FINAL

Environmental Assessment

Modification and Operation of Test Stand 4550 in Support of Integrated Vehicle Ground Vibration Testing for the Constellation Program
Marshall Space Flight Center

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Prepared for:

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Huntsville, Alabama

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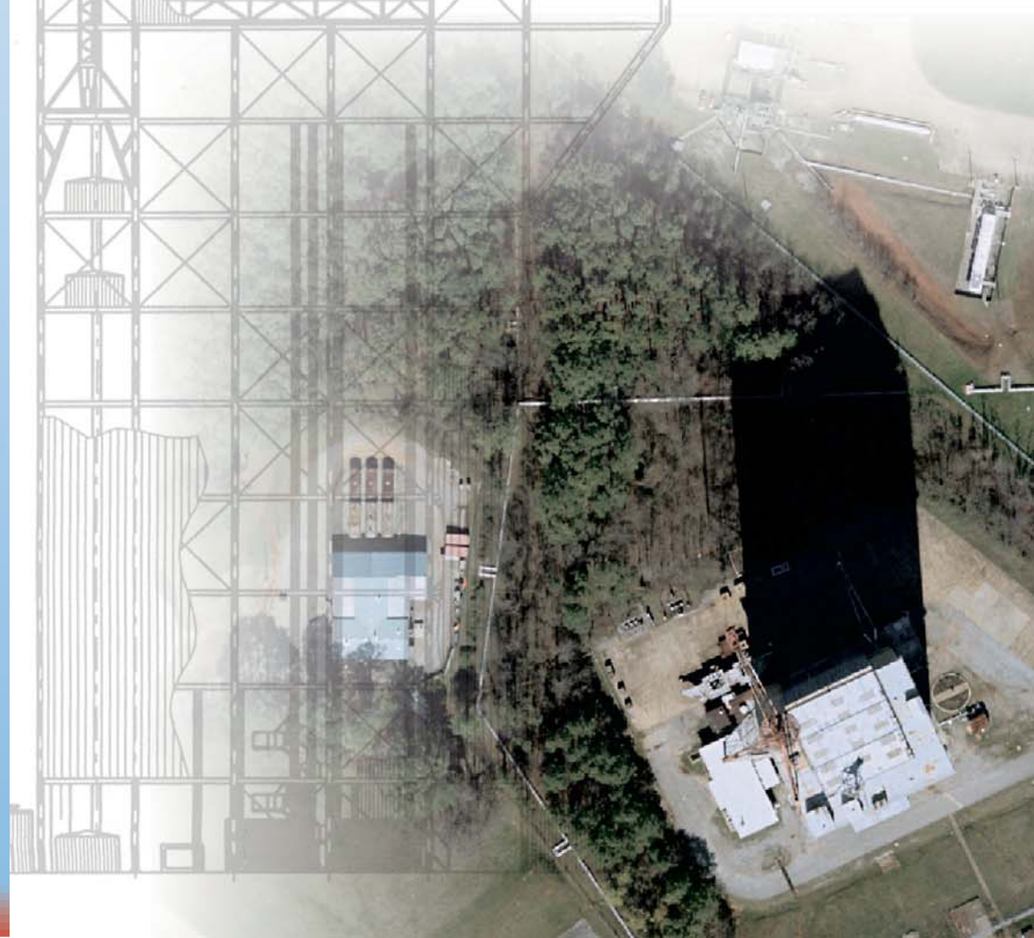

ENVIRONMENTAL ASSESSMENT

MODIFICATION AND OPERATION OF TEST STAND 4550 IN SUPPORT OF INTEGRATED VEHICLE GROUND VIBRATION TESTING FOR THE CONSTELLATION PROGRAM GEORGE C. MARSHALL SPACE FLIGHT CENTER

NATIONAL AERONAUTICS AND SPACE ADMINSTRATION

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Environmental Assessment Organization

This Environmental Assessment addresses the National Aeronautics and Space Administration's Proposed Action to modify and operate Test Stand 4550 at George C. Marshall Space Flight Center in Huntsville, Alabama in support of Integrated Vehicle Ground Vibration Testing for the Constellation Program. As required by 32 Code of Federal Regulations 651 and the National Environmental Policy Act, the potential effects of implementing this action are analyzed.

The ***EXECUTIVE SUMMARY*** provides a summary of the Proposed Action, alternatives to the Proposed Action, and conclusions of the EA.

A ***LIST OF ACRONYMS*** is provided immediately following the Table of Contents.

SECTION 1: ***PURPOSE OF AND NEED FOR THE PROPOSED ACTION*** provides an introduction and background, summarizes the purpose of and need for the Proposed Action, discusses the scope of the document, and identifies the resources considered but eliminated from further analysis.

SECTION 2: ***DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES*** describes the Proposed Action and the alternatives to the Proposed Action.

SECTION 3: ***AFFECTED ENVIRONMENT*** describes the existing conditions of each resource for which the Proposed Action and alternatives to the Proposed Action are evaluated.

SECTION 4: ***ENVIRONMENTAL CONSEQUENCES*** presents the potential effects of implementing the Proposed Action and alternatives to the Proposed Action on the resources described in Section 3, as well as mitigation measures.

SECTION 5: ***SUMMARY OF ENVIRONEMENTAL CONSEQUENCES AND CONCLUSIONS*** presents a tabulated summary of the potential consequences of the Proposed Action and No-Action Alternative and also presents the conclusions of the Environmental Assessment.

SECTION 6: ***REFERENCES*** presents bibliographical information about the sources used to prepare the Environmental Assessment.

SECTION 7: ***LIST OF PREPARERS*** provides information about the persons who prepared the Environmental Assessment

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Acronyms

ACHP	Advisory Council on Historic Preservation
ADCNR	Alabama Department of Conservation and Natural Resources
ADEM	Alabama Department of Environmental Management
ANHP	Alabama Natural Heritage Program
AST	aboveground storage tank
BMPs	best management practices
CAA	Clean Air Act
CaLV	Cargo Launch Vehicle (also known as Ares V)
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CEV	Crew Exploration Vehicle (also known as Orion)
CFR	*Code of Federal Regulations*
CLV	Crew Launch Vehicle (also known as Ares I)
CO	carbon monoxide
CT	Census Tract
CTC	carbon tetrachloride
CVOC	chlorinated volatile organic compound
dBA	A-weighted scale
DCE	dichloroethene
DNL	Day-Night Average A-Weighted Sound Level
EA	Environmental Assessment
EEOH	Environmental Engineering and Occupational Health
EHS	extremely hazardous substance
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency
EPCRA	Emergency Planning and Community Right-to-Know Act
ESA	Endangered Species Act
ESC	Environmental Support Contractor
FEMA	Federal Emergency Management Agency
FIFCFS	Federal Interagency Forum on Child and Family Statistics
FIRM	Flood Insurance Rate Map
HABS-HAER	Historic American Buildings Survey-Historic American Engineering Record
HEMSI	Huntsville Emergency Medical Services, Inc.
HMA	Huntsville Metropolitan Area
HWSF	Hazardous Waste Storage Facility
ILS	Instrument Landing System
IVGVT	Integrated Vehicle Ground Vibration Testing
ISS	International Space Station
IWTF	Industrial Wastewater Treatment Facility
kV	kilovolt
LBP	lead-base paint

MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
MSFC	Marshall Space Flight Center
msl	mean sea level
NAAQS	National Ambient Air Quality Standards
NASA	National Aeronautics and Space Administration
NCSHPO	National Conference of State Historic Preservation Officers
NEPA	National Environmental Policy Act
NHL	National Historic Landmark
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOx	nitrogen oxide
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
NRHP	Natural Register of Historic Places
NPR	NASA Procedural Requirements
OSHA	Occupational Safety and Health Administration
OU	Operable Unit
P.L.	Public Law
P2	Pollution Prevention
PCA	tetrachloroethane
PCB	polychlorinated biphenyl
PCE	tetrachloroethene
PM	particulate matter
RCRA	Resource Conservation and Recovery Act
RI	Remedial Investigation
RSA	Redstone Arsenal
SHPO	State Historic Preservation Officer
TCE	trichloroethene
TPQ	Threshold planning quantity
TSDF	Treatment, Storage, and Disposal Facility
TVA	Tennessee Valley Authority
U.S.C.	United States Code
UAH	University of Alabama–Huntsville
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish & Wildlife Service
UST	underground storage tank
UXO	unexploded ordnance
VOC	volatile organic compound
WNWR	Wheeler National Wildlife Refuge

Executive Summary

Introduction

The National Aeronautics and Space Administration (NASA) proposes to modify and operate Test Stand (TS) 4550 at George C. Marshall Space Flight Center (MSFC) in Huntsville, Alabama to conduct Integrated Vehicle Ground Vibration Testing (IVGVT) for the proposed Constellation Program. The Constellation Program is proposed to succeed the Space Shuttle Program which would be phased out by 2010. IVGVT would be conducted at TS 4550 to provide test data to support design certification review, launch, flight, and human-rating of the Ares I, also known as the Crew Launch Vehicle (CLV). The Ares I is an integrated, stacked vehicle that consists of two primary elements: a solid fueled First Stage Booster and a liquid fueled Upper Stage. The Ares I will carry to orbit the Orion payload, also known as the Crew Exploration Vehicle (CEV).

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 *Code of Federal Regulations* [CFR] Parts 1500 through 1508), and NASA regulations (14 CFR Part 1216 Subpart 1216.3). The outline and content of the EA are consistent with NASA Procedural Requirements (NPR) 8580.1 for implementing NEPA and Executive Order (EO) 12114.

Proposed Action

IVGVT at TS 4550 would provide test data to experimentally anchor and validate structural and controls analysis models used in the design of the Ares I. IVGVT would be conducted on test articles specified and built to represent actual flight hardware. TS 4550 was used to conduct ground vibration testing for several other past NASA programs such as the Saturn and Space Shuttle programs. IVGVT would be conducted on the entire Orion launch stack at various flight trajectory configurations.

The proposed modification of TS 4550 would involve upgrading utility and mechanical systems and remodeling the test position infrastructure within the interior of the building. Interior remodeling would also include construction of data acquisition centers, storage rooms, and security features. The exterior walls and support structure of TS 4550 would not require any architectural modifications.

Utility and mechanical system upgrades would include refurbishment of existing systems and installation of new systems required for IVGVT. Systems that require upgrades include electrical power, lighting, communications, air conditioning and heating, hydraulic, plumbing, water (cooling, potable, distilled, and de-ionized), fire protection, and special gas supply (nitrogen and helium).

Three discrete test positions would be constructed within TS 4550 to conduct IVGVT on test articles at various flight trajectory configurations. Two test positions would be used to test the entire Orion launch stack. Test Position #1 would be used to test the Orion launch stack at lift-off conditions which consists of a First Stage filled with inert propellant, an Upper Stage, and the Orion payload. Test Position #2 would be used to test the Orion I launch stack with a First Stage empty of propellant which represents the burnout phase just prior to when the First Stage separates from the Upper Stage. Test Position #3 would be dedicated to testing the Upper Stage with its Orion payload at four critical flight trajectory configurations.

Alternatives to the Proposed Action

During preliminary planning, NASA evaluated constructing a new IVGVT test stand as a potential alternative to modifying TS 4550 to support the Constellation Program. TS 4550 is the only facility that has been used by NASA to conduct ground vibration testing of vertically-stacked, large launch vehicles; therefore, the modification of a different facility was not evaluated as a potential alternative to the Proposed Action.

Based on the general infrastructure construction, planning, design, and environmental permitting that would be required, the cost of constructing a new IVGVT test stand at any site would be significantly more than the cost of modifying TS 4550. In addition to its considerable cost, constructing a new IVGVT test stand at MSFC or at some other NASA Center would be complicated by space and environmental constraints. Suitable sites for development at MSFC and other NASA Centers are limited and new construction must be consistent with planning policy to seek opportunities to remodel existing infrastructure. In general, new construction also has a greater potential for environmental impacts than the remodeling of existing infrastructure. The availability of TS 4550 and its suitability to be remodeled was considered a significant advantage over the alternative of constructing a new IVGVT test stand. For these reasons, the potential alternative of constructing a new IVGVT test stand was rejected as a reasonable alternative to the Proposed Action of modifying and operating TS 4550.

The No-Action Alternative is to maintain existing conditions, i.e., not to modify or operate TS 4550 to conduct IVGVT for the Constellation Program. Under the No-Action Alternative, TS 4550 would remain inactive unless it is used in its current state to support the remainder of the Space Shuttle Program, for which it was last modified and operated.

Affected Environment

This EA assesses the potential impacts associated with the modification and operation of TS 4550 at MSFC on the following resources: land use, air quality, noise, topography, geology, soils, water resources, biological resources, cultural resources, socioeconomic resources, environmental justice, protection of children, infrastructure, and hazardous/toxic materials and wastes. Baseline conditions for these resources are described as the affected environment in Section 3 of this EA.

Environmental Consequences

The potential impacts that the Proposed Action would have on air quality and noise would be short-term and temporary, and are expected to be minor. Based on the type and condition of the habitat at and around the TS 4550 site, the Proposed Action would have a minimal impact on wildlife.

TS 4550 is listed in the National Register of Historic Places (NRHP) and is designated a National Historic Landmark (NHL), as being representative of "Man in Space." The proposed upgrades and refurbishments would improve the structural integrity of TS 4550 and the reuse of the building to support another NASA program would add historical significance to the structure. MSFC is currently preparing Level II Historic American Buildings Survey-Historic American Engineering Record (HABS-HAER) documentation for TS 4550. The Alabama State Historic Preservation Officer (SHPO) has determined that the HABS-HAER documentation would serve as adequate mitigation for the proposed modifications.

