

United States Department of the Interior  
National Park Service

For NPS use only

National Register of Historic Places  
Inventory—Nomination Form

received

date entered

See instructions in *How to Complete National Register Forms*

Type all entries—complete applicable sections

1. Name

historic Attitude Control Test Facility

and/or common Spacecraft Magnetic Test Facility

2. Location

street & number Goddard Space Flight Center

not for publication

city, town Greenbelt

vicinity of

congressional district

state Maryland

code 24

county Prince Georges

code 033

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 type="checkbox"/> unoccupied	<input type="checkbox"/> commercial	<input type="checkbox"/> park
<input checked="" type="checkbox"/> structure	<input type="checkbox"/> both	<input type="checkbox"/> work in progress	<input type="checkbox"/> educational	<input type="checkbox"/> private residence
<input type="checkbox"/> site	<b>Public Acquisition</b>	<b>Accessible</b>	<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 type="checkbox"/> military	<input checked="" type="checkbox"/> 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 None

has this property been determined eligible?  yes  no

date  federal  state  county  local

depository for survey records

city, town

state

# 7. Description

<b>Condition</b>		<b>Check one</b>	<b>Check one</b>
<input checked="" type="checkbox"/> excellent	<input type="checkbox"/> deteriorated	<input checked="" type="checkbox"/> unaltered	<input checked="" type="checkbox"/> original site
<input type="checkbox"/> good	<input type="checkbox"/> ruins	<input type="checkbox"/> altered	<input type="checkbox"/> moved
<input type="checkbox"/> fair	<input type="checkbox"/> unexposed		date _____

**Describe the present and original (if known) physical appearance**

The Spacecraft Magnetic Test Facility was built in 1966 and consists of a 60-foot square building constructed of nonmagnetic materials, which contains a 42-foot-diameter coil system. The coil, a 3-axis Braunbek system of 4 loops on each axis, provides cancellation of the earth's magnetic field over the central 6-foot-diameter spherical volume, uniform to 0.001% and stable to a half nanotesla. Geomagnetic fluctuations up to 16 Hz and + 750 nanoteslas are eliminated by automatic servo-control from 3 remotely-located rubidium magnetometers. The coil can generate a stable artificial field from zero to 60,000 nanoteslas in steps of 0.1 nanotesla. The artificial magnetic vector can be rotated about any axis at rates of zero to 100 rad/sec.

Accessories include nonmagnetic tracks and dollies to transport the test item in and out of the coil system, and an 8 foot-diameter powered turntable at the coil center for positioning the test item, 9 foot-5 inch Helmholtz coils to provide dc and ac field exposure up to  $50 \times 10^{-4}$  tesla for perm and deperm treatment, and a sensitive nonmagnetic torquemeter capable of measuring magnetic torques of  $10 \times 10^{-7}$  Nm on test items weighing up to 4000 kg.

The coil building is about 2 miles east of the Goddard Space Flight Center. Access is through a truck lock with doors 14 feet by 15 feet high. Material handling is accomplished with a 3-ton monorail hoist in the truck lock and 5000-pound-capacity fixed location hoists on the coil center line and outside the coil. The coil has a 10 foot-3 inch square opening and a clear interior work space 25 feet in diameter x 17 feet-6 inches high. The coil building is air-conditioned to maintain the dew point at 50°F or less. Cleanliness is maintained by passing all air introduced into the building through a bank of HEPA (high-efficiency particulate air) filters. A recirculating air system to maintain a higher degree of contamination control in the work space is available.<sup>1</sup>

# 8. Significance

<b>Period</b>	<b>Areas of Significance—Check and justify below</b>			
<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 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 checked="" 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 checked="" type="checkbox"/> other (specify) Space Exploration
	<input type="checkbox"/> invention			

**Specific dates** 1966-Present      **Builder/Architect** NASA

**Statement of Significance (in one paragraph)**

The Spacecraft Magnetic Test facility is the only facility in NASA's inventory that makes it possible to determine and to minimize the magnetic movement of even the largest unmanned spacecraft and observatories and thereby reduce unwanted torques due to the interaction of magnetic movement with magnetic vector. The limited evaluation of magnetic control systems is also possible as is the final calibration of precision flight magnetometers in orbital configuration.<sup>2</sup>

Without the use of the Spacecraft Magnetic Test facility and information it provides in the testing of large satellites, the United States would be unable to successfully orbit and maintain the large variety of satellites that have provided information on weather, communications, earth resources and many other fields. The use and operation of this facility is essential to the continuing success of the American Manned and Unmanned Space program. The Spacecraft Magnetic Test facility is unique and is not replicated anywhere else in the United States.

