

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 APR 25 1977
DATE ENTERED NOV 23 1977

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Fort Detrick (between Bldgs 567 & 571) _ NOT FOR PUBLICATION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 VICINITY OF CONGRESSIONAL DISTRICT
Sixth
STATE
Maryland CODE COUNTY CODE
24 Frederick 021

2 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 VICINITY OF STATE
Maryland 21701

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		CHECK ONE	CHECK ONE
<input type="checkbox"/> EXCELLENT	<input type="checkbox"/> DETERIORATED	<input checked="" type="checkbox"/> UNALTERED	<input checked="" type="checkbox"/> ORIGINAL SITE
<input checked="" type="checkbox"/> GOOD	<input type="checkbox"/> RUINS	<input type="checkbox"/> ALTERED	<input type="checkbox"/> MOVED DATE _____
<input type="checkbox"/> FAIR	<input type="checkbox"/> UNEXPOSED		

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.

8 SIGNIFICANCE

PERIOD	AREAS OF SIGNIFICANCE -- CHECK AND JUSTIFY BELOW			
<input type="checkbox"/> PREHISTORIC	<input type="checkbox"/> ARCHEOLOGY-PREHISTORIC	<input type="checkbox"/> COMMUNITY PLANNING	<input type="checkbox"/> LANDSCAPE ARCHITECTURE	<input type="checkbox"/> RELIGION
<input type="checkbox"/> 1400-1499	<input type="checkbox"/> ARCHEOLOGY-HISTORIC	<input type="checkbox"/> CONSERVATION	<input type="checkbox"/> LAW	<input checked="" type="checkbox"/> SCIENCE
<input type="checkbox"/> 1500-1599	<input type="checkbox"/> AGRICULTURE	<input type="checkbox"/> ECONOMICS	<input type="checkbox"/> LITERATURE	<input type="checkbox"/> SCULPTURE
<input type="checkbox"/> 1600-1699	<input type="checkbox"/> ARCHITECTURE	<input type="checkbox"/> EDUCATION	<input type="checkbox"/> MILITARY	<input type="checkbox"/> SOCIAL/HUMANITARIAN
<input type="checkbox"/> 1700-1799	<input type="checkbox"/> ART	<input type="checkbox"/> ENGINEERING	<input type="checkbox"/> MUSIC	<input type="checkbox"/> THEATER
<input type="checkbox"/> 1800-1899	<input type="checkbox"/> COMMERCE	<input type="checkbox"/> EXPLORATION/SETTLEMENT	<input type="checkbox"/> PHILOSOPHY	<input type="checkbox"/> TRANSPORTATION
<input checked="" type="checkbox"/> 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 operated 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.

