

**MARYLAND HISTORICAL TRUST
DETERMINATION OF ELIGIBILITY FORM**

NR Eligible: yes no

Property Name: Technical Division Buildings E3330-E3331 Inventory Number: HA-2204

Address: Edgewood Area, Aberdeen Proving Ground Historic district: yes no

City: Edgewood Zip Code: 21010 County: Harford

USGS Quadrangle(s): Edgewood

Property Owner: U.S. Army Garrison, APG, Department of the Army, DoD Tax Account ID Number: N/A

Tax Map Parcel Number(s): N/A Tax Map Number: N/A

Project: _____ Agency: U.S. Army Garrison, APG, Department of th

Agency Prepared By: R. Christopher Goodwin & Associates, Inc

Preparer's Name: Roger Ciuffo Date Prepared: 4/20/2010

Documentation is presented in: _____

Preparer's Eligibility Recommendation: X Eligibility recommended _____ Eligibility not recommended

Criteria: X A B X C D Considerations: A B C D E F G

Complete if the property is a contributing or non-contributing resource to a NR district/property:

Name of the District/Property: _____

Inventory Number: _____ Eligible: yes Listed: yes

Site visit by MHT Staff yes X no Name: _____ Date: _____

Description of Property and Justification: *(Please attach map and photo)*

Building E3330 was originally identified in 1941 as the Technical Division Building. According to real property records, the building was designated Building 73 in the U.S. Army old numbering system, but was eventually constructed as Building 330 in 1942. The number was subsequently changed to E3330 during the 1963 renumbering of Edgewood Arsenal buildings. The building was part of the Technical Research Center complex constructed at Edgewood Arsenal to support the mission of the chemical warfare service during World War II (APG, DPW real property records). A booklet from the First Annual Meeting – Chemical Warfare Association meeting dated May 24 and 25, 1946 notes on page 8, that the “Technical Command is located in Building 330, one of the most attractive buildings on the post. The most modern and scientific equipment available is in use by the research and development staff.”

Building History

Building E3330 (original number 330) was constructed in 1942 as the Technical Division Building. The firm Whitman Reardon & Smith of Baltimore, Maryland, served as the architects and engineers for the building (APG, DPW, drawing files). The building contains two floors and a partially exposed basement with an approximate overall area of 128,585 square feet (APG, DPW, real

MARYLAND HISTORICAL TRUST REVIEW	
Eligibility recommended <u>X</u>	Eligibility not recommended _____
Criteria: <u>X</u> A <u> </u> B <u>X</u> C <u> </u> D	Considerations: <u> </u> A <u> </u> B <u> </u> C <u> </u> D <u> </u> E <u> </u> F <u> </u> G
MHT Comments:	
<u>[Signature]</u> Reviewer, Office of Preservation Services	<u>7/6/2010</u> Date
<u>[Signature]</u> Reviewer, National Register Program	<u>7/6/10</u> Date

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property records). The building rests on a concrete foundation, contains concrete walls, and concrete floors that are topped with vinyl asphalt tiles. The building has a flat roof surrounded by parapet walls with concrete coping and finished with composition roofing. The building exterior is coated with a smooth concrete stucco finish that is simply ornamented with pronounced horizontal scoring.

Building E3330 occupies an irregular E-shaped footprint. The front elevation faces southwest along Ricketts Point Road. Three two-story wings project from the rear elevation of the building. Wing D is attached to the north end of the building; wing E is centered on the rear elevation. The south wing, identified as the JA wing, is the longest of the three wings. The JA wing is topped with a penthouse.

The focus of the front elevation of Building E3330 is the two-story protruding central entry bay that features rounded corners and three, large, deeply recessed, glass block windows. Three glass doors allow access to the building. The central doorway originally contained paired glass doors, but now contains a revolving door. The outer glass doors are framed with glass block sidelights. The entry doors are protected by a rounded corner, flat-roofed, protruding concrete slab that is described on the as-built drawings as a marquee. The elevated doorway is accessed by side concrete stairs that are concealed by square concrete walls. An at-grade landscaped brick patio, constructed ca.1995, is located west of the building's entrance and contains seating for visitors and employees.

