

UNITED STATES DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE

**NATIONAL REGISTER OF HISTORIC PLACES
INVENTORY -- NOMINATION FORM**

FOR FEDERAL PROPERTIES

FOR NPS USE ONLY

RECEIVED

DATE ENTERED

SEE INSTRUCTIONS IN *HOW TO COMPLETE NATIONAL REGISTER FORMS*
TYPE ALL ENTRIES -- COMPLETE APPLICABLE SECTIONS

1 NAME

HISTORIC

"One-Million-Liter Test Sphere" or "HORTON TEST SPHERE" or "Test Sphere" or
AND/OR COMMON
"Cloud Study Chamber" or "THE 8-BALL" (Fort Detrick Structure #527)

2 LOCATION

STREET & NUMBER

Fort Detrick (between Bldgs 567 & 571)

NOT FOR PUBLICATION

CITY, TOWN

Frederick

CONGRESSIONAL DISTRICT

Sixth

STATE

Maryland

VICINITY OF

CODE

24

COUNTY

Frederick

CODE

021

3 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRESENT USE	
<input type="checkbox"/> DISTRICT	<input checked="" type="checkbox"/> PUBLIC	<input type="checkbox"/> OCCUPIED	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> MUSEUM
<input type="checkbox"/> BUILDING(S)	<input type="checkbox"/> PRIVATE	<input checked="" type="checkbox"/> UNOCCUPIED	<input type="checkbox"/> COMMERCIAL	<input type="checkbox"/> PARK
<input checked="" type="checkbox"/> STRUCTURE	<input type="checkbox"/> BOTH	<input checked="" type="checkbox"/> WORK IN PROGRESS	<input type="checkbox"/> EDUCATIONAL	<input type="checkbox"/> PRIVATE RESIDENCE
<input type="checkbox"/> SITE	PUBLIC ACQUISITION	ACCESSIBLE	<input type="checkbox"/> ENTERTAINMENT	<input type="checkbox"/> RELIGIOUS
<input type="checkbox"/> OBJECT	<input type="checkbox"/> IN PROCESS	<input checked="" type="checkbox"/> YES: RESTRICTED	<input checked="" type="checkbox"/> GOVERNMENT	<input checked="" type="checkbox"/> SCIENTIFIC
	<input type="checkbox"/> BEING CONSIDERED	<input type="checkbox"/> YES: UNRESTRICTED	<input type="checkbox"/> INDUSTRIAL	<input type="checkbox"/> TRANSPORTATION
		<input type="checkbox"/> NO	<input checked="" type="checkbox"/> MILITARY	<input type="checkbox"/> OTHER

4 AGENCY

REGIONAL HEADQUARTERS: (If applicable)

US Army, Fort Detrick (Attn: HSD-F)

STREET & NUMBER

CITY, TOWN

Frederick

STATE

Maryland 21701

VICINITY OF

5 LOCATION OF LEGAL DESCRIPTION

COURTHOUSE,
REGISTRY OF DEEDS, ETC.

Fdk Co. Courthouse Also: District Engr, US Army Corps of Engrs

STREET & NUMBER

Court & Church Sts

Attn: NABRE-M, WR Grace Bldg

CITY, TOWN

Fdk, Md. 21701

STATE

10 E. Baltimore St., Baltimore, Md. 21201

6 REPRESENTATION IN EXISTING SURVEYS

TITLE Acquisition Tract Register, Dwg MAD59

Fort Detrick Tract No. 13 (89.65 Acres purch from City of Fdk)

DATE

Deed dated 12 April 1944

FEDERAL STATE COUNTY LOCAL

DEPOSITORY FOR
SURVEY RECORDS

District Engineer US Army Corps of Engineers Attn: NABRE-M

CITY, TOWN

W.R. Grace Bldg, 10 E. Baltimore St., Baltimore, Md. 21201

STATE

(or P.O. Box 1715, Baltimore, Md. 21203)

7 DESCRIPTION

CONDITION

- EXCELLENT
- GOOD
- FAIR
- DETERIORATED
- RUINS
- UNEXPOSED

CHECK ONE

- UNALTERED
- ALTERED

CHECK ONE

- ORIGINAL SITE
- MOVED DATE _____

See Note on Continuation Sheet

DESCRIBE THE PRESENT AND ORIGINAL (IF KNOWN) PHYSICAL APPEARANCE

Test Sphere 527 was and is a 40 foot diameter steel sphere which during most of its existence was enclosed in a 60 foot wooden framed, metal sheathed cube.

a. Physical Size and Configuration.

Gas-tight (freon tests), 40-ft diameter sphere with 1,000,000-liter total volume; constructed of 1-1/4" mild steel, painted interior finish.

b. Environmental Control.

Freon tight air processing system capable of maintaining temperature within the range of 55° - 90°F, dry bulb, at relative humidities between 20 percent and saturation.

c. Access Ports.

Five access ports at equator fitted with biological safety cabinets for aerosol sample collection and whole body exposure of small animal species, up to and including monkeys; one access on equator for personnel entry when facility is decontaminated; one access port on equator with newly constructed biological safety cabinets for whole-body exposure of large animal species, such as sheep and goats; four exposure cubicles on equator for mask exposure of volunteers; one access at base of facility with biological safety cabinet for introduction of disseminating devices and large items of equipment.