# 9. Major Bibliographical References

See continuation sheets

# 10. Geographical Data

Acreeage of nominated property Less than 1 acre

Quadrangle name Laurel

Quadrangle scale 1:24,000

### UMT References

A 

1	8	3	4	1	9	4	0	4	3	1	8	9	0	0
Zone			Easting				Northing							

B 

Zone			Easting				Northing							

C 

Zone			Easting				Northing							

D 

Zone			Easting				Northing							

E 

Zone			Easting				Northing							

F 

Zone			Easting				Northing							

G 

Zone			Easting				Northing							

H 

Zone			Easting				Northing							

### Verbal boundary description and justification

The boundary of the Spacecraft Magnetic Test Facility is defined by the outside perimeter of building 310-20 at the Goddard Space Flight Center.

### List all states and counties for properties overlapping state or county boundaries

state	code	county	code
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state	code	county	code
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# 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.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 \_\_\_\_\_

Chief of Registration

**United States Department of the Interior  
National Park Service**

**National Register of Historic Places  
Inventory—Nomination Form**



Continuation sheet

item number 7, 8

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Footnotes

1. Technical Facilities Catalog Vol. 1 (Washington, D.C.: National Aeronautics and Space Administration, October, 1974), p. 5-15.
2. Technical Facilities Catalog Vol. 1 (Washington, D.C.: National Aeronautics and Space Administration, March, 1967), pp. 7-16, 7-17.

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Continuation sheet

Item number

9

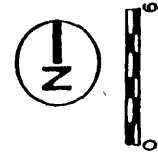
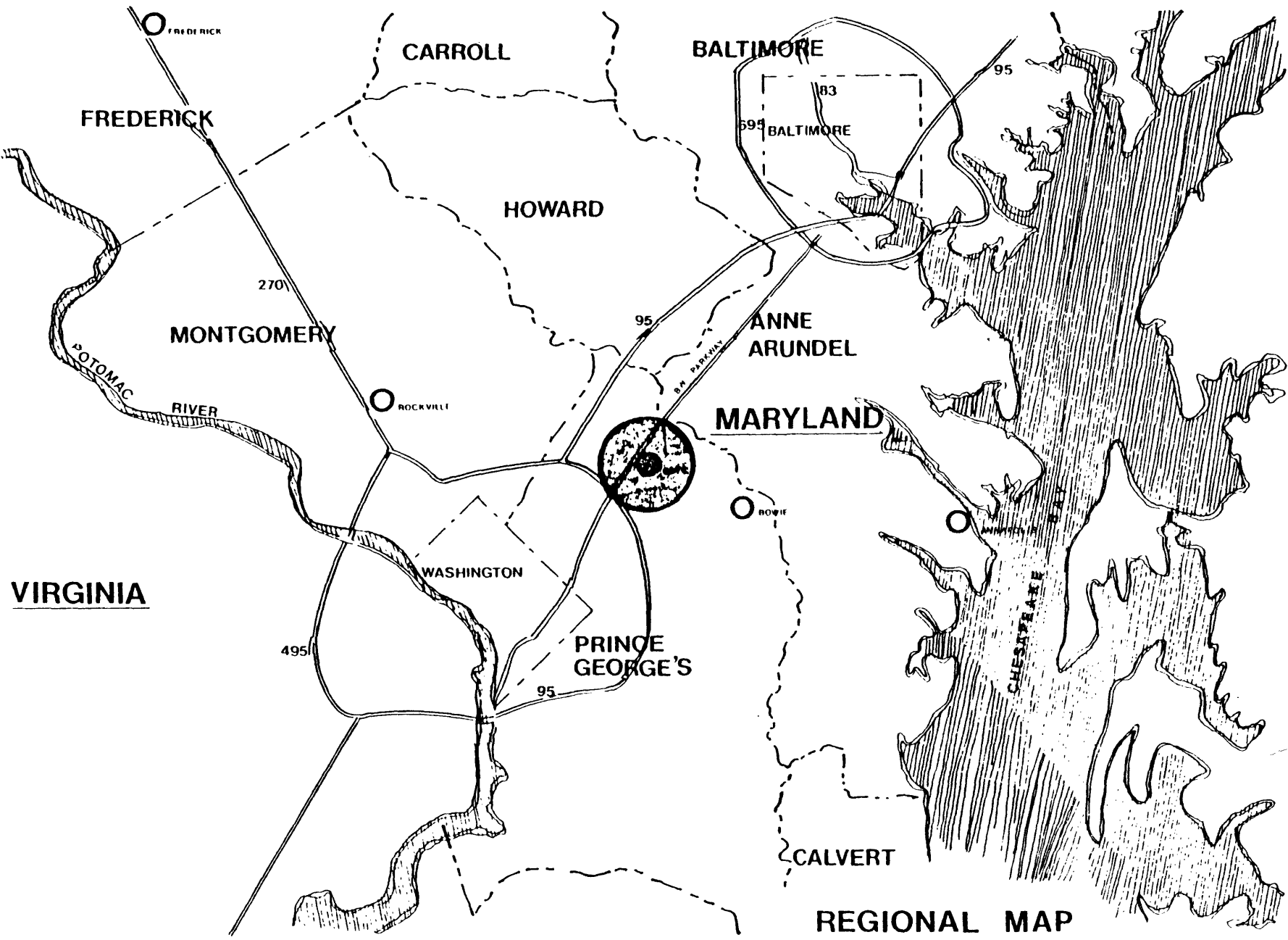
Page 1