Modification and operation of TS 4550 under the Proposed Action would not require permanent personnel relocations or employee hires. Expenditures for construction-related materials and supplies would have a small, short term, beneficial effect on the economy of the region. Operation of TS 4550 would increase energy consumption at MSFC; however, the increase in energy demand would not overburden the energy utility system of the Center. Modification of TS 4550 would temporarily increase traffic in the area during construction; however, the projected increase is not expected to significantly burden the road system at or around MSFC.

TS 4550 contains lead-based paint (LBP). LBP management would be conducted by the MSFC Environmental Engineering and Occupational Health Office during the modification and operation of TS 4550 in accordance with all applicable federal, state, local, and NASA regulations and policies. Workers in TS 4550 would follow Occupational Safety and Health Administration standards and procedures and the project safety representative would ensure that all LBP safety measures are implemented. The TS 4550 site is located near an area that has been designated as having an "occasional" probability for Munitions and Explosives of Concern (MEC). A MEC sweep would be conducted at the site as a precautionary measure before the commencement of any construction activity. Any MEC that is identified would be appropriately removed and disposed of. Construction activities would be allowed to proceed only after the site is determined by MSFC officials to be safe from potential MEC hazards.

The Proposed Action would have little potential to interact with any past, present, or reasonably foreseeable future actions at or outside MSFC. The coupling of the Proposed Action with the planned development projects identified in the MSFC Master Plan is not expected to result in adverse cumulative impacts to any resource based on their locations, schedules, and respectively low direct/indirect impact potentials. Because the Proposed Action would allow MSFC to support IVGVT for the Constellation Program and provide critical test data for the design of the launch vehicle system, it would have positive cumulative impacts on operations at MSFC and the mission of NASA.

Under the No-Action Alternative, MSFC would not be able to support IVGVT for the Constellation Program and provide critical test data for the design of the launch vehicle system. As such, the No-Action Alternative would negatively impact operations at MSFC and the mission of NASA.

Conclusions

Based on the findings of this EA, the Proposed Action would not have a significant impact on the quality of the human or natural environment. The only mitigation measure that has been determined to be necessary for the Proposed Action is the preparation of HABS-HAER documentation for the proposed modifications to TS 4550. This EA supports a Finding of No Significant Impact for the Proposed Action. Accordingly, preparation of an Environmental Impact Statement is not required.

SECTION 1

Purpose of and Need for Proposed Action

1.1 Introduction

The National Aeronautics and Space Administration (NASA) proposes to modify and operate Test Stand (TS) 4550 at George C. Marshall Space Flight Center (MSFC) in Huntsville, Alabama to conduct Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program. IVGVT will be used to determine the structural dynamic behavior of the Constellation Program's launch vehicles at critical points in their flight, such as at lift-off, stage separations, and other flight events. IVGVT will also be used to validate the controls systems design models.

This Environmental Assessment (EA) has been prepared in compliance with the National Environmental Policy Act of 1969 (NEPA), as amended (42 United States Code [U.S.C.] 4321 et seq.), the Council on Environmental Quality Regulations for Implementing the Procedural Provisions of NEPA (40 *Code of Federal Regulations* [CFR] Parts 1500 through 1508), and National Aeronautics and Space Administration (NASA) regulations (14 CFR Part 1216 Subpart 1216.3). The outline and content of the EA are consistent with NASA Procedural Requirements (NPR) 8580.1 for implementing NEPA and Executive Order (EO) 12114.

1.2 Background

NASA has embarked on a program for exploration of the Moon, Mars, and beyond (NASA 2004). The completion of the International Space Station (ISS) and retirement of the Space Shuttle fleet by 2010 necessitate an innovative plan and program to fulfill the goals of human space exploration as established by the President and expressly endorsed by Congress in the NASA Authorization Act of 2005 (Pub. L. 109-155). NASA's Constellation Program, a family of new spacecraft, launchers, and associated hardware, will meet Presidential and Congressional directives and facilitate a variety of human and robotic missions, from ISS re-supply to lunar and planetary landings.

The new crew transportation system, which uses both Earth Orbit Rendezvous and Lunar Orbit Rendezvous techniques, can be categorized into three parts: The Orion Crew and Service Modules, the Lunar Surface Access Module (Lunar Lander), and the Earth Departure Stage. The rockets to be used for launching the different components consist initially of the Ares I, also known as the Crew Launch Vehicle (CLV) and later the Ares V, also known as the Cargo Launch Vehicle (CaLV).

1.3 Purpose and Need

MSFC has a unique role in the pursuit of NASA's mission. MSFC serves as NASA's Propulsion Development Center and would serve as the lead Center for the Ares Project. The Constellation Program is planned as NASA's predominant mechanism for human

exploration and utilization of space once the Space Shuttle program is retired. MSFC's participation in the Constellation Program is fundamental and will include design, development, and testing of the Constellation Program's launch vehicles, Ares I and Ares V. One aspect of this development will be to conduct IVGVT on launch vehicle test articles at TS 4550 to provide test data to support design certification review, launch, flight, and human-rating of the launch vehicle system. IVGVT is needed to generate the data required to anchor and verify structural analysis models used in the design of the launch vehicle components.

The Constellation Program would be completed in phases over several decades. A Programmatic Environmental Impact Statement (EIS) Notice of Intent for the Constellation Program was published in September 2006 and the Draft Constellation Programmatic EIS was released for public review and comment on August 17, 2007. The EIS is expected to be completed in March 2008. However, to meet the aggressive schedule necessary to develop the Constellation Program in time to succeed the Space Shuttle Program and meet other exploration milestones established by the President and Congress, the modification of TS 4550 at MSFC must begin before the EIS is completed. If the modifications to TS 4550 are not begun as scheduled, NASA would have to delay the test flights of Ares I which would affect the overall schedule of the Constellation Program.

1.4 Scope of EA

This EA assesses the potential environmental, cultural, physical, and socioeconomic impacts associated with the modification and operation of TS 4550 at MSFC in support of IVGVT for the Constellation Program. Potential impacts associated with the Proposed Action are evaluated against those associated with the No-Action Alternative of maintaining existing conditions (i.e., not to modify and operate TS 4550 to conduct IVGVT for the Constellation Program).

The Proposed Action analyzed in this EA pertains only to IVGVT of the Ares I. The Ares V, which will be developed later for the Constellation Program, may require additional modifications to TS 4550; therefore, separate NEPA documentation may be necessary for IVGVT of this vehicle. Ongoing general maintenance work, including routine repairs and painting at TS 4550, has been addressed by a Categorical Exclusion that was issued on January 10, 2007. This work is exclusive of the modifications under the Proposed Action addressed by this EA.

A 30-day public review period was held from September 24, 2007 through October 24, 2007 to solicit comments on this EA. The public review period was announced in a public notice that was published in the Huntsville Times newspaper out of Huntsville, Alabama. Hardcopies of the EA were made available to the public during the review period at three public libraries in the local area. An electronic copy of the EA was also posted on the Constellation EIS web page http://www.nasa.gov/mission_pages/constellation/main/eis.html. A copy of the public notice that was published in the Huntsville Times newspaper is presented as Appendix B. No comments were received during the public review period.

This EA was also coordinated with pertinent regulatory agencies and local entities. All associated correspondence is included in Appendix A and discussed in pertinent sections of this EA.

1.5 Resources Considered but Eliminated From Further Analysis

NASA uses a systematic and interdisciplinary approach to ensure that all pertinent resources are analyzed and potential effects identified. Using this approach, the Proposed Action was determined to have no effect on several resources. As a result, these resources were eliminated from further analysis and discussion in this EA. Table 1-1 identifies the resources that would not be affected by the proposed action and, therefore, have been eliminated from further analysis.

TABLE 1-1
Resources Considered but Eliminated from Further Analysis

Resource	Rationale
Land Use	Modification and operation of TS 4550 under the Proposed Action would not change the land use designation of the site. The proposed modifications would be contained within the existing footprint of the facility. Other land uses within MSFC and land uses in the surrounding region would not be affected in any manner by the Proposed Action.
Topography, Geology, and Soils	Modification of TS 4550 under the Proposed Action would occur entirely within the existing footprint of the building. The proposed modifications would not require land contouring and would not involve any intrusive construction activity that would affect subsurface geological formations. Construction activities would occur within the TS 4550 site, which is entirely paved. Sediment and erosion controls would be implemented during construction to prevent any indirect impacts to surrounding soils. Such controls may include the installation of silt fences and hay bales. Operation of TS 4550 would not involve any activity that would affect topography, geology, or soils in any manner.
Surface Water	Modification of TS 4550 under the Proposed Action would occur entirely within the existing footprint of the building and, therefore, would have no direct impacts on the drainage ditch that runs along the perimeter of the facility. Construction activities would not result in soil disturbance or loss of vegetative cover. There would be no increase in impervious area and no change in storm water runoff characteristics or volume. Sediment and erosion controls would be implemented during construction to prevent any indirect impacts to surrounding surface waters. Such controls may include the installation of silt fences and hay bales. Operation of TS 4550 under the Proposed Action would not involve any activity that would affect surface water in any manner.
Groundwater	Modification and operation of TS 4550 under the Proposed Action would not involve withdrawals from, or discharges to, groundwater. Construction activities would not require dewatering or involve intrusion into the surficial groundwater table.
Floodplains	No portion of the TS 4550 site is located within the 100-year floodplain. Therefore, modification and operation of TS 4550 under the Proposed Action would have no effect on floodplains.

TABLE 1-1
Resources Considered but Eliminated from Further Analysis

Resource	Rationale
Vegetation	The TS 4550 site is paved and devoid of vegetation. Modification of TS 4550 under the Proposed Action would occur entirely within the existing footprint of the building and, therefore, would not displace any vegetation. Sediment and erosion controls would be implemented during construction to prevent any indirect impacts to vegetation that exists along the perimeter of the site. Such controls may include the installation of silt fences and hay bales. Operation of TS 4550 under the Proposed Action would not involve any activity that would affect vegetation in any manner.
Wetlands	No wetlands are located within or in the immediate vicinity of the TS 4550 site. Therefore, modification and operation of TS 4550 under the Proposed Action would have no effect on wetlands.
Protected Species	The TS 4550 site and its surroundings do not provide suitable habitat for any of the federally listed or state-listed species that potentially occur at MSFC. The site is also not within the vicinity of the only ecologically sensitive area at MSFC–Williams Spring Ecological Sensitive Area.
Demographics	Modification and operation of TS 4550 under the Proposed Action would not require permanent personnel relocations or employee hires. Existing MSFC personnel would operate TS 4550 and personnel from other NASA Centers may be utilized on an as-needed, temporary basis. The labor force of the local area is expected to be able to provide enough workers to perform the necessary construction without additional persons relocating to the area.
Housing, Schools, and Recreation	Modification and operation of TS 4550 under the Proposed Action would not require permanent personnel relocations or employee hires. Therefore, the Proposed Action would have no effect on housing, schools, or recreation.
Environmental Justice	On February 11, 1994, the President issued EO 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*. The purpose of this EO is to avoid disproportionate placement of any adverse environmental, economic, social, or health impacts from federal actions and policies on minority and low-income populations. On April 21, 1997, the President issued EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, which recognized that a growing body of scientific knowledge demonstrates that children may suffer disproportionately from environmental health and safety risks. This EO required federal agencies, to the extent permitted by law and mission, to identify and assess such environmental health and safety risks. Modification and operation of TS 4550 under the Proposed Action would not result in significant impacts associated with air quality, noise, groundwater, surface water, or hazardous materials and wastes. As a result, minorities, low-income residents, and children under 17 years of age living in proximity to MSFC would not be disproportionately impacted. This analysis is considered valid regardless of the total number or percentage of minorities, low-income residents, or children under 17 years of age that live in proximity to the area, or the distance of their residences from the area.
Aviation	Modification and operation of TS 4550 under the Proposed Action would not involve any mode of air transportation. The Proposed Action would also not affect airspace or require coordination with airfield operations. As a precautionary measure, aviation lights would be utilized on the exterior of TS 4550 to warn approaching aircraft of the building's presence.
Asbestos and Polychlorinated Biphenyls	TS 4550 does not contain asbestos or polychlorinated biphenyls (PCBs). Therefore, the Proposed Action would have no asbestos or PCB-related effects.

SECTION 2

Description of the Proposed Action and Alternatives

2.1 Description of the Proposed Action

The Proposed Action is to modify and operate TS 4550 at MSFC to conduct IVGVT for the Constellation Program. MSFC is located in north-central Alabama on approximately 1,841 acres of property within the Army's Redstone Arsenal (RSA) (Figure 2-1). TS 4550 is located in the East Test Area of MSFC and is surrounded by other test area facilities (Figure 2-2).

IVGVT at TS 4550 would provide test data to experimentally anchor and validate structural and controls analysis models used in the design of the Ares I. The Ares I is an integrated, stacked vehicle that consists of two primary elements: a solid fueled First Stage Booster and a liquid fueled Upper Stage (Figure 2-3). The Ares I will carry to orbit the Orion payload, also known as the Crew Exploration Vehicle (CEV). IVGVT would be conducted on test articles specified and built to represent actual flight hardware. Inert simulated propellant would be used instead of actual fuel in the First Stage and Upper Stage test articles. The data generated would be used to determine structural resonant frequencies, damping, and modal deflection shapes (bending, torsional, and flexural shapes). Validation of the launch vehicle's control, navigation, and guidance systems depends heavily on ground vibration testing data. IVGVT would be conducted on the entire Orion launch stack at various flight trajectory configurations. Three test positions within TS 4550 would be used to conduct IVGVT on the test articles at the selected trajectory configurations.