The original drawing dated 1941 depicted the windows as groups of four industrial steel sash units. The windows were 12-light units flanking two 16-light units with continuous concrete sills (APG, DPW drawing file). A World War II-era photograph showed these windows in place (RDECOM, historic photograph collection). The windows on the building have been replaced over the years. No windows currently on the building appear to be original. The oldest appearing windows are groups of four metal-frame windows comprising four-light units flanking paired twelve-light units. The upper portions of the windows appear fixed, while slider windows are located along the bottom lights. These windows are located along the front elevation and in various areas of the rear elevation. No documentation to date has identified when these windows were installed. Beginning in the 1980s and through the 1990s, windows in the JA wing and on the second floor of the rear elevation have been replaced with aluminum-frame, fixed pane with bottom hopper windows.

As a laboratory and administrative building, Building E3330 has undergone continuous modifications on the interior and exterior over the years. Active laboratories were continually upgraded to meet new standards; former laboratory spaces were reconfigured into offices. Air conditioning and ventilation throughout the building has been continuously upgraded. The JA wing has undergone extensive renovations beginning ca. 1984. Renovations have included the removal of hoods, fans, ductwork associated with the fume hood ventilation system. The table below notes some of the major changes in exterior renovations to Building E3330 over the years.

Date □ Renovation*

- 1942 □ Steel sash windows installed
- 1962 □ Steel sash windows repaired, cleaned and caulked
- 1974 □ Installed protective screening on windows
- 1978 □ Installed security screens
- 1984 □ Window replacement in JA wing
- 1992 □ New aluminum windows (fixed pane with bottom hopper) installed on second floor, rear, and in D wing
- 1995 □ Installed brick deck at entrance

*Information taken from APG, DPW, real property records and engineering drawings

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Building E3330 was built as the central building of the Technical Research Center complex constructed at Edgewood Arsenal to support the mission of the chemical warfare service during World War II (EAI Corporation Building E3330). The building was designed to contain laboratories for the study of a wide variety of chemical warfare materials, a library, administrative offices, and personnel support, such as a cafeteria (APG DPW drawing file). Currently laboratories in Building E3330 are located primarily in the JA wing, which was the primary location for laboratory and process development work on chemical agents. Work accomplished in the JA wing included the development of the continuous process for the production of GB (Sarin - a highly toxic nerve gas). Process development work was phased out in Building E3330 after the construction of Building E3640 was completed in 1952 (APG, DPW, real property records; EAI Corporation Building E3330). Over the years, the building has come to serve more administrative functions. As laboratory requirements expanded, new buildings to accommodate specific laboratory programs were constructed.

Attached to the north end of Building E3330 is Building E3331. Access to the building is available from Ricketts Point Road or through a hyphen connection from Building E3330. Constructed in 1954 at a cost of \$727,000, the building contains two floors plus a basement and measures 267'5 1/2" x 55'11 3/4"; it adopts a rectangular footprint. The building was built as an annex to Building E3330 and received a separate number as Building E3331 in 1984 (APG, DPW real property records). Building E3331 reflects similar design and construction techniques and ornamentation of Building E3330. Building E3331 is constructed with a concrete foundation, concrete and asphalt tile floors, and concrete block walls. The building is coated with a smooth concrete stucco finish and is ornamented with horizontal scoring. The parapet roof is finished with composition roofing.

The main entry to Building E3331 has a two-story, central, square, slightly-projecting, entry bay that is accessed by a wide flight of concrete steps. Three sets of modern glass doors are topped with fixed pane windows on the first floor and a row of three, fixed pane and hopper style windows on the second floor. The current doors were installed in 1991. The doorways are separated by vertical narrow concrete panels and the entire entryway is enframed by a pronounced concrete surround. The original windows as designed were sets of three, six-light units with hoppers (APG DPW drawing file). No windows currently on the building appear to be original. The oldest appearing windows are groups of three metal-frame windows comprising four-light units flanking a three light fixed unit. The upper portions of the windows appear fixed, while slider windows are located along the bottom lights. These windows are located along the front elevation and in various areas of the rear elevation. No documentation to date has identified when these windows were installed. In 1984, the windows on the rear elevation were with aluminum-frame, fixed pane with bottom hopper windows. The table below notes some of major changes in exterior renovations to Building E3331 over the years.