NOTE: The basic Sphere is unaltered from its construction. The metal sheathed housing which enclosed the Sphere for almost 25 years was badly damaged by fire on 11 Dec 1975 and is being removed. Reactivation for new use as discussed on Continuation Sheet 1 would require new controls and relatively minimal repairs to ports.

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CONTINUATION SHEET

ITEM NUMBER

PAGE

"Classification"

NOTE: Decontaminated/certified biologically non-hazardous as of 5 Nov 1970, Test Sphere 527 has been unused/inactive since 1970's cessation of Biological Warfare Research & Development by the United States. The Sphere is currently under consideration for possible R&D test use by Environmental Quality Division of U.S. Army Bioengineering R&D Laboratory (tenant), an element of U.S. Army Medical R&D Command which operates nearby buildings. From 1951 the Sphere was enclosed by a 60' 9" x 60' 9" x 60' 9" wood frame, insulated and later metal sheathed housing; this was destroyed by fire 11 Dec 1975 but without damage to the Sphere itself except to controls and ports.

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION
50-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input checked="" type="checkbox"/> SCIENCE
1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE
1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN
1700-1799	<input type="checkbox"/> ART	<input type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER
1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION
X 1900-	<input type="checkbox"/> COMMUNICATIONS	<input type="checkbox"/> INDUSTRY	<input type="checkbox"/> POLITICS/GOVERNMENT	<input type="checkbox"/> OTHER (SPECIFY)
		<input type="checkbox"/> INVENTION		

SPECIFIC DATES

BUILDER/ARCHITECT

STATEMENT OF SIGNIFICANCE

As far as is known, the 1-million-liter test sphere is unique -- the largest such facility in the world. The facility was employed from 1951 to 1970 for aerobiological studies of agents highly pathogenic to man and animals, investigating biological agent stability in aerosol as function of environment, respiratory dose response characteristics in man and animal, evaluation of experimental vaccines with respect to conferred immunity against respiratory disease, and evaluation of biological agent aerosol detection devices and large-volume air samplers.

Containment of the infectious aerosol was insured by pre-testing for gas-tight integrity using a test gas of high detection sensitivity. Protection against system failures and human errors was provided by means of backup systems that were energized, either automatically or instantly by manual means upon functioning of warning alarms. In addition to the gas-tight feature of the system, the entire complex was routinely rated on a slight negative pressure so that any leakage that should develop would only permit clean air to enter the system; contaminated air could not escape. The air process system used for achieving and maintaining controlled environments was displayed schematically, giving the operations supervisor continual surveillance over the status of the equipment.

In testimony to the integrity of the Test Sphere facility with respect to agent containment, it is worthwhile noting that in 19 years of almost daily operations, its biological safety record was perfect. Not only was there never an escape of any of the lethally dangerous biologicals worked with in the Sphere, there were also no instances of occupational illness among operating personnel. These personnel worked in the area surrounding the sphere without benefit of or need for respiratory protection.

In essence, the staff of the old Biological Laboratories weaned aerobiology from a qualitative into a quantitative science, and the Test Sphere not only was instrumental in this accomplishment, but also stands as a tribute to the scientific staff that did it. Thus, because of its historical scientific significance, placement of the Test Sphere on the National Register of Historic Places is considered to fall within the purview of Executive Order 11593.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

F-3-46

10 GEOGRAPHICAL DATA

ACREAGE OF NOMINATED PROPERTY _____

UTM REFERENCES

A	ZONE	EASTING	NORTHING
C	ZONE	EASTING	NORTHING

B	ZONE	EASTING	NORTHING
D	ZONE	EASTING	NORTHING

VERBAL BOUNDARY DESCRIPTION

Test Sphere 527 is located at Latitude 39° 26'10" North/Longitude 77° 25'55" West (coordinates on Maryland Grid System are: E678650 and N583400)

LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES

STATE	CODE	COUNTY	CODE
STATE	CODE	COUNTY	CODE

11 FORM PREPARED BY

NAME / TITLE

JAMES P. GODSEY, LTC, CE, Director/Facilities Engineering

ORGANIZATION

Fort Detrick

DATE

(AC-301) 663-2817

STREET & NUMBER

TELEPHONE

CITY OR TOWN

Frederick

STATE

Maryland 21701

12 CERTIFICATION OF NOMINATION

STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION

YES ___ NO ___ NONE ___

STATE HISTORIC PRESERVATION OFFICER SIGNATURE

In compliance with Executive Order 11593, I hereby nominate this property to the National Register, certifying that the State Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and to evaluate its significance. The evaluated level of significance is ___ National ___ State ___ Local.

FEDERAL REPRESENTATIVE SIGNATURE

TITLE

DATE

FOR NPS USE ONLY

I HEREBY CERTIFY THAT THIS PROPERTY IS INCLUDED IN THE NATIONAL REGISTER

DATE

DIRECTOR, OFFICE OF ARCHEOLOGY AND HISTORIC PRESERVATION
ATTEST:

DATE

KEEPER OF THE NATIONAL REGISTER