Man in Space Theme Study
Federal Agency Nomination

NPS Form 10-900
(7-81)

United States Department of the Interior
National Park Service

For NPS use only
received
date entered

National Register of Historic Places Inventory—Nomination Form

See instructions in *How to Complete National Register Forms*
Type all entries—complete applicable sections

1. Name

historic Neutral Buoyancy Space Simulator

and/or common Neutral Buoyancy Space Simulator

2. Location

street & number George C. Marshall Space Flight Center ___ not for publication

city, town Huntsville ___ vicinity of congressional district

state Alabama code 01 county Madison code 089

3. Classification

Category	Ownership	Status	Present Use	
___ district	X public	___ occupied	___ agriculture	___ museum
___ building(s)	___ private	___ unoccupied	___ commercial	___ park
X structure	___ both	___ 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	___ military	X other: Space Exploration

4. Owner of Property

name National Aeronautics and Space Administration (NASA)

street & number

city, town Washington ___ vicinity of state D.C. 20546

5. Location of Legal Description

courthouse, registry of deeds, etc. National Aeronautics and Space Administration (NASA)

street & number Real Property Management Office Code NXG

city, town Washington state D.C. 20546

6. Representation in Existing Surveys

title Historic Properties Report (Draft) has this property been determined eligible? ___ yes ___ no

date July 1983 X federal ___ state ___ county ___ local

depository for survey records U.S. Army Redstone Arsenal

city, town Huntsville state Alabama

7. Description

Condition		Check one	Check one
X excellent	___ deteriorated	X unaltered	X original site
___ good	___ ruins	___ altered	___ moved date _____
___ fair	___ unexposed		

Describe the present and original (if known) physical appearance

The Neutral Buoyancy Simulator is in Building 4705 at the Marshall Space Flight Center in Huntsville, Alabama. A large water tank, 75 feet in diameter and 40 feet deep is the heart of the simulator. The water within the simulator is temperature controlled, continuously recirculated, and filtered. There are four observation levels with portholes to view activities within the simulator. An elevator serves all four observation levels. Special systems are integrated into the tank for underwater audio and video, pressure-suit environmental control, and emergency rescue and treatment. Life support is simultaneously provided by these systems for up to four pressure-suited subjects. Additional systems include data acquisition and recording, underwater lighting, special underwater pneumatic and electrical power operations of motor, valves, controls, and indicators that are required for high fidelity, and functional engineering mockups and trainers.

Adjacent to the Neutral Buoyancy Simulator is a completely equipped test control area for directing, controlling, and monitoring simulation activities in the Neutral Buoyancy Simulator. An annex contains the operating crew dressing and shower area.[1]

Footnotes

1. George C. Marshall Space Flight Center Master Plan (Washington, D.C.: National Aeronautics and Space Administration, 1980), p.31.

8. Significance

Period	Areas of Significance—Check and justify below			
___ prehistoric	___ archeology-prehistoric	___ community planning	___ landscape architecture	___ religion
___ 1400–1499	___ archeology-historic	___ conservation	___ law	___ science
___ 1500–1599	___ agriculture	___ economics	___ literature	___ sculpture
___ 1600–1699	___ architecture	___ education	___ military	___ social/ humanitarian
___ 1700–1799	___ art	X engineering	___ music	___ theater
___ 1800–1899	___ commerce	___ exploration/settlement	___ philosophy	___ transportation
X 1900–	___ communications	___ industry	___ politics/government	X other (specify) Space Exploration
		___ invention		

Specific dates 1955-Present **Builder/Architect** U.S. Army, NASA

Statement of Significance (in one paragraph)

The Neutral Buoyancy Simulator was constructed in 1955 by the Army at the Redstone Arsenal. It was designed to provide a simulated zero-gravity environment in which engineers, designers, and astronauts could perform, for extended periods of time, the various phases of research needed to gain first hand knowledge concerning design and operation problems associated with working in the zero-gravity environment of space. Because of this capability to support research and testing of operational techniques and materials needed to successfully performed manned space missions the Neutral Buoyancy Simulator contributed significantly to the American manned space program especially Projects Gemini, Apollo, Skylab, and the Space Shuttle. The Neutral Buoyancy Simulator is a facility that is unique within the NASA inventory of training facilities. Until the mid-1970s, when an additional facility was constructed at the Johnson Space Flight Center to support the Space Shuttle Program, this facility was the only test facility that allowed astronauts to become familiar with the dynamics of body motion under weightless conditions.

The Neutral Buoyancy Simulator is on the NASA public tour of the Marshall Space Flight Center and is interpreted to the public.

Bibliography

Brooks, Courtney G., Grimwood, James M., and Swenson, Loyd S. Chariots for Apollo: A History of Manned Lunar Spacecraft. Washington, D.C.: National Aeronautics and Space Administration, 1979.

Draft Historic Properties Report Redstone Arsenal, Alabama with the George C. Marshall Space Flight Center. Silver Spring, Maryland: Building Technology Incorporated, 1983.

Master Plan George C. Marshall Space Flight Center. Washington, D.C.: National Aeronautics and Space Administration, 1980.

Technical Facilities Catalog Vol. lll. Washington, D.C.: National Aeronautics and Space Administration, 1974.

9. Major Bibliographical References

See continuation sheets

10. Geographical Data

Acreage of nominated property Less than 1 acre

Quadrangle name Madison

Quadrangle scale 1:24,000

UMT References

	Zone	Easting	Northing
A	16	529500	3834500
B			
C			
D			
E			
F			
G			
H			

Verbal boundary description and justification

The boundary of the Neutral Buoyancy Simulator is defined by the outside perimeter of Building 4705 at the Marshall Space Flight Center

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 Harry A. Butowsky

organization National Park Service **date** May 15, 1984

street & number Division of History **telephone** (202) 343-8168

city or town Washington, D.D. 20240 **state**

12. State Historic Preservation Officer Certification

The evaluated significance of this property within the state is:

____ national ____ state ____ local

As the designated State Historic Preservation Officer for the National Historic Preservation Act of 1966 (Public Law 89-665), I hereby nominate this property for inclusion in the National Register and certify that it has been evaluated according to the criteria and procedures set forth by the National Park Service.

State Historic Preservation Officer signature

title date

For NPS use only

I hereby certify that this property is included in the National Register

date

Keeper of the National Register

Attest: date

Chief of Registration