Bibliography

Boyle, J.C. Lunar Roving Vehicle Magnetic Test X-325-72. Greenbelt, Maryland:  
Goddard Space Flight Center, October 1971.

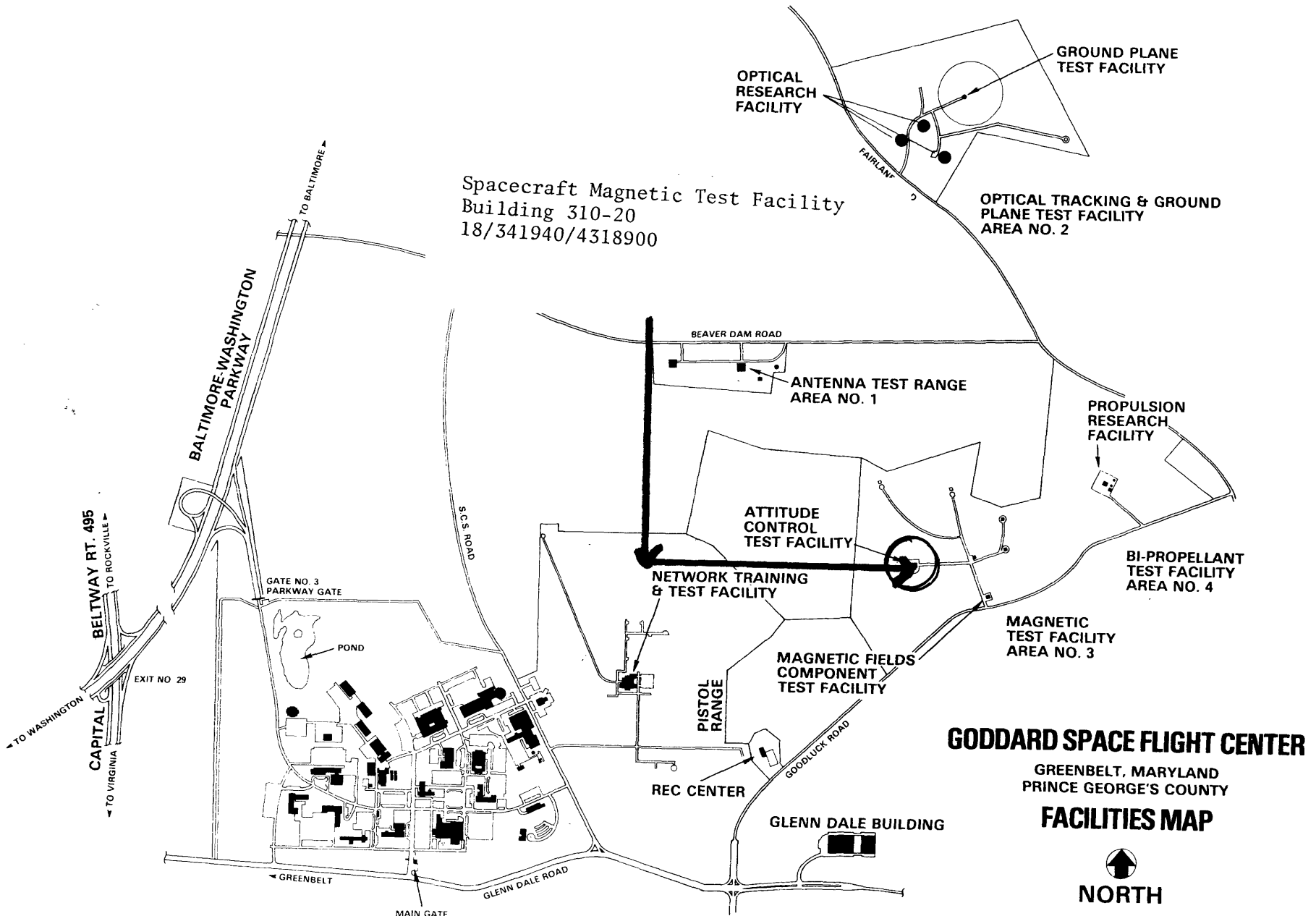
Technical Facilities Catalog Vol. 1. Washington, D.C.: National Aeronautics  
and Space Administration, March 1967.

