192 No. 1128		NA		4-7 μ R/h ^a	

^aBackground varied depending on naturally occurring radioactive material in the area.



= Measurements provided in attached table.

Figure A-2. Survey Map Inside Area

Table A-2. Aerospace Innovations - Inside			
Location No.	Gamma ^a		Comments
	Contact	1 m	
	cpm	μR/hr	
1	7,700	7	
2	7,400	7	
3	6,000	6	
4	5,600	5	
5	5,800	6	
6	5,900	6	
7	5,200	5	
8	5,300	5	
9	5,700	5	
10	5,900	5	
11	5,000	5	
12	5,500	4	
13	5,700	6	
14	7,600	6	
15	6,600	7	
16	6,300	6	
17	6,400	6	

a) Ludlum 44-10 NaI with Ludlum 2221 ratemeter; Ludlum 192 NaI