Date Renovation*

1954 Steel sash windows installed and venetian blinds installed in exterior walls on all windows

1984 New windows installed, rear elevation

1991 Upgrade if fours doors at entrance

*Information taken from APG, DPW, real property records and engineering drawings

When constructed, Building E3331 was designed for administrative office space for the commanding officer, staff offices, and engineering department. The basement was used as a camera repair shop, a photography studio and laboratory, duplicating room that included an Ozalid machine (Ozalid is a trade name for a duplicating machine which uses ammonia as a developing agent), and a Photostat machine room (EAI Corporation Building E3331). Today, the building is used as a general office building.

General History

Edgewood Arsenal was founded in 1917 as the first chemical warfare production facility in the United States. It was established in response to the appearance of toxic gas weapons on the European battlefields. Because commercial chemical companies were

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reluctant to invest in such weapons, the U.S. government decided to build its own industrial production plant. Edgewood Arsenal remained the only chemical warfare installation in the U.S. until World War II, when three other chemical warfare production plants were established. Edgewood Arsenal continued as the headquarters of the expanded chemical warfare program and the center for specialized and experimental tasks (Cannan et al. 1995).

Edgewood Arsenal was originally named the U.S. Filling Plant, Gunpowder Reservation. The central core of the installation was designed as an integrated production line to accommodate the multi-step process of chemical weapons manufacturing. The installation included an area to receive shipments of and to produce raw materials, an area to produce chemicals, an area to pack chemicals into shells, and an area to load, store, and ship chemical ordnance.

After World War I, Edgewood Arsenal remained a permanent installation, but at a much reduced level of activity. The National Defense Act of 1920 established the Chemical Warfare Service as a separate entity, distinct from the Ordnance Department. However, a general abhorrence for chemical warfare as practiced during World War I limited the role of this new service. In 1924, the Chemical Warfare Service was confined to studying defensive measures and equipment and to preparing a modest deterrent or retaliatory capability; the United States would not develop chemicals as an offensive measure (Brophy 1959a:21 23).

Within this framework, Edgewood Arsenal served as the center of Chemical Warfare Service activity. Workers at Edgewood tested methods for dispersing chemical agents from aircraft or from chemical mortars. They also developed improved gas masks and means of impregnating clothing for protection against toxic gases. Stocks of chemical agents that remained from World War I were stored at Edgewood, but the production facilities were mothballed and, in some cases, dismantled. The Chemical Warfare School, which trained both Army and Navy personnel, also operated at Edgewood (Brophy 1959a:28 31).

As the possibility of war increased between 1939 and 1941, facilities at Edgewood were placed on standby status. Old production plants were repaired and manufacturing equipment was updated. Experimental chemical plants were constructed. Additional laboratory and office space was required to consolidate research activities expanded during the war. The area east of the airfield along Ricketts Point Road was selected as the location of the new research and testing buildings. This location had enough space to build new up-to-date laboratories and support buildings to accommodate all staff in a few buildings.

As the buildings and facilities at Edgewood Arsenal were expanding, the administrative structure of the Chemical Warfare Service was reorganized in 1940 into the following divisions: Executive, Information, Fiscal, Operations, Training and War Plans, Personnel, Procurement, Supply, and Technical. The Technical Division originally administered all research and development work undertaken in the chemical warfare field, including all offensive and defensive phases, as well as medical and biological phases (U.S. Army Service Forces 1946:3). In 1941, the Technical Division was organized in the following divisions: Research, Development, Engineering, Special Assignments, and Information. As the war progressed and the research requirements expanded, the Technical Division's staff grew from 300 to 2,400 persons supported by \$8 million budget. Building E3330 was completed in 1942 as the principal laboratory and administrative building to contain this expansion. In spring 1943, the medical and biological research and development functions were removed from the Technical Division and a new Medical Division and Special Projects Division were organized (U.S. Army Service Forces 1946:3).

During World War II, Edgewood fulfilled more chemical functions than it had during World War I. President Roosevelt declared that the United States would not use chemical weapons offensively, but would retaliate defensively with chemical weapons. This deterrent capability had its desired effect; the Axis powers never resorted to the use of toxic gases on military targets (Grandine et al. 1982; Smart 1994).