TS 4550 is 360 feet (109.7 meters) high and approximately 10,000 square feet (929 square meters) at ground level (Figure 2-4). The building has 15 levels (24 feet/level) (7.3 meters/level) and a 64-foot (19.5-meter) stiff-leg derrick crane mounted on the roof, which gives it an overall maximum height of 425 feet (129.5 meters). A portion of the roof and a vertically sliding door that covers the top 6 levels of the north face are removable by crane, which allows placement/removal of test articles. TS 4550 has one elevator and a set of stairs that connects all 15 levels. The exterior walls of the building are galvanized, corrugated sheet metal siding.

The proposed modification of TS 4550 would involve upgrading utility and mechanical systems and remodeling the test position infrastructure within the interior of the building. Interior remodeling would also include construction of data acquisition centers, storage rooms, and security features. The exterior walls and support structure of TS 4550 would not require any architectural modifications.

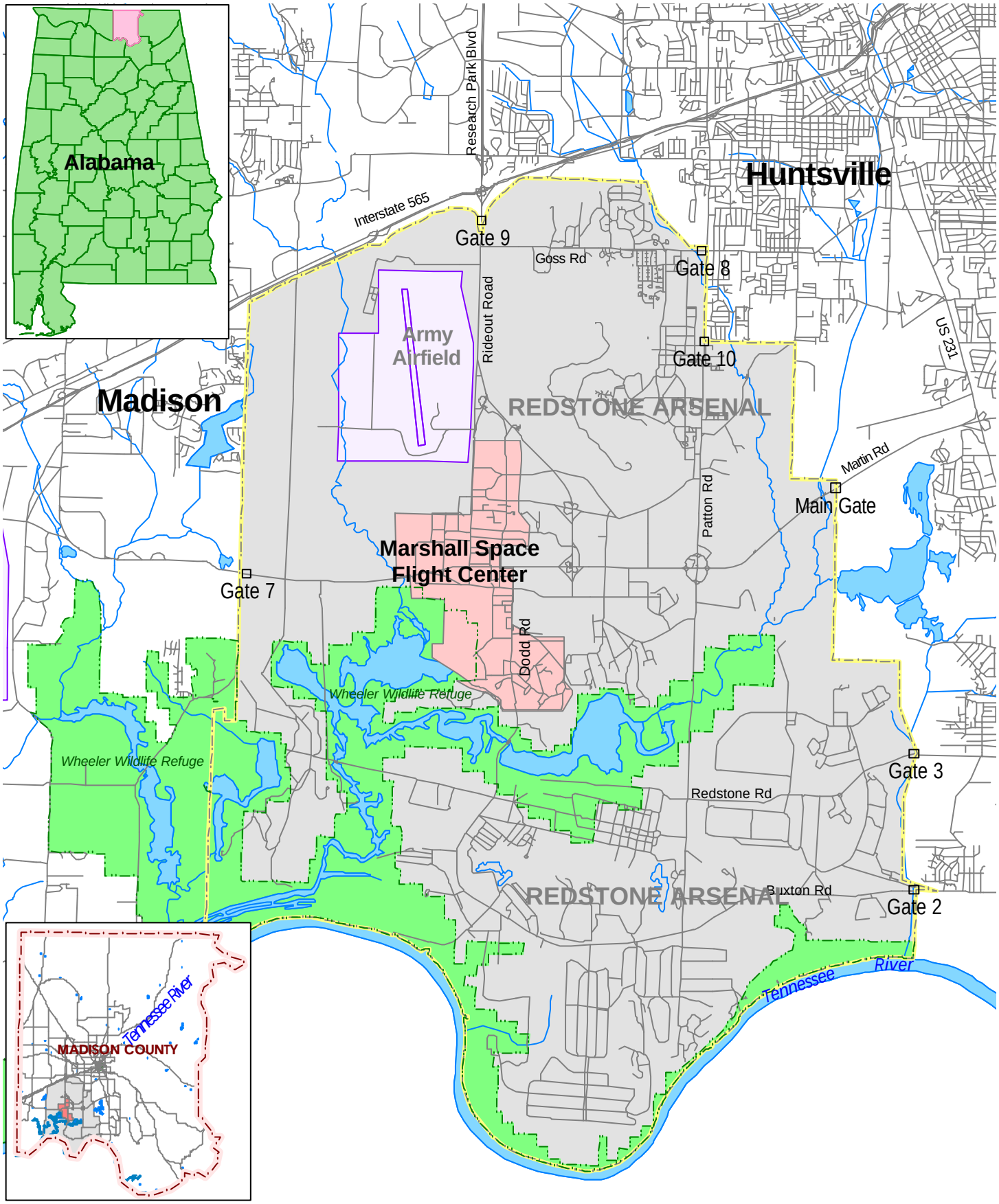

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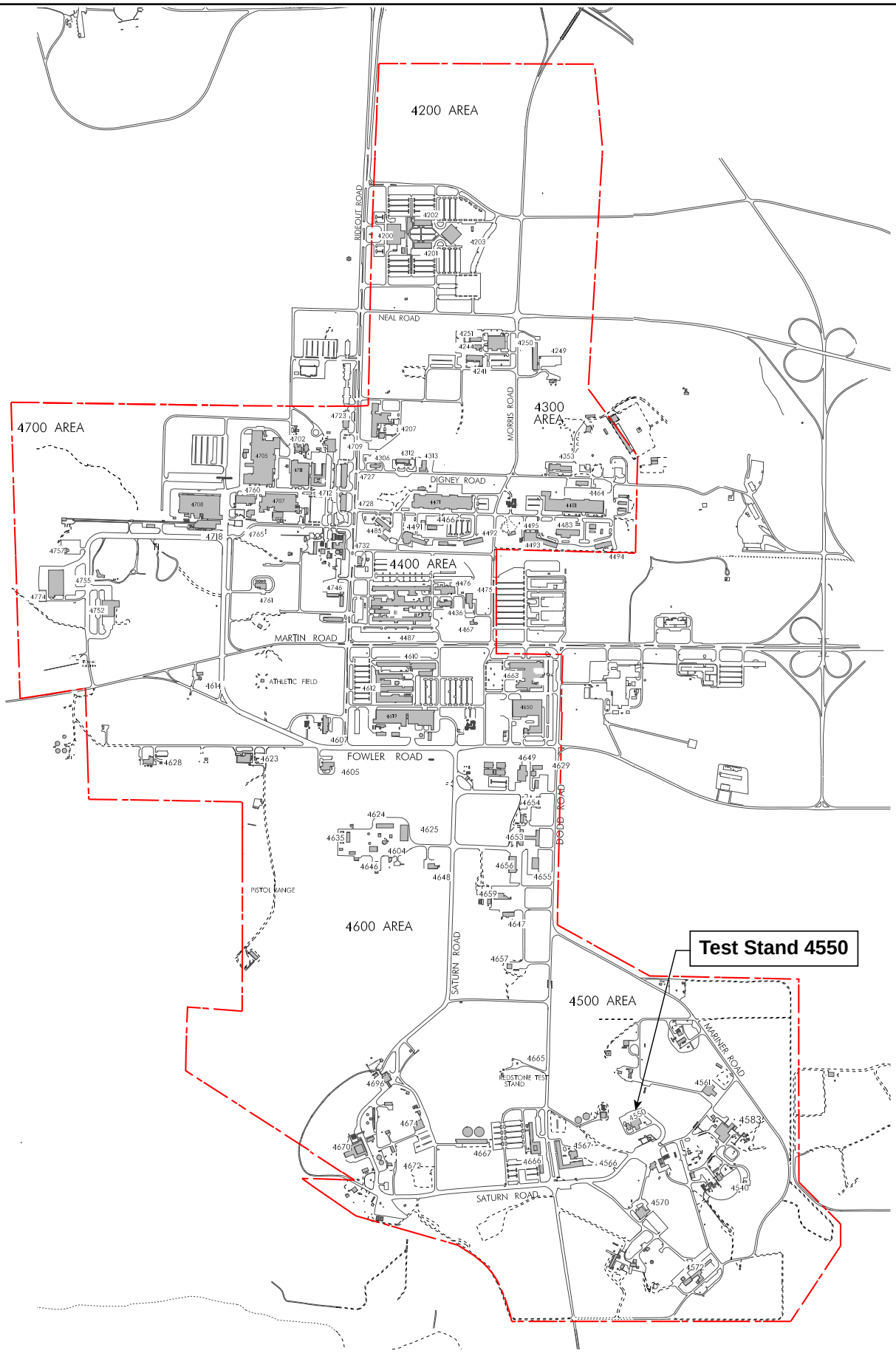
FIGURE 2-1
Marshall Space Flight Center
Location and Vicinity Map



500m 0m 500m
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FIGURE 2-2
Location of Test Stand 4550 at Marshall Space Flight Center

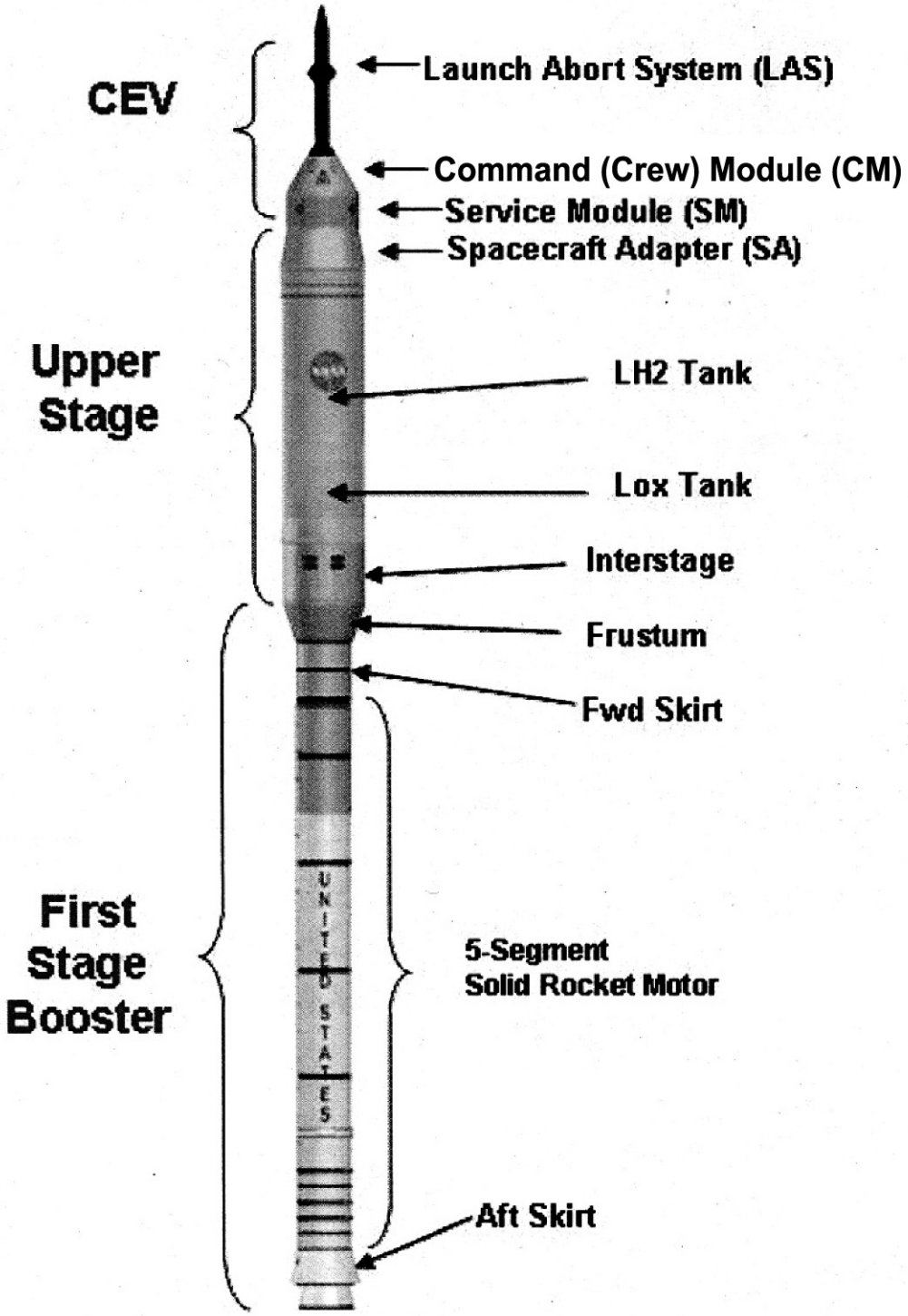
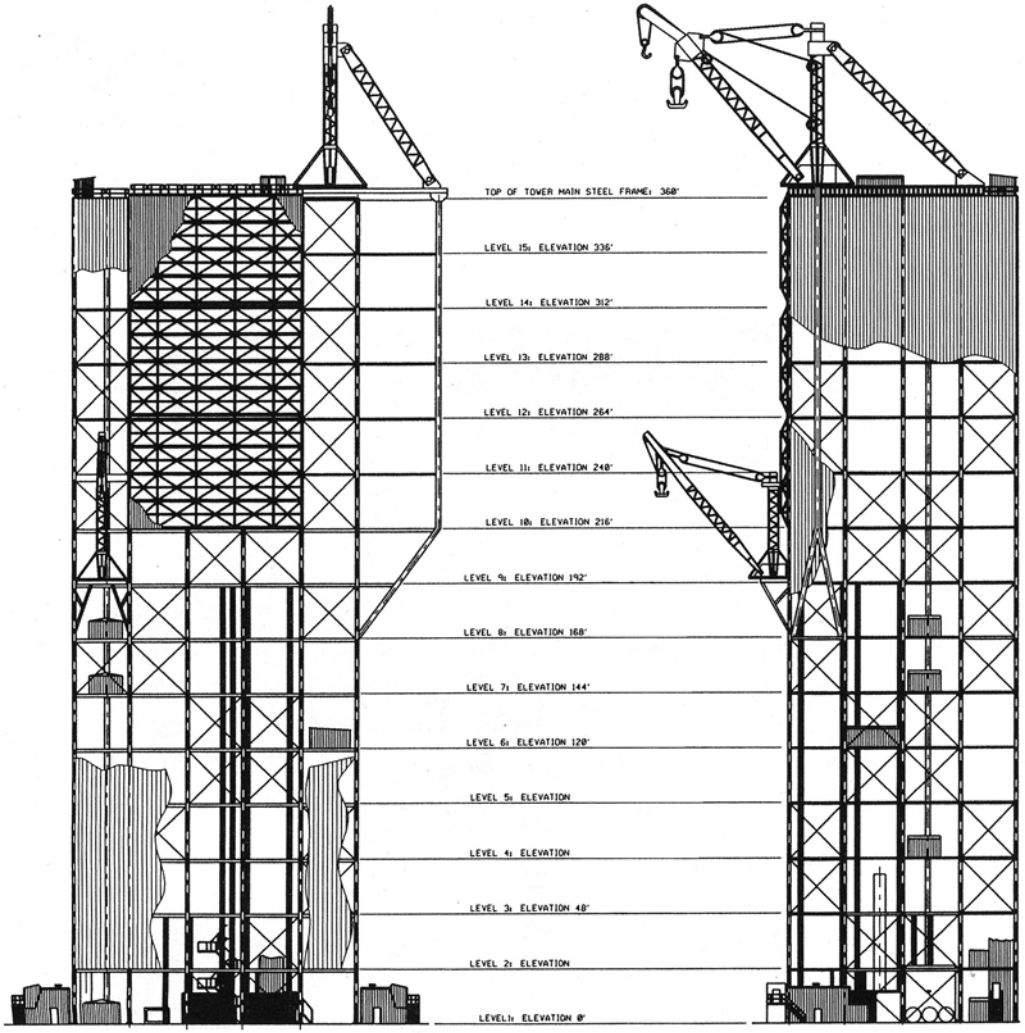