Technical Facilities Catalog Vol. 1. Washington, D.C.: National Aeronautics  
and Space Administration, October 1974.



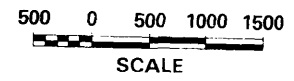
GODDARD SPACE FLIGHT CENTER  
 GREENBELT, MARYLAND 20770





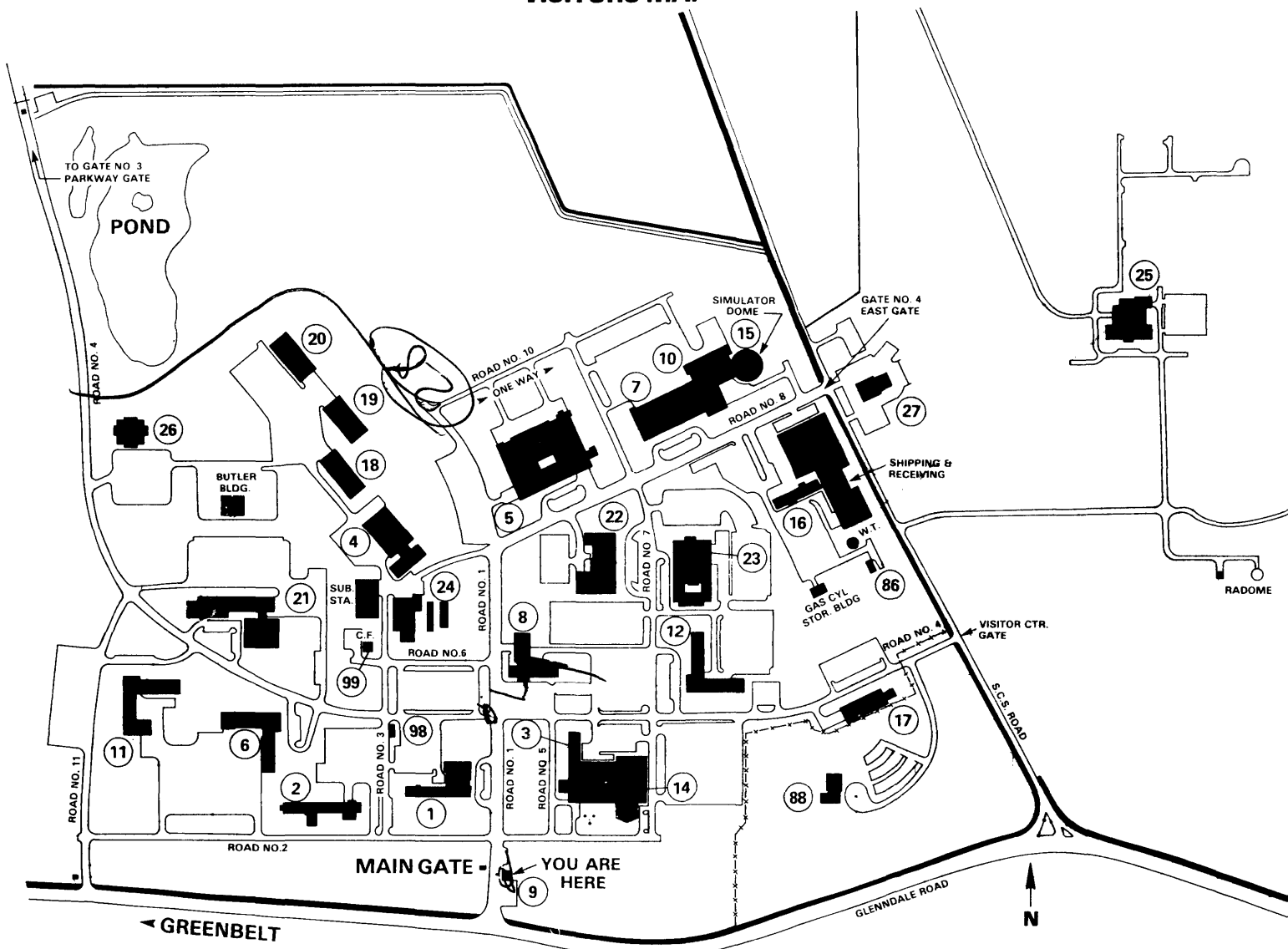
Spacecraft Magnetic Test Facility  
 Building 310-20  
 18/341940/4318900

