United States Department of the Interior
National Park Service

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

city, town Huntsville

county Madison

3. Classification

Category

Ownership

X public

X building(s)

X structure

X site

X object

Status

X occupied

X unoccupied

X work in progress

Accessible

X yes: restricted

X yes: unrestricted

X no

Present Use

X agriculture

X commercial

X educational

X entertainment

X government

X industrial

X military

X museum

X park

X private residence

X religious

X scientific

X transportation

X other: Space Exploration

4. Owner of Property

name National Aeronautics and Space Administration (NASA)

street & number

city, town Washington

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

depository for survey records U.S. Army Redstone Arsenal

state Alabama
7. Description

<table>
<thead>
<tr>
<th>Condition</th>
<th>Check one</th>
<th>Check one</th>
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</thead>
<tbody>
<tr>
<td>X excellent</td>
<td>X unaltered</td>
<td>X original site</td>
</tr>
<tr>
<td>___ good</td>
<td>___ altered</td>
<td>___ moved</td>
</tr>
<tr>
<td>___ fair</td>
<td>___ unexposed</td>
<td>date</td>
</tr>
</tbody>
</table>

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

8. Significance

<table>
<thead>
<tr>
<th>Period</th>
<th>Areas of Significance—Check and justify below</th>
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<tbody>
<tr>
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<td></td>
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<td>X engineering</td>
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<td>X invention</td>
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<td>X invention</td>
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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


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

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<tr>
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</table>

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

<table>
<thead>
<tr>
<th>state</th>
<th>code</th>
<th>county</th>
<th>code</th>
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</table>

11. Form Prepared By

name/title: Harry A. Butowsky

organization: National Park Service

date: May 15, 1984

telephone: (202) 343-8168

city or town: Washington, D.C. 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