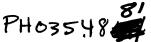
Form No. 10-306 (Rev. 10-74)



DATA SHEET

UNITED STATES DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

NATIONAL REGISTER OF HISTORIC PLACES INVENTORY -- NOMINATION FORM

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__NOT FOR PUBLICATION

RECEIVED APR 2 5 1977 DATE ENTERED NOV 2 3 1977

FOR FEDERAL PROPERTIES

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) -

CITY, TOWN	······	CONGRESSIONAL DIST	RICT
Frederick		Sixth	
STATE	CODE	COUNTY	CODE
Maryland	24	Frederick	021

2 CLASSIFICATION

CATEGORY	OWNERSHIP	STATUS	PRES	ENTUSE
DISTRICT	X_PUBLIC	OCCUPIED	AGRICULTURE	MUSEUM
BUILDING(S)	PRIVATE		COMMERCIAL	PARK
X_STRUCTURE	ВОТН	X_WORK IN PROGRESS	EDUCATIONAL	PRIVATE RESIDENCE
SITE	PUBLIC ACQUISITION	ACCESSIBLE	ENTERTAINMENT	RELIGIOUS
OBJECT	IN PROCESS	X_YES: RESTRICTED	X_GOVERNMENT	X_SCIENTIFIC
	BEING CONSIDERED	YES: UNRESTRICTED	INDUSTRIAL	TRANSPORTATION
		NO	X_MILITARY	OTHER:

AGENCY

REGIONAL HEADQUARTERS: (If applicable)

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

STREET & NUMBER

CITY, TOWN			STAT	TE		·,
Frederick	<u>X</u> vic	INITY OF	Mary1	and	21701	
5 LOCATION C	OF LEGAL DESCRIP	TION				
COURTHOUSE. REGISTRY OF DEEDS, ETC.	Fdk Co. Courthouse	<u>Also:</u> Distr	lct Engr, US Arm	iy Co	rps of E	ngrs
STREET & NUMBER	Court & Church Sts		NABRE-M, WR Gr			
CITY, TOWN	Fdk, Md. 21701	10 E.	STAT Baltimore St.,		imore, Mo	d. <u>212</u> 0
6 REPRESENT	ATION IN EXISTIN	G SURVEY	S			
	n Tract Register, Dwg ck Tract No. 13 (89.6		h from City of	Fdk)		
DATE	12 April 1944		LSTATECOUNTY _		L	
DEPOSITORY FOR SURVEY RECORDS DIS	trict Engineer US Arm	y Corps of E	ngineers Attn:	NAB	RE-M	
CITY TOWN	cace Bldg, 10 E. Balti		STAT	E		
	(or P.O. Boz	x 1715, Balt:	Lmore, Md. 21203)		



CON	DITION	CHECK ONE	CHECK (DNE
EXCELLENT	DETERIORATED	XUNALTERED	XORIGINAL	SITE
X_GOOD	RUINS	ALTERED	MOVED	DATE
FAIR	UNEXPOSED	See Note on Continuation	Sheet	

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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.

<u>NOTE</u>: 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		REAS OF SIGNIFICANCE CH	IECK AND JUSTIFY BELOW	
PREHISTORIC	ARCHEOLOGY-PREHISTORIC	COMMUNITY PLANNING	LANDSCAPE ARCHITECTURE	RELIGION
1400-1499	ARCHEOLOGY-HISTORIC	CONSERVATION	LAW	X.SCIENCE
1500-1599	AGRICULTURE	ECONOMICS	LITERATURE	SCULPTURE
1600-1699	ARCHITECTURE	EDUCATION	MILITARY	_SOCIAL/HUMANITARIAN
1700-1799	-ART	ENGINEERING	MUSIC	THEATER
1800-1899	COMMERCE	EXPLORATION/SETTLEMENT	PHILOSOPHY	TRANSPORTATION
<u>X</u> 1900-	COMMUNICATIONS	INDUSTRY	POLITICS/GOVERNMENT	OTHER (SPECIEV)
		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.

9 MAJOR BIBLIOGRAPHICAL REFERENCES

A [GEOGRAPHICAL D ACREAGE OF NOMINATED PROPER UTM REFERENCES	ATA TYless_#	han One	
Test Sphere 527 is located at Latitude 39° 26'10" North/Longitude 77° 25'55" if (coordinates on Maryland Grid System are: <u>E678650 and N583400)</u> LIST ALL STATES AND COUNTIES FOR PROPERTIES OVERLAPPING STATE OR COUNTY BOUNDARIES STATE CODE STATE CODE CODE COUNTY CODE COUNTY STATE CODE CODE COUNTY CODE CODE FORM PREPARED BY DATE JAMES P. GODSEY, LTC, CE, Director/Facilities Engineering DATE ORGANIZATION DATE Fort Detrick (AC-301) 663-2817 STREET & NUMBER TELEPHONE CITY OR TOWN STATE Prederick Maryland 21701 CERTIFICATION OF NOMINATION STATE HISTORIC PRESERVATION OFFICER RECOMMENDATION YES NO NONE NO NONE STATE In compliance with Executive Order 11593.1 hereby nominate this property to the faitonal Register, certifying that the SI NO Historic Preservation Officer has been allowed 90 days in which to present the nomination to the State Review Board and evaluate its significance. The evaluated level of significance is Mattered Local. FEDERAL REPRESENTATIVE SIGNATURE			ZONE EASTING	
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