**GODDARD SPACE FLIGHT CENTER**  
 GREENBELT, MARYLAND  
 PRINCE GEORGE'S COUNTY  
**FACILITIES MAP**





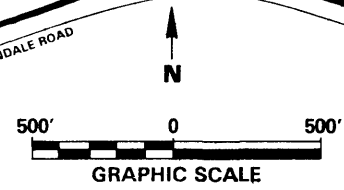
# GODDARD SPACE FLIGHT CENTER VISITORS MAP



- 1 SECURITY AND ID SECTION  
SPACE PROJECTS BUILDING—CAFETERIA,  
PERSONNEL, TRAVEL
- 2 RESEARCH PROJECTS LABORATORY
- 3 CENTRAL FLIGHT CONTROL AND RANGE  
OPERATIONS LABORATORY
- 4 GENERAL PURPOSE FACILITY BUILDING  
D.O.M.D.
- 5 INSTRUMENT CONSTRUCTION AND—  
INSTALLATION LABORATORY,  
HEALTH UNIT
- 6 SPACE SCIENCES LABORATORY
- 7 PAYLOAD TESTING FACILITY
- 8 SATELLITE SYSTEMS BUILDING
- 9 GATE HOUSE
- 10 ENVIRONMENTAL TESTING LABORATORY
- 11 APPLIED SCIENCES LABORATORY
- 12 TRACKING AND TELEMETRY LABORATORY
- 14 SPACECRAFT OPERATIONS FACILITY  
(SPACE EXHIBITS)
- 15 LAUNCH PHASE SIMULATOR
- 16 DEVELOPMENT OPERATIONS BUILDING
- 17 MULTI-PURPOSE BUILDING—BID ROOM,  
BANK, SAFETY OFFICE F.E.D.
- 18 BUSINESS OPERATIONS BUILDING
- 19 MULTI-PURPOSE BUILDING
- 20 GEOCHEMISTRY LABORATORY  
(MAIL RM. & CLASS RM.)
- 21 METEOROLOGICAL SYSTEMS—  
DEVELOPMENT LABORATORY  
CAFETERIA, LIBRARY, CREDIT UNION
- 22 TECHNOLOGY LABORATORY
- 23 DATA INTERPRETATION LABORATORY
- 24 CENTRAL HEATING AND REFRIGERATION  
PLANT
- 25 NETWORK TRAINING AND TEST FACILITY
- 26 NASA SPACE SCIENCE DATA CENTER
- 27 TRANSPORTATION CNTR.
- 86 CHILD DAY CARE CENTER
- 88 VISITOR CENTER
- 98 GEWA
- 99 OFFICE OF EXECUTIVE DEVELOPMENT &  
CAREER COUNSELING CENTER