FIGURE 2-3
ARES I Crew Launch Vehicle



North Elevation View

West Elevation View

FIGURE 2-4
Test Stand 4550 Photograph and Elevation Profiles

Utility and mechanical system upgrades would include refurbishment of existing systems and installation of new systems required for IVGVT. Systems that require upgrades include electrical power, lighting, communications, air conditioning and heating, hydraulic, plumbing, water (cooling, potable, distilled, and de-ionized), fire protection, and special gas supply (nitrogen and helium).

Three discrete test positions would be constructed within TS 4550 to conduct IVGVT on test articles at various flight trajectory configurations (Figure 2-5). Two test positions would be used to test the entire Orion launch stack. Test Position #1 would be used to test the Orion launch stack at lift-off conditions. Test Position #1 would use the First Stage inert test article which be filled with an inert propellant. Test Position #2 would be used to test the Orion launch stack at burnout conditions just prior to First Stage separation from the Upper Stage. Test Position #2 would use the empty First Stage test article. Test Position #3 would be dedicated to testing the Upper Stage with its Orion payload at four critical flight trajectory configurations.

2.2 Alternatives to the Proposed Action

2.2.1 No-Action Alternative

The No-Action Alternative is to maintain existing conditions, i.e., not to modify or operate TS 4550 to conduct IVGVT for the Constellation Program. Under the No-Action Alternative, TS 4550 would remain inactive unless it is used in its current state to support the remainder of the Space Shuttle Program, for which it was last modified and operated. Modification and operation of TS 4550 for some other purpose would require separate NEPA analysis and documentation. The No-Action Alternative is analyzed in Section 4 as a baseline against which the Proposed Action can be compared.

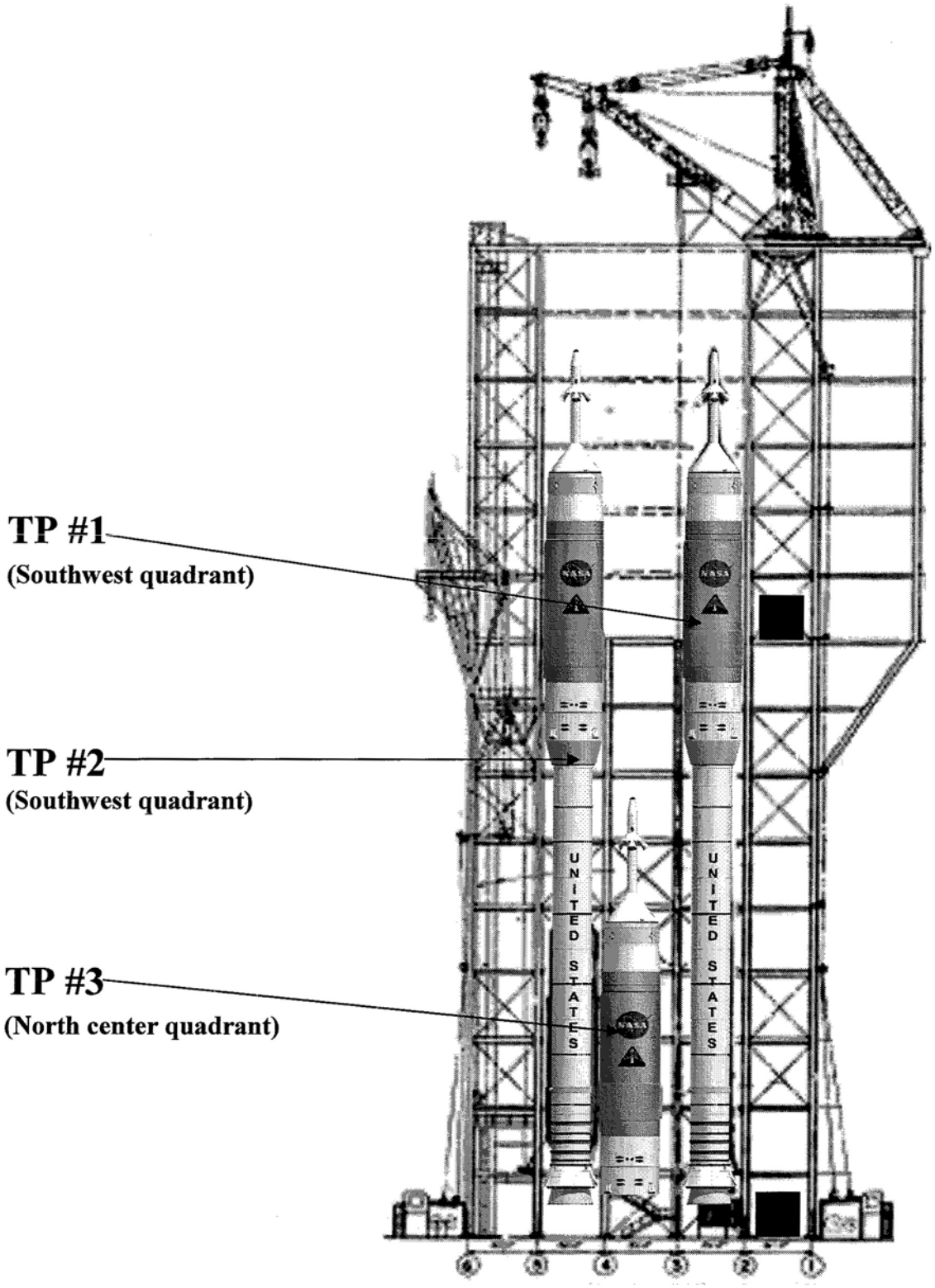
2.2.2 Alternatives Considered but Not Carried Forward

NEPA and 32 CFR Part 651 require consideration of reasonable alternatives to the Proposed Action. Only alternatives that would reasonably meet the defined need for the Proposed Action require detailed analysis in this EA.

During preliminary planning, NASA evaluated constructing a new IVGVT test stand as a potential alternative to modifying TS 4550 to support the Constellation Program. This potential alternative was evaluated in terms of its ability to meet the project needs and its potential impacts. The screening criteria used for analyzing this potential alternative included overall project expense and various siting criteria.

TS 4550 is the only facility that has been used by NASA to conduct IVGVT; therefore, the modification of a different facility was not evaluated as a potential alternative to the Proposed Action.

Project expenses for constructing a new IVGVT test stand would include those associated with new infrastructure as well as planning, design, and environmental permitting for the new site. Infrastructure expenses would include new access roads and utility connections from other areas. The overall cost of constructing a new IVGVT test stand would depend on the site-specific conditions of the selected location. Constructing a new IVGVT test stand at any site would be significantly more than the cost of modifying TS 4550.



TP = Test Position

FIGURE 2-5
ARES I Test Positions

In addition to its considerable cost, constructing a new IVGVT test stand at MSFC or at some other NASA Center would be complicated by space and environmental constraints. Suitable sites for development at MSFC and other NASA Centers are limited and new construction must be consistent with planning policy to seek opportunities to remodel existing infrastructure. In general, new construction also has a greater potential for environmental impacts than the remodeling of existing infrastructure.

For these reasons, the potential alternative of constructing a new IVGVT test stand was rejected as a reasonable alternative to the Proposed Action of modifying and operating TS 4550.

SECTION 3

Affected Environment

3.1 Air Quality

The Clean Air Act requires the U.S. Environmental Protection Agency (EPA) to set National Ambient Air Quality Standards (NAAQS) for pollutants considered harmful to public health and the environment. NAAQS include two types of air quality standards. Primary standards protect public health, including the health of sensitive populations such as asthmatics, children, and the elderly. Secondary standards protect public welfare, including protection against decreased visibility, damage to animals, crops, vegetation, and buildings (EPA, 2005). EPA has established NAAQS for six principal pollutants, which are called criteria pollutants (Table 3-1).

TABLE 3-1
National Ambient Air Quality Standards
EA for Operation and Modification of TS 4550

Pollutant	Primary Standards	Averaging Times	Secondary Standards
Carbon Monoxide	9 ppm (10 mg/m^3)	8-hour[1]	None
	35 ppm (40 mg/m^3)	1-hour[1]	None
Lead	1.5 µg/m^3	Quarterly Average	Same as Primary
Nitrogen Dioxide	0.053 ppm (100 µg/m^3)	Annual (Arithmetic Mean)	Same as Primary
Particulate Matter	50 µg/m^3	Annual[2] (Arithmetic Mean)	Same as Primary
PM_{10}	150 µg/m^3	24-hour[1a]	
$PM_{2.5}$	15.0 µg/m^3	Annual[3] (Arithmetic Mean)	Same as Primary
	65 ug/m^3	24-hour[4]	
Ozone	0.08 ppm	8-hour[5]	Same as Primary
Sulfur Oxides	0.03 ppm	Annual (Arithmetic Mean)	
	0.14 ppm	24-hour[1]	
		3-hour[1]	0.5 ppm (1,300 µg/m^3)

Notes:

[1] Not to be exceeded more than once per year.
[1a] Not to be exceeded more than once per year on average over 3 years..
[2] 3-year average of the weighted annual mean PM_{10} concentration at each monitor within an area must not exceed 50 µg/m^3.
[3] 3-year average of the weighted annual mean $PM_{2.5}$ concentrations from single or multiple community-oriented monitors must not exceed 15.0 µg/m^3.
[4] 3-year average of the 98th percentile of 24-hour concentrations at each population-oriented monitor within an area must not exceed 35 µg/m^3.
[5] 3-year average of the fourth-highest daily maximum 8-hour average ozone concentrations measured at each monitor within an area over each year must not exceed 0.08 ppm.

ppm = parts per million
PM = particulate matter
µg/m^3 = micrograms per cubic meter
Source: http://www.epa.gov/air/criteria.html (EPA, 2005)

Areas that do not meet the air quality standard for one of the criteria pollutants may be subject to the formal rule-making process and be designated as being in nonattainment for that standard.

MSFC is located in an attainment area for all criteria pollutants. MSFC operates under an Alabama Department of Environmental Management (ADEM) Title V Air Quality Operating Permit (Permit No. 0108900014). As part of the Title V Clear Air Act Permit regulations, MSFC conducts an annual air emission inventory.

3.2 Noise

Noise levels are usually presented in decibels on the A-weighted scale (dBA) as Day-Night Average A-Weighted Sound Level (DNL). The DNL metric accounts for the greater annoyance of noise during nighttime hours, and is calculated by averaging hourly sound levels for a 24-hour period and adding a weighting factor to the nighttime values. The noise guidelines established for land use planning at MSFC are the same as those published by the Federal Interagency Committee on Urban Noise in the June 1980 publication, *Guidelines for Considering Noise in Land-Use Planning and Control*. Based on these guidelines, the maximum acceptable noise level for most residential land uses is considered to be 65 DNL.