Edgewood Arsenal, however, was prepared, although the nature of the industrial mission at the installation changed as the post no

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longer functioned as an integrated chemical production line. The bulk of chemical warfare production was shifted to other installations, including Huntsville/Redstone Arsenal (1941), Alabama; Rocky Mountain Arsenal (1942), Colorado; and Pine Bluff Arsenal (1943), Arkansas. Edgewood Arsenal became the center for specialized and experimental tasks, such as the establishment of pilot plants to test new chemicals and new production processes.

The shift in mission resulted in a smaller number of self-contained production plants constructed at Edgewood Arsenal. Production lines were either housed in one building or in a series of separate buildings, each containing a different step in the production process. Instead of the entire installation functioning as an integrated industrial plant, each manufacturing process functioned independently. Older production facilities were dismantled or demolished while new plants were constructed wherever space was available.

Edgewood Arsenal also served as the location for proof tests for preliminary and final engineering and field tests for chemical weapons, munitions, agents, protective equipment and other chemical warfare materiel. Personnel initiated test programs, and developed field techniques and field operating procedures. The purpose of the testing program was to undertake comparative evaluation and analysis and to publish test results (Brophy and Ross 1953). Chemical research was conducted in the main laboratories in Building E3330, while specific testing facilities were sited in the area east of Building E3330. Test facilities included test chambers for aerosols (Building E3370), as well as environmental chambers, and a vertical wind tunnel, which was added to Building E3360 in 1964 (EAI Corporation, Building E3370).

The Cold War era generally is defined as the period, which begins in 1946, following Soviet activities to retain territory liberated from Nazi Germany during World War II and extends to the fall of the Berlin Wall in 1989. This period was marked by a tense, hostile relationship between the Warsaw Pact countries led by the U.S.S.R. and the North Atlantic Treaty Organization (NATO) Allies led by the U.S.A. The primary role of the U.S. Army during this time was to support U.S. policies of peace through strength by maintaining ground force readiness as an alternative to strategic nuclear weapons for deterring communist expansion (USAEC 1997).

The Cold War era was marked by major organizational changes in the armed forces and accompanied by competition for limited military appropriations among the services. Under the 1947 National Security Act, the Army assumed responsibility for conducting land warfare, providing troops for occupation duty in Central Europe, and for providing air defense units within the continental U.S.

The Cold War era also was marked by significant changes in U.S. Army operations. Instead of relying on a small standing army and mobilizing troops as needed, Army personnel were now ready to enter combat on short notice. This meant that a large, trained standing army was maintained in constant readiness. Troops were stationed for the first time in friendly foreign nations under an allied command structure. Within the U.S., the Army maintained an active force prepared to deploy quickly into combat zones (USAEC 1997).

In 1951, Edgewood Arsenal (Army Chemical Center) became the Research & Engineering Center for the Chemical Corps. In 1962, the Army's technical services were disbanded, and the Army Materiel Command (AMC) was established. This new command consolidated logistical functions to ensure integrated materiel management, including new product development, management of materiel stockpiles, testing, and technical and maintenance support (USAEC 1997). The Ordnance Department and the Chemical Corps activities at APG were transferred to AMC. 1962 brought about the demise of the Chemical Corps as it was abolished and the laboratories and production facilities were placed under the Chemical – Biological – Radiological Agency (CBR Agency). In 1983 the name changed to Chemical, Research and Development Center (CRDC) and in 1986 the name was changed once again to the Chemical Research, Development and Engineering Center (CRDEC). 1992 brought about another

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change as the Edgewood Research, Development and Engineering Center was placed under the U.S. Army Chemical and Biological Defense Command (CBDCOM). In 1998, CBDCOM became absorbed by the Soldier and Biological Chemical Command (SBCCOM) (Smart 1997). In 2002, the U.S. Army Research, Development and Engineering Command (RDECOM) (Provisional) was created with RDECOM becoming permanent in 2004. In 2005, the ERDEC combined with the Natick RDEC to become the Edgewood Chemical Biological Center (ECBC). In 1971, Aberdeen Proving Ground and Edgewood Arsenal were joined administratively.