**MAIN GATE-OPEN 24 HOURS • 7 DAYS A WEEK**

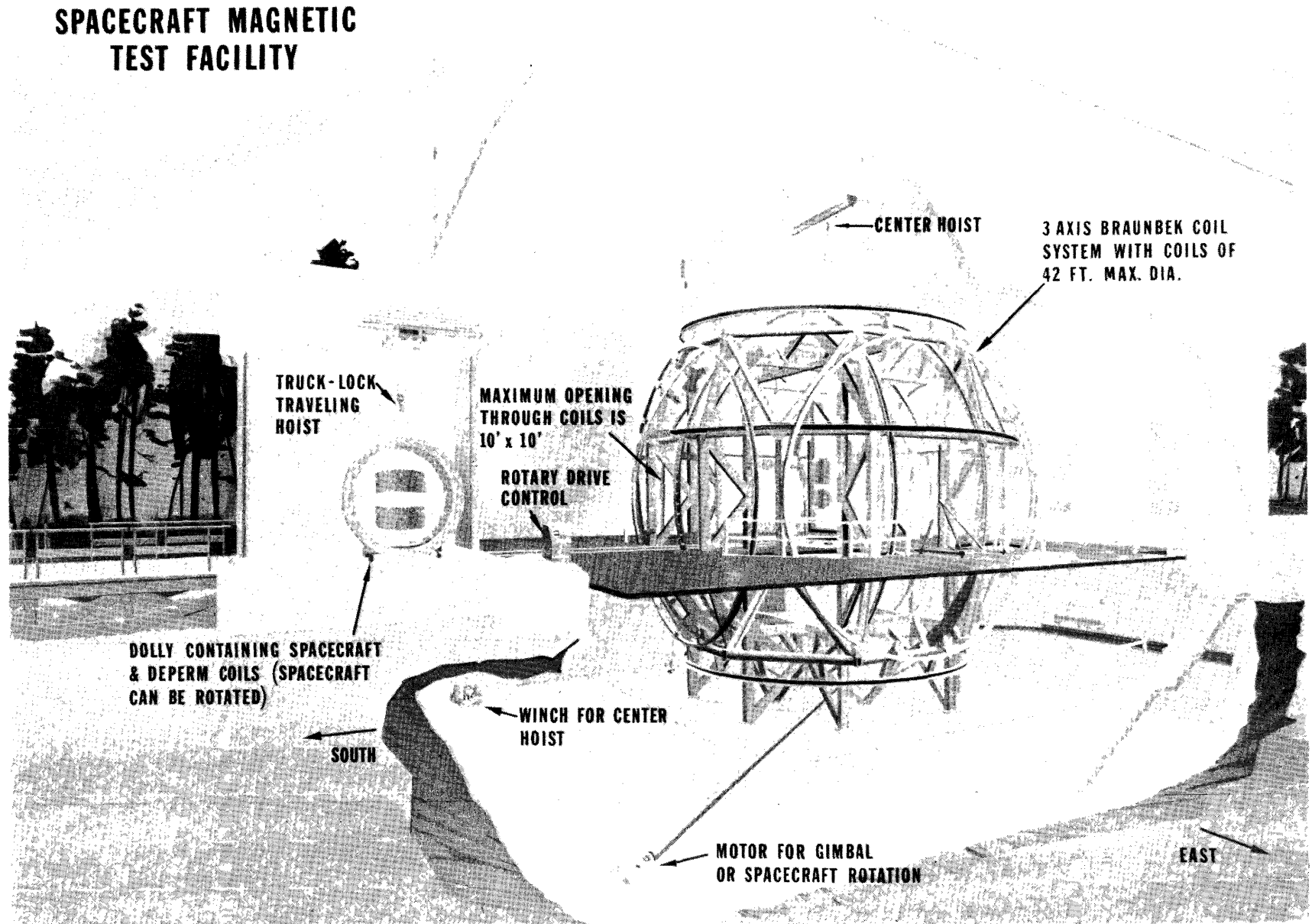
**PARKWAY GATE  
EAST GATE  
(TRUCK ENTRANCE) } OPEN 6A.M.—7P.M. • MON.-FRI. ONLY  
CLOSED HOLIDAYS**



# SPACECRAFT MAGNETIC TEST FACILITY

Photo # 76  
407

top



TRUCK-LOCK TRAVELING HOIST

MAXIMUM OPENING THROUGH COILS IS 10' x 10'

ROTARY DRIVE CONTROL

CENTER HOIST

3 AXIS BRAUNBEK COIL SYSTEM WITH COILS OF 42 FT. MAX. DIA.

DOLLY CONTAINING SPACECRAFT & DEPERM COILS (SPACECRAFT CAN BE ROTATED)

WINCH FOR CENTER HOIST

SOUTH

MOTOR FOR GIMBAL OR SPACECRAFT ROTATION

EAST

1. Spacecraft Magnetic Test Facility
2. Greenbelt, Maryland
3. NASA
4. 1971
5. NASA, Goddard Space Flight Center Facilities Office
6. Cutaway View of Spacecraft Magnetic Test Facility
7. 66