Test operations are the primary sources of noise in the vicinity of TS 4550. Engine testing has been routinely performed in the test area since the 1950's. Noise levels exceeding 100 dBA occur during engine testing in the test area of MSFC. (MSFC, 2002). Other noise sources include vehicular traffic and intermittent construction. Normal street traffic within MSFC produces noise levels in the range of 70 dBA. Construction activities within MSFC produce noise levels in the range of 78 to 89 dBA.

Noise levels expected in the vicinity of TS 4550 during construction were estimated using a number of reports prepared by EPA on general noise conditions in the United States. A summary report, *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety* (EPA, 1974), indicated that national noise level trends could be used to represent regional noise conditions on a broad basis. Individual discrepancies may occur, especially in areas with a high concentration of specialized land uses such as heavy industrial or government/institutional, but the noise levels generally are consistent within a specific land use area across the country.

Based on data presented in the EPA publication, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances* (EPA, 1971), outdoor construction noise levels range from 78 dBA to 89 dBA, approximately 50 feet (15.2 meters) from a typical construction site. Table 3-2 presents typical noise levels (dBA at 50 feet [15.2 meters] estimated by EPA for the main phases of outdoor construction.

Because MSFC is located in the center of RSA, RSA provides a buffer zone between noise-producing activities at MSFC and the residential communities within the Cities of Huntsville, Madison, and Triana. TS 4550 is located over 4 miles from the nearest residential area.

TABLE 3-2
Typical Noise Levels for Outdoor Construction
EA for Modification and Operation of TS 4550

Construction Phase	Noise Level (dBA at 50 feet [15.2 meters] from source)
Ground Clearing	84
Excavation, Grading	89
Foundations	78
Structural	85
Finishing	89

dBA – decibel on the A-weighted scale

3.3 Wildlife

MSFC has relatively low habitat and plant species diversity, and as a result, relatively low wildlife diversity. Game mammals and furbearers that have been sighted at MSFC include white-tailed deer, opossum, raccoon, gray squirrel, eastern cottontail and swamp rabbits, beaver, gray and red foxes, and mink. Several waterfowl species have been documented to use MSFC during winter months when adequate water is present in onsite wetlands and surface waters. Other game birds at MSFC include the mourning dove, northern bobwhite, and wild turkey. Common non-game birds include the red-tailed hawk, kestrel, turkey vulture, eastern meadowlark, starling, rock dove, blue jay, Carolina chickadee, Carolina wren, eastern bluebird, common crow, downy and hairy woodpeckers, red-bellied woodpecker, and pileated woodpecker. Terrestrial reptiles include the box turtle, eastern glass lizard, five-lined skink, broad-headed skink, eastern garter snake, and black racer snake. Common reptiles inhabiting aquatic and wetland habitats at MSFC include the snapping turtle, painted turtle, mud turtle, river cooter, and cottonmouth snake.

Based on its location within the test area, the TS 4550 facility and its surroundings provide relatively low quality wildlife habitat. The forested areas that border the site provide habitat that would support urbanized wildlife species adapted to such environments such as common song birds, squirrels, raccoons, and mice. Wildlife that utilize these areas are adapted to the developed setting and high noise levels of the test area.

3.4 Cultural Resources

Federal agencies are required to protect and preserve cultural resources in cooperation with state and local governments under NEPA and the National Historic Preservation Act (NHPA) of 1966, as amended (16 U.S.C. 470, Public Law [P.L.] 95-515).

The area now designated as MSFC initially was purchased in 1941 by the U.S. Army as part of a 32,255-acre acquisition for the Chemical Warfare Service in response to the munitions requirements of World War II. Before the purchase, the land was largely farmed for cotton, corn, hay, and small grains, and also used as pasture.

In total, only seven archaeological sites have been identified at MSFC (MSFC, 2002). Four sites have been identified as eligible for the NRHP. TS 4550 is not located within the vicinity of any of the archaeological sites that have been identified at MSFC.

TS 4550 was built in 1963-64 and used to conduct ground vibration testing in 1965-67 for the Saturn IB and Saturn V launch vehicles. It was also used in 1972-73 for the Skylab Space Station program and in 1978-79 for the Space Transportation System (a.k.a. Space Shuttle) program. TS 4550 was modified in the 1980's to act as a Microgravity Drop Tower. After the microgravity experiments, TS 4550 was mothballed and has since remained inactive.

TS 4550, along with its ancillary facility TS 4551, are listed in the National Register of Historic Places (NRHP) under Criteria A (for association with key missions at MSFC) and C (for association with leading aerospace architectural-engineering firms of the early Cold War years). TS 4550 was designated a National Historic Landmark (NHL) in 1986, as being representative of "Man in Space." A Programmatic Agreement among NASA, the National Conference of State Historic Preservation Officers (NCSHPO), and the Advisory Council on Historic Preservation (ACHP) defines categories of activities, the consultation process, mitigation measures, and the terms of continuing coordination for NHLs such as TS 4550 (ACHP, 1991).

3.5 Regional Employment and Economic Activity

Total employment, including part-time positions, in the HMA in 2000 was 221,332, with Madison County accounting for approximately 87 percent of this total. Unemployment rates in the HMA and Madison County are lower than the State of Alabama and national averages. The U.S. Army Aviation and Missile Command and other defense agencies employ approximately 6,899 civilians and 1,741 military specialists. MSFC has about 2,492 employees.

During the past 45 years, the economy of the HMA has grown from agriculture and space-related industries to a diversified mix of manufacturing, testing, development, research, and support services. Cummings Research Park, located west of downtown Huntsville, is the second largest research park in the United States, encompassing 3,800 acres and employing 26,000 people. In addition to MSFC, more than 90 companies employ more than 11,000 people in the local aerospace industry. RSA is the largest employer, providing 11,393 jobs in November 2000 (Chamber of Commerce, 2001).

3.6 Public and Occupational Health and Safety

The Medical Center at MSFC is located in Building 4249. This facility offers out-patient services only and provides emergency, therapeutic, preventive, and special medical and health services to MSFC employees and certain contractor personnel. Occupational medicine and environmental health services are provided at the Center under contract. Ambulatory services are provided under subcontract with Huntsville Emergency Medical Services, Inc. (HEMSI).

MSFC has an established physical security program for site facilities and operations. The main Security Office at MSFC is located in Building 4312. Protective security measures at MSFC include the use of physical barriers, electro-mechanical intrusion detection systems,

protective lighting, warning notification, identification and badge recognition, and automated access control capability. MSFC is an area of exclusive federal jurisdiction; as a result, state, county, and city police have no jurisdiction within MSFC and RSA boundaries.

Twenty-four-hour firefighting services, including personnel and equipment, are provided to MSFC by four fire stations owned and operated by the Army, under an agreement that provides them with reimbursement. In the event of a fire on MSFC or RSA, all stations are alerted, and usually all stations report to the scene regardless of its location. In addition to the firefighting services provided by the Army, MSFC has a mutual aid agreement with the City of Huntsville fire department for firefighting assistance, as well as a working agreement with all northern Alabama fire stations.

3.7 Utilities

3.7.1 Energy

RSA obtains electrical power from the Tennessee Valley Authority (TVA). The primary supply is obtained from the 161 kilovolts (kV), 3-phase transmission systems of the TVA. MSFC is billed by RSA for all electrical power consumed. MSFC also has approximately 1,800-kVA total capacity through several emergency generators for critical or special electrical circuits. RSA's main steam plant is the City of Huntsville Plant, Ogden Martin Systems. MSFC is supplied with steam from RSA's steam supply. Steam is also provided by boiler plants and modular boilers located within MSFC buildings. The boiler plants are located in the Test Area and are used exclusively for heat and processes associated with test operations. RSA receives its natural gas supply from the City of Huntsville. Natural gas is routed through MSFC in a 12-inch pipeline.

TS 4550 is connected to existing electrical service north of the site (MSFC, 2007). There is an abandoned transformer bank and a 480-volt transformer bank of either 500 or 750 kVA capacity serving the site for the crane, light, and convenience power. The primary is the overhead East Test Area 4160-volt circuit.

3.7.2 Water and Wastewater

The main source of potable and industrial water for RSA and MSFC is the Wheeler Reservoir of the Tennessee River. No water supply wells exist at MSFC. Potable and industrial water are stored using elevated steel tanks and steel and concrete standpipes. This equipment is capable of storing 3 million gallons (11.35 million liters) of potable water and 7.5 mg of industrial water. Domestic wastewater at MSFC is treated by Domestic Treatment and Collection System 3 which is operated by RSA and consists of 6-inch to 18-inch-diameter gravity sewers. There are 4 force main pumping stations serving RSA and 10 lift stations serving MSFC. Effluent is discharged to the Tennessee River under the provisions of the current NPDES permit held by RSA. The majority of the industrial wastewater at MSFC is sent to the Industrial Wastewater Treatment Facility (IWTF), which has a treatment capacity of 50,000 gallons (189,271 liters) per day.

TS 4550 has an existing 2-inch potable water supply line that enters the building from the south (MSFC, 2007). An off-site de-ionized water storage system and associated pump house are located to the northwest and north, respectively. The facility is connected to an existing 8-inch sanitary sewer line.

3.7.3 Solid Waste

Refuse and nonhazardous waste at MSFC are collected by a contractor and disposed under the provisions of RSA's Support Agreement. The majority of the solid waste is burned at the Huntsville Incinerator. "Unacceptable" nonhazardous waste (construction waste, rubble, vegetation, and asbestos) excluded from the incinerator is disposed of at RSA's Construction Debris Landfill.

3.8 Transportation

3.8.1 Roadways

The road system within MSFC consists of primary, secondary, and tertiary roads. All primary roads are surfaced with asphaltic concrete. Many of the secondary roads have paving of bituminous plant mix or asphalt surface treatment. The tertiary roads generally are surfaced with gravel, and most of them are located in the test areas. Maintenance of Martin, Marshall, Neal, Morris, Fowler, Rideout, and Dodd roads is provided by RSA as part of a support agreement with MSFC. RSA also is responsible for maintenance of the gates and bridges. MSFC is responsible for maintenance of all other roads and paved areas within its boundaries. Currently, all traffic to and from MSFC and RSA is routed through six gates. The Main Gate is on Martin Road on the eastern side of RSA.

The TS 4550 access drive is constructed of concrete and has a clear width of 50 feet (15.2 meters) and a minimum inside turning radius of 95 feet (29 meters) (MSFC, 2007). The access drive was designed for the Saturn Program to have a wheel capacity of 22,000 pounds. The asphalt drives around the site were designed for a wheel capacity of 9,000 pounds. Parking space for approximately 8 to 10 vehicles is located along the southern and western sides of the facility.

3.8.2 Railroads

The use of rail at RSA was largely discontinued in 1973. Most of the track has been removed, and only a small section of rail remains. The use of planes and trucks for shipping purposes has decreased the demand for rail transportation. A railhead located near the northern boundary of RSA has been retained to serve MSFC as the need arises.

3.8.3 Waterways

MSFC has access to docking facilities along the Tennessee River. NASA has overall responsibility for all special water transportation of spacecraft components and related cargo between ports. NASA monitors cargo loading, unloading, and in-transit care of the barges. MSFC docks, located at the River Terminal, have a recess for roll-on and roll-off loading and unloading. Water transportation was developed because NASA recognizes that the distances between manufacturing, static testing, and launch sites, as well as the size, weight, and sensitivity of the cargo, might preclude the use of highway, rail, and air transport. NASA has two covered river-ocean barges (*Poseidon* and *Pegasus*) and one open shuttle barge (*Pearl River*), with the home port being New Orleans, Louisiana. The water route used to transport the equipment from MSFC to the Kennedy Space Center is the Tennessee-Tombigbee Waterway.

3.9 Hazardous/Toxic Materials and Waste

3.9.1 Storage and Handling

A variety of hazardous materials are used at MSFC. Hazardous substances have been declared hazardous through federal listing such as extremely hazardous substances (EHSs), listed in 40 CFR 355, those listed as hazardous if released under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) in 40 CFR 302.4, and by definition of hazardous chemicals by OSHA, in 29 CFR 1910.1200. In addition to these chemicals defined as hazardous, pesticides and sources of radiation are regulated.

Sections 311 and 312 of the Emergency Planning and Community Right-to-Know Act (EPCRA) require any user to submit a report, known as a Tier II, annually for any substance that is present at MSFC in the following quantities:

- Greater than or equal to 10,000 pounds at any one time for a hazardous chemical; and
- Greater than or equal to 500 pounds or the threshold planning quantity (TPQ), whichever is less, at any time, for EHSs.

At present, hazardous materials are not stored or handled at TS 4550.

3.9.2 Waste Management

MSFC is classified according to federal and state regulations as a large quantity generator. MSFC generates more than 1,000 kilograms of hazardous waste each month. Federal regulations on hazardous waste are contained in 40 CFR Parts 260 to 279, and are a result of Subtitle C of the Resource Conservation and Recovery Act (RCRA), which requires a program to track hazardous waste from generation to storage to transportation to disposal.

NASA maintains a comprehensive inventory of all RCRA-defined hazardous wastes and controlled wastes not regulated by RCRA. The collection and management of hazardous waste data are the responsibility of the Environmental Support Contractor (ESC). MSFC has established hazardous and controlled waste accumulation site inspection guidelines that serve to monitor the accumulation activities of each generating activity throughout MSFC. Full drums of wastes are stored temporarily in the Hazardous Waste Storage Facility (HWSF). Within a 60- to 70-day time period, the ESC arranges for shipment of the containers to an appropriate Treatment, Storage, and Disposal Facility (TSDF), so that MSFC is not subject to regulation under RCRA as a hazardous waste storage facility. All similar waste is combined within a consolidation area in the HWSF. Hazardous wastes are disposed offsite at several hazardous waste disposal facilities approved by EPA. Wastes are transported from MSFC by licensed hazardous waste transporters. Special wastes generated at MSFC include asbestos, industrial waste, petroleum-contaminated soil and water from spill cleanup, and medical waste.