The chemical laboratories located at Edgewood conducted both basic research and materiel development. The laboratories focused on the development of chemicals as tactical weapons and on defensive measures to counter chemical weapons attack. Basic research included the discovery and development of new chemical agents, incendiaries, and screening and signaling smokes. Materiel development focused on improved weapons delivery and dispersal systems, including flame throwers, chemical mortars, and smoke generators. By 1953, the 4.2-inch chemical mortar developed by the Chemical Corps became a standard infantry weapon. In addition, the laboratories conducted research into the development of insecticides, rodenticides, and fungicides, as well as tear gas, non-lethal riot control agents, nerve agents, and defoliants (Brophy and Ross 1953; Smart 1994).

Evaluation

Buildings E3330 and E3331 were evaluated applying the National Register Criteria for Evaluation to assess if they retained those qualities of significance and integrity to merit further consideration for eligibility to the National Register of Historic Places (NRHP).

The buildings were evaluated under Criterion A for their association with events that have made a significant contribution to the broad patterns of our history. As originally designed and constructed, Building E3330 and Annex E3331 were the principal laboratory and administrative buildings housing the Technical Division, a major division at Edgewood Arsenal in charge of all research and development work undertaken in the chemical warfare field. Building E3330 is associated with the activities of the Technical Division from World War II through the Cold War, while Building E3331 is associated with those activities during the Cold War.

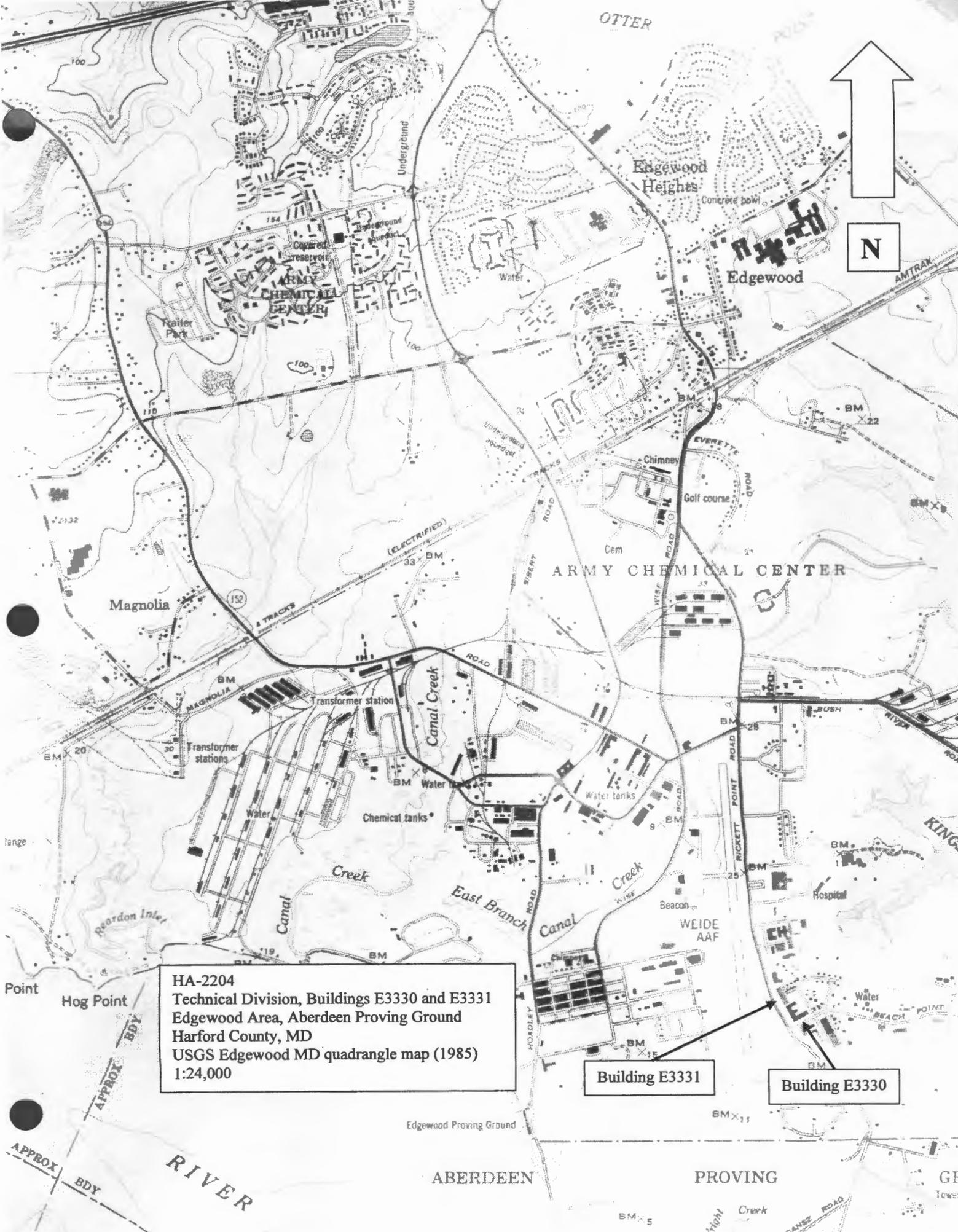
Buildings E3330 and E3331 also possess the qualities of significance applying National Register Criterion C. Building E3330 exhibits construction techniques and minimal architectural ornamentation applied to permanent buildings constructed during the early 1940s as the United States was beginning preparations for war. The minimalist approach to architectural ornamentation in military architecture continued from World War II onward throughout the Cold War as exhibited in the design of Building E3331 attached to the north end of Building E3330 in 1954. Concrete and concrete block were widely adopted during this period. Building exteriors exhibited minimal ornamentation. Architectural ornamentation was focused on the major entryways and in the treatment of the exterior stucco surface. The windows currently in the buildings are not original and are not character-defining features.

