



March 23, 2018

Mr. Chris Grossman
Nuclear Material Safety and Safeguards
Division of Decommissioning, Uranium Recovery, and Waste Programs
Materials Decommissioning Branch
U.S. Nuclear Regulatory Commission
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**SUBJECT: SITE SUMMARY REPORT FOR THE YANKEE AIRCRAFT MUSEUM
PROPERTY AT A STREET IN VAN BUREN CHARTER TOWNSHIP,
MICHIGAN
CONTRACT NO. NRC-HQ-50-17-A-0001; DCN 5307-TR-06-1**

Dear Mr. Grossman:

Oak Ridge Associated Universities (ORAU) is pleased to provide the attached site summary report for the Yankee Aircraft Museum property at A Street, Van Buren Charter Township, Michigan. NRC's comments on the draft report have been incorporated into this final version.

Please feel free to contact me at 865.574.0685 or Erika Bailey at 865.576.6659 if you have any questions.

Sincerely,

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

DAK:lw

Attachment

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Yankee Aircraft Museum: Site Summary

**Prepared by
Oak Ridge Associated Universities
Under NRC Contract Number HQ-50-17-A-0001**

March 23, 2018

**Prepared for
U.S. Nuclear Regulatory Commission**

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Yankee Aircraft Museum: Site Summary

The following information was extracted from public records.

Addresses

- Address 1: A Street, Van Buren Charter Township, Michigan 48111
- Address 2: Yankee Air Museum Collections & Exhibits Bldg., 47884 D Street, Belleville, Michigan 48111
- Address 3: Willow Run Bomber Plant, Kirk Profit Drive, Ypsilanti Charter Township, Michigan 48198

Site Description/History

The Willow Run Airport was built in 1941 by the Ford Motor Company to serve as an airfield for a B-24 Bomber Plant, which mass produced B-24 aircraft until the end of World War II. After the war, the airport was used for passenger flights and air freight in the Detroit Metropolitan area. In 1981, the Yankee Air Force, a group of aviation enthusiasts, acquired one of the original U.S. Army Air Force's hangers and restored it to vintage conditions (at Address 1). This marked the birth of the Yankee Aircraft Museum (Yankee Air Museum 2017). In July of 1992, the State of Michigan surveyed the Museum's inventory and found radioactive gauges. Museum employees were surprised and stated their intention to dispose of the radioactive gauges and no longer accept or install radioactive item donations (NRC 2017).

In October of 2004, the Museum along with all documents and artifacts within the structure were destroyed in a fire. Only the restored B-17, C-47, and B-25 flyable aircraft, on display outside of the structure, survived the fire. Figure 1 shows the Museum before the fire; Figure 2 shows the charred remains after the fire; and Figures 3 and 4 show the site after the land was cleared. In an effort to rebuild, the Museum purchased a nearby building from the Michigan Institute of Aviation and Technology (MichiganAT) in 2009. In 2010, this approximately 47,000-square-foot building became the Yankee Air Museum Collections and Exhibits Building (Address 2), which serves as the "Headquarters" and houses permanent and rotating aviation and historical displays, restoration projects, a retail store, and a movie theatre.

Additionally, a schoolhouse, built by Henry Ford in 1938, was donated in April 2007 and now houses the Yankee Air Museum David and Andrea Robertson Education Center, which serves as the Museum's library and archives center (Yankee Air Museum 2017). The original site, the new Museum building, and the library and archives center are all shown in Figure 5.

In 2011, the Museum began negotiations with RACER Trust and the Michigan Aerospace Foundation for acquiring 144,000 square feet of space within the Willow Run Bomber Plant. A successful fundraiser was held in early 2014, and the historic Willow Run Bomber Plant officially became the new future home for the Museum (at Address 3) on October 30, 2014. Currently, the space is being renovated, with various pieces from the Museum's collection transitioning over as progress is made. It is estimated that the new museum at the Willow Run Bomber Plant, shown in Figure 6, will be fully operational by 2018 (Yankee Air Museum 2017).



**Figure 1. Yankee Aircraft Museum, Address 1, on 11/14/2003 (before fire in 2004)
(Google Earth Pro 2017)**



**Figure 2. Yankee Aircraft Museum, Address 1, on 03/30/2005 (after fire in 2004)
(Google Earth Pro 2017)**



**Figure 3. Yankee Aircraft Museum, Address 1, on 08/27/2005 (cleanup after fire in 2004)
(Google Earth Pro 2017)**



**Figure 4. Yankee Aircraft Museum, Address 1, on 04/07/2017
(Google Earth Pro 2017)**



Figure 5. Aerial View of Original Site (Address 1) and Current Site (Address 2) for Yankee Aircraft Museum in 2017 (Google Earth Pro 2017)



Figure 6. Future Location of Yankee Aircraft Museum, Address 3, at Willow Run Bomber Plant in 2017 (Google Earth Pro 2017)