At present, waste management is not conducted at TS 4550.

3.9.3 Contaminated Areas

MSFC was placed on the National Priorities List (NPL) in 1994, which required compliance with CERCLA. In response, MSFC conducted a surface media Remedial Investigation (RI) for the entire property in 1999 to assess the nature and extent of contamination, to evaluate

public health risks, and to screen potential remedial actions. Contaminated areas were divided into operable units (OUs). OUs were then divided among media: surface soil, subsurface soil, surface water, sediment, and groundwater.

A substantial portion of MSFC is underlain by groundwater that is contaminated by chlorinated solvents because of the prevalent use of these compounds in the past. Most of the contamination is located in the rubble zone of the residuum layer. The primary contaminants in the rubble zone plumes are the chlorinated volatile organic compounds (CVOCs), tetrachloroethene (PCE), trichloroethene (TCE), dichloroethene (DCE), vinyl chloride, carbon tetrachloride (CTC), chloroform, and 1,1,2,2-tetrachloroethane (1,1,2,2-PCA). The following five major contamination plumes have been identified at MSFC:

- Northwest Plume
- Northeast Plume
- Central Plume
- Southwest Plume
- Southeast Plume

TS 4550 is located within the boundaries of OU 1, which covers the East and West Test Areas of MSFC under NASA's CERCLA program. OU 1 is classified as a "Restricted Area Boundary" and requires a CERCLA Site Access Checklist for proposed activities. An associated dig permit is required for all activities involving earthwork within OU 1. MSFC is currently conducting an RI for OU 1, which involves surface and subsurface soil sampling for CERCLA constituents.

The eastern and southern portions of the TS 4550 site are underlain by a portion of the Southeast Plume. The sources of this plume are past operations in test facilities to the north and east of the TS 4550 facility (TCE and DCE) and leaking water lines (chloroform). Natural attenuation mechanisms such as dilution, dispersion, chemical degradation, and sorption have been shown to be occurring in the plume. Ongoing pilot studies involving *in-situ* chemical oxidation using hydrogen peroxide and *in-situ* chemical reduction using zero-valent iron are being conducted at the source areas in the center of the plume to treat the contamination (NASA, 2001a).

3.9.4 Lead-Based Paint

Many of the older buildings at MSFC contain lead-based paint (LBP). MSFC implements a LBP abatement program through the MSFC Environmental Engineering and Occupational Health (EEOH) Office in accordance with all applicable federal, state, local, and NASA regulations and policies.

Some of the TS 4550 structure was initially painted with LBP. LBP is still present within the building. Surface soils around TS 4550 are being analyzed for lead contamination as part of the RI that is currently being conducted for OU 1.

3.9.5 Ordnance

RSA has been surveyed for ordnance activity and disposal areas. Ordnance is defined collectively as Munitions and Explosives of Concern (MEC) and includes unexploded ordnance (UXO), ordnance that has exploded, and ordnance that does not have explosive

potential. MEC is managed at RSA by RSA's Military Munitions Response Program (MMRP). The following five categories for MEC have been designated at RSA:

- Probability 1 – Frequent
- Probability 2 - Will occur several times during proposed site activities
- Probability 3 – Occasional
- Probability 4 – Seldom
- Probability 5 - Unlikely

The TS 4550 site is located within an area that is designated as Probability 5 – Unlikely for MEC. An area designated as Probability 3 – Occasional for MEC is located approximately 100 feet (30.5 meters) southwest of the TS 4550 site perimeter. MEC has been discovered in this area at Site MSFC-003-R-01, a landfill managed under RSA's MMRP.

3.9.6 Storage Tanks

There are numerous Aboveground Storage Tanks (ASTs) and Underground Storage Tanks (USTs) used to store fuels and oils, as well as cryogenic storage tanks for the storage of rocket propellants at MSFC. All USTs at MSFC have been removed or upgraded per ADEM Rule 335-6-15.07, Upgrading of Existing UST Systems.

There is one inactive AST at the TS 4550 site.

3.9.7 Pollution Prevention

Pollution prevention (P2) at MSFC is implemented in accordance with MSFC's 2002 P2 Plan. The plan was developed in accordance with EO 13423 which requires federal agencies to further reduce their toxic chemical uses and releases and to phase out Class 1 ozone-depleting substances.

SECTION 4

Environmental Consequences

This section provides a detailed analysis of the potential consequences associated with the implementation of the Proposed Action and the No Action Alternative. Criteria for determination of significance of the potential consequences are defined in Table 4.1.

TABLE 4-1
Significance Criteria for Potential Consequences

Significance	Criteria
No Effect	No effects expected.
Minimal	Impacts are not expected to be measurable, or are measurable but are too small to cause any change in the environment
Minor	Impacts which are measurable but are within the capacity of the impacted system to absorb the change, or the impacts can be compensated for with little effort and resources so that the impact is not substantial.
Moderate	Impacts which are measurable but are within the capacity of the impacted system to absorb the change, or the impacts can be compensated for with little effort and resources so that the impact is not substantial.
Major	Environmental impacts which individually or cumulatively could be substantial.

4.1 Air Quality

4.1.1 Proposed Action

Because MSFC is located in an air quality attainment area, a conformity analysis in accordance with 40 C.F.R. §93.153 is not required for the Proposed Action.

Modification and operation of TS 4550 under the Proposed Action would result in short-term, minor impacts to air quality. Fugitive dust (particulate matter) and construction vehicle exhaust emissions would be generated during construction and would vary daily, depending on the level and type of work conducted. Fugitive dust would be controlled at the sites using best management practices (BMPs) such as the periodic watering of stockpiled material. Pollutants that would be emitted from the internal combustion engine exhausts of construction vehicles and equipment include nitrogen oxide (NO_x), CO, PM_{10}, and volatile organic compounds (VOCs). These types of exhaust emissions would be temporary, and at their expected generation levels, would not significantly affect air quality. Fugitive dust and exhaust emissions from the proposed construction activities would not collectively represent a new major source of air emission and, therefore, would not require a modification to the Title V permit under which MSFC operates. Operation of TS 4550 would also not include any new source of air emission that would be regulated under an air operating permit.

For these reasons, the Proposed Action would have a minor impact on air quality.

4.1.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-action Alternative would have no effect on air quality.

4.2 Noise

4.2.1 Proposed Action

As discussed in Section 3.3, typical construction work generates noise levels in the range of 78 to 89 dBA approximately 50 feet (15.2 meters) from the construction area. Based on the EPA publication, *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, PB 206717* (EPA, 1971), noise levels at 50 feet (15.2 meters) from a source decrease by approximately 3 dBA over a hard, unobstructed surface (such as asphalt), and by approximately 4.5 dBA over a soft surface (such as vegetation).

Under the Proposed Action, construction activities associated with the modification of TS 4550 would temporarily increase ambient noise levels at and around the site. The increased noise levels would be short term and limited to normal working hours. Based on the EPA estimates of noise dissipation previously described, construction-related noise would not be audible in the nearest residential area which is located over 4 miles from the building.

IVGVT for the Ares I CLV is expected to generate noise levels that are comparable to those generated by other testing activities conducted in the test area of MSFC. Operational noise associated with IVGVT would be intermittent and is expected to be below the acceptable range in the residential areas of Huntsville and Madison. Workers in TS 4550 would use hearing protection and would follow Occupational Safety and Health Administration (OSHA) standards and procedures. The project safety representative would monitor operational noise levels and would ensure that all noise protection measures are implemented during testing activities.

For these reasons, the Proposed Action would have a minor noise impact.

4.2.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no noise-related effects.

4.3 Wildlife

4.3.1 Proposed Action

Based on its location within the test area, the TS 4550 site and its surroundings provide relatively low quality wildlife habitat. Modification of TS 4550 under the Proposed Action would occur entirely within the existing footprint of the building and, therefore, would not displace any wildlife habitat. Construction noise generated by the modification of TS 4550 may temporarily disturb common wildlife species that utilize the areas around the site.

Intermittent operational noise may also temporarily disturb wildlife. Wildlife that utilize the areas around the site are adapted to the developed setting and high noise levels of the test area. Any disturbance experienced by wildlife is expected to be minimal and comparable to the disturbance experienced in other parts of the test area.

For these reasons, the Proposed Action would have a minimal impact on wildlife.

4.3.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on wildlife.

4.4 Cultural Resources

4.4.1 Proposed Action

TS 4550 is not located within the vicinity of any of the archaeological sites that have been identified at MSFC. Modification of TS 4550 under the Proposed Action would occur entirely within the existing footprint of the building. Construction activities would occur within the TS 4550 site, which is entirely paved. As such, the Proposed Action does not have the potential to impact any archaeological artifacts that have not been discovered.

Modification of TS 4550 under the Proposed Action would involve upgrading utility and mechanical systems and remodeling the test position infrastructure within the interior of the building. The exterior walls and support structure of TS 4550 would not require any modifications. As such, the overall architectural design of the building would be maintained under the Proposed Action. The proposed upgrades and refurbishments would improve the structural integrity of the building. Moreover, the reuse of TS 4550 to support another NASA program would add historical significance to the structure.

MSFC is currently preparing Level II Historic American Buildings Survey-Historic American Engineering Record (HABS-HAER) documentation for TS 4550. The Proposed Action and the ongoing HABS-HAER study have been coordinated with the Alabama State Historic Preservation Officer (SHPO) through letter correspondence (Appendix A). Based on a reply letter dated August 24, 2007, SHPO stated that it concurs with the Proposed Action and that the HABS-HAER documentation would serve as adequate mitigation for the proposed modifications (Appendix A).

For these reasons, the Proposed Action would have a minor impact on cultural resources.

4.4.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on cultural resources.

4.5 Regional Employment and Economic Activity

4.5.1 Proposed Action

The construction work associated with the modification of TS 4550 under the Proposed Action would not have a significant impact on the total labor force, employment, or unemployment in the region because of the small number of jobs that would be created. As the net increase in construction employment would be temporary and minimal, there would be no appreciable effect on the local economy. Expenditures for construction-related materials and supplies would have a small, short term, beneficial effect on the economy of the region. Businesses near MSFC such as gas stations and restaurants could benefit from additional sales to construction workers.

For these reasons, the Proposed Action would have a minimal positive impact on regional employment and economic activity.

4.5.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on regional employment and economic activity.

4.6 Public and Occupational Health and Safety

4.6.1 Proposed Action

Modification and operation of TS 4550 under the Proposed Action would not require permanent personnel relocations or employee hires; therefore, the Proposed Action would not have a significant impact on occupational medicine and environmental health services at MSFC. The operation of TS 4550 would not involve any activity that would affect public health and safety. Workers in TS 4550 would follow OSHA standards and procedures and the project safety representative would ensure that all safety measures are implemented during testing activities. Modification of TS 4550 would include upgrading/installing safety features such as emergency alarms systems, handrails, guard rails, ladders, eye wash stations, and first aid kits. The MSFC security program, which includes access control at the perimeter of the East Test Area, is considered to be sufficient for providing security for TS 4550. Modification of TS 4550 would include upgrading/installing fire detection and suppression features such as alarm systems, smoke detectors, and fire extinguishing systems.

For these reasons, the Proposed Action would have a minimal impact on public and occupational health and safety.

4.6.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on public and occupational health and safety.

4.7 Infrastructure

4.7.1 Utilities

4.7.1.1 Proposed Action

Modification of TS 4550 under the Proposed Action would involve upgrading existing utility systems and installing new utility systems, including electrical power, air conditioning and heating, plumbing, water (cooling, potable, distilled, and de-ionized), and special gas supply (nitrogen and helium). Preliminary evaluations of the current condition and suitability of the existing utility infrastructure at TS 4550 to support IVGVT for the Constellation Program have been conducted. The existing system upgrades and new system components are being designed in conjunction with other proposed modifications to the building.

Operation of TS 4550 would increase energy consumption at MSFC; however, the increase in energy demand would not overburden the energy utility system of the Center. As discussed previously, modification and operation of TS 4550 under the Proposed Action would not permanently increase the number of personnel at MSFC. As such, the Proposed Action is not expected to significantly increase potable water consumption or domestic wastewater and solid waste generation at the Center. Operation of TS 4550 would produce little or no process/industrial wastewater. Solid waste generated during construction activities would be disposed of at RSA's Construction Landfill.

For these reasons, the Proposed Action would have a minimal impact on utilities.

4.7.1.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on utilities.

4.7.2 Transportation

4.7.2.1 Roadways

4.7.2.1.1 Proposed Action

As discussed previously, modification and operation of TS 4550 under the Proposed Action would not permanently increase the number of personnel at MSFC. As such, the Proposed Action would not permanently increase traffic in the area. Modification of TS 4550 would temporarily increase traffic in the area during construction; however, the projected increase is not expected to significantly burden the road system at or around MSFC. After the modifications are completed, traffic levels in the area would return to current levels.