The buildings were evaluated under Criterion B for their association with the lives of person persons significant in our past. Archival research yielded no specific information about the activities or impact of a person with relationships to the building and no scholarly judgment can be made about historic importance. Building E3330 does not possess association with individuals significant in local, state, or national history to merit further consideration for eligibility to the NRHP under Criterion B.

References

Aberdeen Proving Ground

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HA-2204
 Technical Division, Buildings E3330 and E3331
 Edgewood Area, Aberdeen Proving Ground
 Harford County, MD
 USGS Edgewood MD quadrangle map (1985)
 1:24,000

Building E3331

Building E3330

Point Hog Point
 APPROX BDY
 RIVER

ABERDEEN

PROVING

GR Tower

Maryland Historical Trust Maryland Inventory of Historic Properties Form

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Technical Division Buildings E3330-E3331

Continuation Sheet

Number Photo Log Page 1

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Distribution Restriction Statement

Distribution Authorized to US Government Agencies and Their
Contractors Only, Contains Technical or Operational

Information. This Determination was made on 4/12/2010, 10100-A-1.

The photographic images must be returned to

U.S. Army Garrison, Aberdeen Proving Ground
Directorate of Public Works, Environmental Division
IMNE-APG-PWE (Ms. Terri Kaltenbacher)
Building E5771, Magnolia Road
Aberdeen Proving Ground, Maryland 21010-5401

The following information is the same for each photograph:

1. MIHP # HA-2204
2. Technical Division Buildings E3330-E3331
3. Harford County, Maryland
4. R. Christopher Goodwin & Associates, Inc.
5. November 2009
6. APG

Photo #

HA-2204_2009-11-24_01.tif	Building E3330 front elevation, looking northeast
HA-2204_2009-11-24_02.tif	Building E3330 detail of front entry looking northeast
HA-2204_2009-11-24_03.tif	Building E3330, front elevation looking southeast
HA-2204_2009-11-24_04.tif	Building E3330 south wing looking west
HA-2204_2009-11-24_05.tif	Building E3330 rear elevation looking west
HA-2204_2009-11-24_06.tif	Building E3330 north wing (rear) looking southwest
HA-2204_2009-11-24_07.tif	Building E3331 front elevation looking northwest
HA-2204_2009-11-24_08.tif	Building E3331 front entry detail looking northwest
HA-2204_2009-11-24_09.tif	Building E3331 north and east elevations looking southwest

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Technical Division Buildings E3330-E3331

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*Historic photos can be
retained.*



Photograph of Building E3330 dated November 15, 1942 (Courtesy of U.S. Army Research Development and Engineering Command (RDECOM))