Information Regarding Radium Sources/Contamination at the Site

In July 1992, the State of Michigan surveyed the Museum's inventory at Address 1 and identified "6-8" radioactive gauges. Museum employees were cooperative and stated their intention to dispose of the radioactive gauges in normal trash (one gauge per week) and no longer accept or install radioactive gauges. However, no effort would be made to remove radioactive gauges already installed in the aircraft, if present. The State did not survey these aircraft, so it is unknown whether or not radioactive gauges were installed (NRC 2017). Additionally, it is not known if the 1992 survey included an evaluation of potential alpha and/or beta contamination, or whether it was a gamma-only survey,

Following the fire in 2004, debris from the original site (Address 1) was removed as indicated in Figures 2 and 3. However, no records of subsequent radiological surveys could be found. Therefore, it is possible that radium contamination is present in surface soil.

As of August 2017, it is suspected that the only intact radioactive items, if any, possessed by the Museum (Address 2) would be located within the restored B-17, C-47, and B-25 aircraft. However, it is possible that the Museum acquired additional radium gauges or other radium containing items since the 2004 fire.

Summary of Current Radium Levels

As of August 2017, it is not known if radium sources and/or radium contamination are present at the sites.

Location and Population Near the Sites

The Township of Ypsilanti is located in Washtenaw County. According to the 2010 U.S. Census, the population of Van Buren charter township was 28,821; the 2016 population estimate for the township was 28,032 (United States Census Bureau 2017). Figure 7 shows the location of the facility (Address 1 and 2) within the local community.

Current State/other Federal Involvement

An extensive internet search of public records did not reveal any information concerning recent State and/or Federal involvement with properties previously occupied by the Museum. The 1992 investigation by the State of Michigan provides the only record of a connection between radium containing devices and previous Museum activities (NRC 2017). No records of disposal for the known radioactive items could be located.

Current Access and Activities at the Site

The Museum is currently in the process of transferring all assets to the Willow Run Bomber Plant building located along Kirk Profit Drive at the Willow Run Airport. Access to the cockpits of the B-17, C-47, and B-25 aircraft is likely restricted with low occupancy based on posted flight schedules, but access and occupancy information for the remainder of the facilities/inventory is unknown. No access controls are apparent at the original site, though limited occupancy is suspected in the abandoned lot (as currently configured).



Figure 7. Aerial View of Surrounding Areas for Yankee Aircraft Museum (Addresses 1 and 2) in 2017 (Google Earth Pro 2017)

The current owner of the areas occupied by the Yankee Aircraft Museum (and all Willow Run Airport property) is the Wayne County Airport Authority located at 1 Detroit Metro Airport, Detroit, Michigan 48242.

Existing Engineering and Administrative Controls

No engineering or administrative controls are known to exist at original or current locations associated with the Museum.

Prioritization Ranking

NRC assigns a prioritization ranking for each site based on two factors. The first factor relates to whether or not the historical record confirms the presence of radium and there is no documentation that the radium contamination was previously remediated. The second factor considers the potential for human exposure. Based on these factors, the site is assigned Tier 1, 2, 3, or 4 using the following criteria:

- Tier 1 = the historical record confirms the presence of radium, the building or adjacent lands are occupied or frequented by visitors, and site access is not controlled.
- Tier 2 = the historical record confirms the presence of radium, the building or adjacent lands are not occupied or frequented by visitors, and site access is weakly controlled.

- Tier 3 = the historical record confirms the presence of radium, the building or adjacent lands are not occupied or frequented by visitors, and site access is strongly controlled.
- Tier 4 = the presence of radium is suspected but not confirmed by the historical record.

Radioactive gauges were previously identified in the Museum's inventory as determined from the State of Michigan's 1992 survey. Based on the responses from Museum staff in 1992, and the extent of destruction caused by the fire in 2004, it is likely that the only possible intact radioactive gauges associated with the original Museum would be located within the restored B-17, C-47, and B-25 aircraft. The photographic record suggests that all materials burned in the 2004 fire were removed, though it is unknown if radioactive materials were removed before the fire or as part of site cleanup activities after the fire. Radium is confirmed to have been present at the original site (Address 1) (NRC 2017), but the site does not appear to be occupied or frequented by visitors. Therefore, the Museum's sites and property are classified as Tier 3.

References

Google Earth Pro 2017. Software Version 7.3.0.3830 (32-bit), accessed August 2017.

NRC 2017. *Letters from the State of Michigan re: Non-Military Radium Program*, prepared by the State of Michigan under Cooperative Agreement with the Nuclear Regulatory Commission, Regional Offices and the Office of Nuclear Materials Safety and Safeguards. July 7, 2017. (Agencywide Documents Access and Management System [ADAMS] Accession No. ML16288A777)

United States Census Bureau 2017.

<https://www.census.gov/quickfacts/fact/table/vanburenchartertownshipwaynecountymichigan/RHI605210>, accessed August 2017.

Yankee Air Museum 2017. <http://yankeeairmuseum.org/our-history/>, accessed August 2017.