Modification of TS 4550 under the Proposed Action would not involve widening the facility access road or expanding the paved parking/staging areas at the site. The pavement of the access road and other areas may be repaired or reinforced depending on further evaluations of the loading requirements of the test articles. Based on the Transportation Plan prepared for the Ares I IVGVT at TS 4550, the Upper Stage and Orion payload test articles would be transported separately from the MSFC Dock to TS 4550 by specialized transporters (MSFC, 2007a). The roadway that connects the MSFC Dock to TS 4550 would not require any modifications to accommodate the transportation of the Upper Stage and Orion payload test articles. The First Stage test article would be transported from the railhead located near the northern boundary of RSA to TS 4550 by a specialized transporter. The roadway that would be used to transport the First Stage test article from the railhead to TS 4550 would not require any modifications.

For these reasons, the Proposed Action would have a minimal impact on roadways.

4.7.2.1.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on roadways.

4.7.2.2 Railroads

4.7.2.2.1 Proposed Action

Based on the Transportation Plan prepared for the Ares I IVGVT at TS 4550, the First Stage test article would be transported by rail from ATK in Utah to RSA (MSFC, 2007a). The article would be transported from the railhead located near the northern boundary of RSA to TS 4550 by a specialized transporter. The railhead would be structurally modified to accommodate the delivery and offloading of the test article. The proposed modifications to the railhead have been included in an EA that the U.S. Army is preparing for the overall development of its property in the area – *EA for Enhanced Use Lease Development at Redstone Arsenal, Alabama,* planned to be submitted for public review in October 2007. The Army included the proposed railhead modifications in this EA to facilitate planning and design for its development plan for the property. Based on the findings of this EA, the proposed modifications to the railhead would not have any significant impacts on any resource.

For these reasons, the Proposed Action would have a minimal impact on railroads.

4.7.2.2.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on railroads.

4.7.2.3 Waterways

4.7.2.3.1 Proposed Action

Based on the Transportation Plan prepared for the Ares I IVGVT at TS 4550, the Upper Stage and Orion payload test articles would be transported by NASA's *Pegasus* barge from Michoud Assembly Facility in Louisiana to the MSFC Dock (MSFC, 2007a). Based on recently completed surveys conducted by MSFC, no dredging or structural modifications are needed for the MSFC Dock to accommodate delivery and offloading of the test articles.

For these reasons, the Proposed Action would have a minimal impact on waterways.

4.7.2.3.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on waterways.

4.8 Hazardous/Toxic Materials and Wastes

4.8.1 Storage and Handling

4.8.1.1 Proposed Action

Construction and operation of TS 4550 under the Proposed Action would require temporary storage and handling of hazardous materials such as paints, solvents, fuels, lubricants and oils. All storage and handling of hazardous materials and wastes at the facility would be conducted in accordance with all local, state, and federal laws and regulations, as well as with all applicable MSFC management plans and pollution prevention measures.

For these reasons, the Proposed Action would have a minimal impact on storage and handling of hazardous materials.

4.8.1.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on storage and handling of hazardous materials.

4.8.2 Waste Management

4.8.2.1 Proposed Action

Construction and operation of TS 4550 under the Proposed Action would require management of accumulated wastes such as those associated with paints, solvents, fuels, lubricants, and oils. Wastes accumulated at TS 4550 would be stored temporarily at a designated satellite accumulation point and then transported to HWSF and then shipped to an appropriate TSDF. Waste management at TS 4550 would be conducted in accordance with all local, state, and federal laws and regulations, as well as with all applicable NASA management plans and pollution prevention measures.

For these reasons, the Proposed Action would have a minimal impact on waste management.

4.8.2.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on waste management.

4.8.3 Contaminated Areas

4.8.3.1 Proposed Action

Because TS 4550 is located within the boundaries of OU 1, construction activities associated with the proposed modification of the building would require a CERCLA Site Access Checklist and potentially an associated dig permit for utility work within the existing footprint of the building. Based on the findings of the ongoing RI for OU1, the MSFC EEOH Office and project safety representative would implement applicable worker safety measures during construction activities.

Modification and operation of TS 4550 under the Proposed Action would not involve withdrawals from, or discharges to, groundwater. Construction activities would not require dewatering or involve intrusion into the residuum. Therefore, the Proposed Action would not directly impact the Southeast Plume or indirectly cause it to spread within the residuum or migrate upward or downward into the bedrock.

For these reasons, the Proposed Action would have a minimal impact on contaminated areas.

4.8.3.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on contaminated areas.

4.8.4 Lead-Based Paint

4.8.4.1 Proposed Action

Some of the TS 4550 structure was initially painted with LBP. LBP is still present within the building. Surface soils around TS 4550 are being analyzed for lead contamination as part of the RI that is currently being conducted for OU 1. LBP management would be conducted by the EEOH Office during the modification and operation of TS 4550 in accordance with all applicable federal, state, local, and NASA regulations and policies. Workers in TS 4550 would follow OSHA standards and procedures and the project safety representative would ensure that all LBP safety measures are implemented.

For these reasons, the Proposed Action would have minor LBP effects.

4.8.4.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no asbestos, LBP, or PCB-related effects.

4.8.5 Ordnance

4.8.5.1 Proposed Action

The TS 4550 site is located within an area that is designated as Probability 5 – Unlikely for MEC (UXO, ordnance that has exploded, or ordnance that does not have explosive potential). Because an area designated as Probability 3 – Occasional for MEC is located

approximately 100 feet (30.5 meters) southwest of the TS 4550 site perimeter, a MEC sweep would be conducted at the site as a precautionary measure before the commencement of any construction activity. Any MEC that is identified would be appropriately removed and disposed of in accordance with RSA's MMRP. Construction activities would be allowed to proceed only after the site is determined by RSA's MMRP to be safe from potential ordnance hazards.

For these reasons, the Proposed Action would have minimal ordnance-related effects.

4.8.5.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no ordnance-related effects.

4.8.6 Storage Tanks

4.8.6.1 Proposed Action

Operation of TS 4550 under the Proposed Action may involve the use of storage tanks. The existing inactive AST at the site may be activated and/or new ASTs may be added to the site depending on further evaluations of operational needs. No USTs would be used. Storage tank usage at the site would be conducted in accordance with all applicable regulations.

For these reasons, the Proposed Action would have a minimal impact on storage tanks.

4.8.6.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on storage tanks.

4.8.7 Pollution Prevention

4.8.7.1 Proposed Action

P2 would be implemented during modification and operation of TS 4550 under the Proposed Action in accordance with MSFC's P2 Plan. Therefore, the Proposed Action would not have a minimal impact on P2.

4.8.7.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Therefore, the No-Action Alternative would have no effect on P2.

4.9 Cumulative Impacts

4.9.1 Proposed Action

A "cumulative impact" is defined in 40 CFR 1508.7 as "the impact on the environment which results from the incremental impact of the action when added to other past, present,

and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions." Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Modification and operation of TS 4550 under the Proposed Action would have little potential to interact with any past, present, or reasonably foreseeable future actions at or outside MSFC. The coupling of the Proposed Action with the planned development projects identified in the MSFC Master Plan is not expected to result in adverse cumulative impacts to any resource based on their locations, schedules, and respectively low direct/indirect impact potentials.

The Proposed Action would have some minor positive cumulative impacts on the local economy resulting from short-term, temporary increases in employment and expenditures during construction. As the Proposed Action would allow MSFC to support IVGVT for the Constellation Program and provide critical test data for the design of the launch vehicle system, it would have positive cumulative impacts on operations at MSFC and the mission of NASA.

4.9.2 No-Action Alternative

Under the No-Action Alternative, TS 4550 would not be modified or operated to conduct IVGVT for the Constellation Program. Without the use of TS 4550, MSFC would not be able to support IVGVT for the Constellation Program and provide critical test data for the design of the launch vehicle system. As such, the No-Action Alternative would have adverse cumulative impacts on operations at MSFC and the mission of NASA.

SECTION 5

Summary of Environmental Consequences and Conclusions

5.1 Summary of Environmental Consequences

The potential environmental consequences of the Proposed Action and No-Action Alternative are summarized in Table 5-1.

TABLE 5-1
Summary of Environmental Consequences
EA of Modification and Operation of TS 4550

Resource	Proposed Action	No Action Alternative
Air Quality	MINOR IMPACT Short-term, minor impacts from fugitive dust and construction vehicle exhaust emissions during the construction period. Fugitive dust and exhaust emissions would not collectively represent a new major source of air emission that would require modification to the MSFC Title V permit. Operation of TS 4550 would also not include any new source of air emission that would be regulated under an air operating permit. Fugitive dust would be controlled by BMPs.	NO EFFECT
Noise	MINOR IMPACT Temporary increase in ambient noise levels in and around construction areas during construction period. Increased noise levels would be short term and limited to normal working hours. Based on the EPA estimates of noise dissipation, construction-related noise would not be audible in nearest residential area. Operational noise levels would be comparable to those generated by other testing activities conducted in the test area. Operational noise would be intermittent and is expected to be below the residential acceptable range in the residential areas of Huntsville and Madison. Workers would use hearing protection and would follow OSHA standards and procedures. The project safety representative would monitor operational noise levels and would ensure that all noise protection measures are implemented during testing activities.	NO EFFECT
Wildlife	MINIMAL IMPACT The TS 4550 site and its surroundings provide relatively low quality wildlife habitat. Modifications would not displace any wildlife habitat. Wildlife that utilize the areas around the site are adapted to the developed setting and high noise levels of the test area. Any disturbance experienced by wildlife is expected to be minimal and comparable to the disturbance experienced in other parts	NO EFFECT

TABLE 5-1
Summary of Environmental Consequences
EA of Modification and Operation of TS 4550

Resource	Proposed Action	No Action Alternative
	of the test area.	
Cultural Resources	MINOR IMPACT TS 4550 is not located within the vicinity of any of the archaeological sites that have been identified at MSFC. Modifications would occur entirely within the existing footprint of the building. Construction activities would occur within the TS 4550 site, which is entirely paved. The overall architectural design of the building would be maintained. The proposed upgrades and refurbishments would improve the structural integrity of the building. The reuse of TS 4550 to support another NASA program would add historical significance to the structure. HABS-HAER documentation is currently being prepared. SHPO has concurred with the Proposed Action and determined that the HABS-HAER documentation would serve as adequate mitigation for the proposed modifications.	NO EFFECT
Regional Employment and Economic Activity	MINOR POSITIVE IMPACT Construction work would not have a significant impact on the total labor force, employment, or unemployment in the region because of the small number of jobs that would be created. Expenditures for construction-related materials and supplies would have a small, short term, beneficial effect on the economy of the region.	NO EFFECT
Public and Occupational Health and Safety	MINIMAL IMPACT Proposed Action would not require permanent personnel relocations or employee hires. Workers would follow OSHA standards and procedures and the project safety representative would ensure that all safety measures are implemented during testing activities. Modifications would include upgrading/installing safety and fire detection/suppression features. The MSFC security program would be sufficient for providing security.	NO EFFECT
Utilities	MINIMAL IMPACT Modifications would involve upgrading existing utility systems and installing new utility systems. The increase in energy demand would not overburden the energy utility system of MSFC. Proposed Action would not significantly increase potable water consumption or domestic wastewater and solid waste generation. Operation of TS 4550 would produce little or no process/industrial wastewater. Solid waste generated during construction activities would be disposed of at RSA's Construction Landfill.	NO EFFECT

TABLE 5-1
Summary of Environmental Consequences
EA of Modification and Operation of TS 4550

Resource	Proposed Action	No Action Alternative
Transportation	MINIMAL IMPACT Modifications would temporarily increase traffic in the area during construction. Modifications would not involve widening the facility access road or expanding the paved parking/staging areas at the site. Pavement of the access road and other areas may be repaired or reinforced. The roadways that connect the MSFC Dock to TS 4550 and the railhead to TS 4550 would not require any modifications for transporting test articles. Necessary railhead modifications have been included in an EA that the U.S. Army is preparing for the overall development of its property in the area – findings concluded that the modifications would not have any significant impacts on any resource. No dredging or structural modifications are needed for the MSFC Dock.	NO EFFECT
Hazardous Materials Storage/Handling and Waste Management	MINIMAL IMPACT Storage/handling of hazardous materials and waste management would be conducted in accordance with all local, state, and federal laws and regulations, as well as with all applicable MSFC management plans and pollution prevention measures.	NO EFFECT
Contaminated Areas	MINIMAL IMPACT Construction activities would require a CERCLA Site Access Checklist and potentially an associated dig permit for utility work within the existing footprint of the building. Proposed Action would not directly impact the underlying groundwater contamination plume or indirectly cause it to spread within the residuum or migrate upward or downward into the bedrock.	NO EFFECT
Lead-Based Paint	MINOR IMPACT LBP management would be conducted by the EEOH Office in accordance with all applicable federal, state, local, and NASA regulations and policies. Workers would follow OSHA standards and procedures and the project safety representative would ensure that all LBP safety measures are implemented.	NO EFFECT
Ordnance	MINIMAL IMPACT The TS 4550 site is located near an area that has been designated as having an “occasional” probability for MEC. A MEC sweep would be conducted at the site as a precautionary measure before the commencement of any construction activity. Any MEC that is identified would be appropriately removed and disposed of in accordance with RSA’s MMRP.	NO EFFECT
Storage Tanks	MINIMAL IMPACT Storage tank usage at the site would be conducted in accordance with all applicable regulations.	NO EFFECT

TABLE 5-1
Summary of Environmental Consequences
EA of Modification and Operation of TS 4550

Resource	Proposed Action	No Action Alternative
Pollution Prevention	MINIMAL IMPACT P2 would be implemented during modification and operation of TS 4550 In accordance with MSFC's P2 Plan.	NO EFFECT
Cumulative Impacts	MAJOR POSITIVE IMPACT Proposed Action would have little potential to interact with any past, present, or reasonably foreseeable future actions at or outside MSFC. Coupling of the Proposed Action with planned development projects is not expected to result in adverse cumulative impacts to any resource based on their locations, schedules, and respectively low direct/indirect impact potentials. Proposed Action would have some minor positive cumulative impacts on the local economy resulting from short-term, temporary increases in employment and expenditures during construction. Proposed Action would allow MSFC to support IVGVT for the Constellation Program and provide critical test data for the design of the launch vehicle system; therefore, it would have positive cumulative impacts on operations at MSFC and the mission of NASA.	MAJOR IMPACT Without the use of TS 4550, MSFC would not be able to support IVGVT for the Constellation Program and provide critical test data for the design of the launch vehicle system. As such, the No-Action Alternative would have adverse cumulative impacts on operations at MSFC and the mission of NASA.

5.2 Conclusions

Based on the findings of this EA, the Proposed Action would not have a significant impact on the quality of the human or natural environment. The only mitigation measure that has been determined to be necessary for the Proposed Action is the preparation of HABS-HAER documentation for the proposed modifications to TS 4550. This EA supports a Finding of No Significant Impact for the Proposed Action. Accordingly, preparation of an EIS is not required.

SECTION 6

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SECTION 7

List of Preparers

Name	Title	Primary Responsibility
Jason Glasgow/CH2M HILL	Environmental Engineer	Hazardous Materials/Wastes
Donna Holland/NASA	Environmental Engineer	Analysis and Coordination
Tunch Orsoy/CH2M HILL	Environmental Scientist	CH2M HILL Project Manager
Mike Reynolds/NASA	Environmental Engineer	NASA Project Manager

APPENDIX A

Regulatory Agency Correspondence

STATE OF ALABAMA
ALABAMA HISTORICAL COMMISSION
468 SOUTH PERRY STREET
MONTGOMERY, ALABAMA 36130-0900

COLONEL (RET.) JOHN A. NEUBAUER
EXECUTIVE DIRECTOR

TEL: 334-242-3184
FAX: 334-240-3477

August 24, 2007

Ralph H. Allen
Historic Preservation Officer
Marshall Space Flight Center, Alabama 35812

Re: AHC 07-1089
Take Back The Moon Program
Modifications to NHL Saturn V Test Stand
Madison County, Alabama

Dear ~~Mr. Allen~~: Ralph:

Upon review of the information forwarded by your office, we have determined that the mitigation proposals are sufficient to mitigate the adverse effects caused by alterations for the new test stand. Therefore, we can concur with the proposed activities. However, as this is a National Historic Landmark, this proposal should also be forwarded to the Secretary of the Interior for review.

We appreciate your efforts on this project. Should you have any questions, my point of contact for this matter is Greg Rhinehart at (334) 230-2662. Please have the AHC tracking number referenced above available and include it with any correspondence.

Truly yours,

Elizabeth

Elizabeth Ann Brown
Deputy State Historic Preservation Officer

EAB/GCR/gcr

National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

July 16, 2007

Reply to Attn of: AS21

Ms Elizabeth Ann Brown
State Historic Preservation Officer
Alabama Historical Commission
468 South Perry Street
Montgomery, AL 36130-0090

Dear Ms. Brown:

NASA has undertaken the development of two new rocket systems to take man back to the Moon and on to Mars as directed by the President. Marshall Space Flight Center (MSFC) will play a major role in the development and testing of these new rocket systems. Several of our test stands that have played a significant part in the testing of the Saturn and Space Shuttle programs will again be called upon to test these new rockets. These tests will require modifications to the stands to accommodate the new rocket configurations and will allow us to also do much needed repairs and maintenance.

The testing is a tremendous step in improving the condition of the stands and can only be seen as having a positive effect by adding to the already historic significance of the stands.

The enclosed submittal describes the proposed changes to the Advanced Saturn Dynamic Test Stand, Building 4550, one of MSFC's four National Historic Landmarks.

Please review the enclosed package and me contact me at (256)544-4959 if you need additional information.

Respectfully,

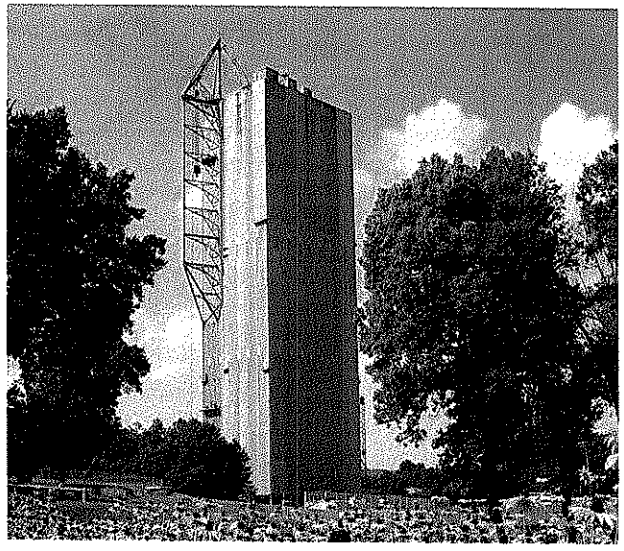
Ralph H. Allen
Marshall Space Flight Center
Historic Preservation Officer

Enclosure

bcc:
AS21/Kent Criswell
AS21/Ralph Allen
AS21/Joseph King
AS22/Dave Skridulis
AS10/Mike Reynolds
AS10/Donna Holland
Historic File

Interior Modifications To Building 4550 at Marshall Space Flight Center, Huntsville, AL For Testing of Aries I & Aries V Rocket Systems

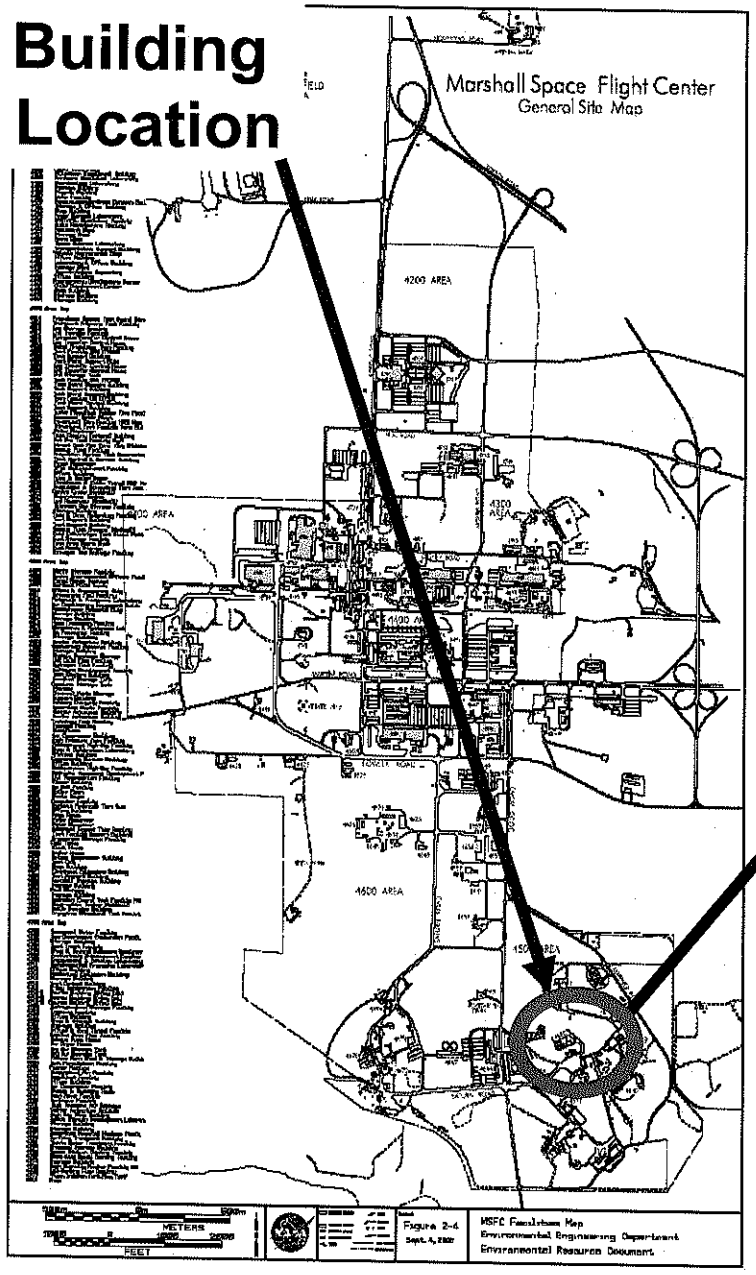
(4550 is Listed on the National Register as a National Landmark Structure)

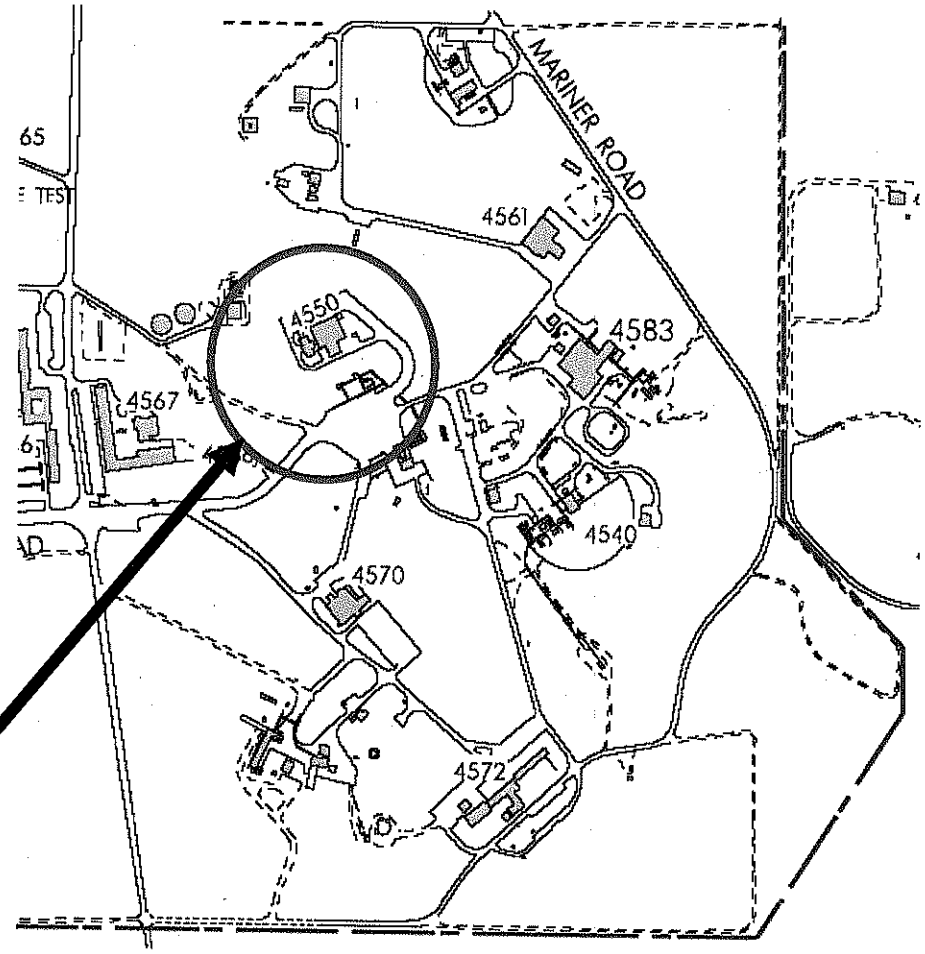


NASA's Marshall Space Flight Center (MSFC) proposes to modify building 4550 to test the new Aries I and Aries V rocket.

These changes will accommodate Engine/stage vibration modal testing and Upper Stage Engine and Mated Vertical Ground Vibration Test (MVGVT) of CLV-Upper Stage

Building Location



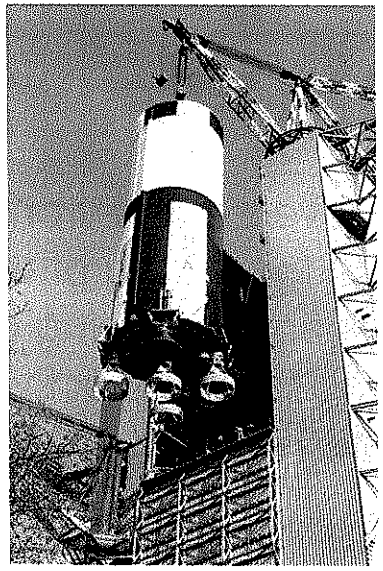


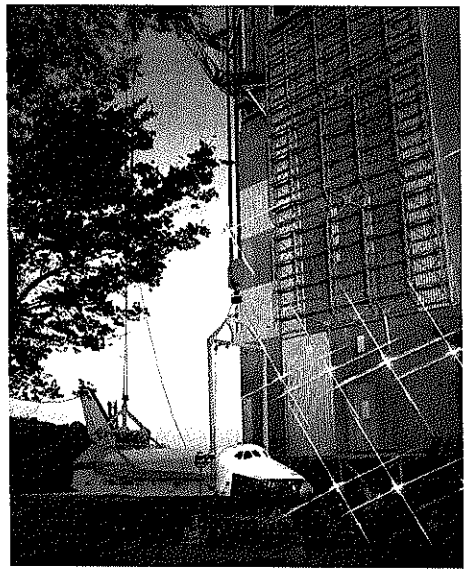
Site Plan of 4550 Vicinity

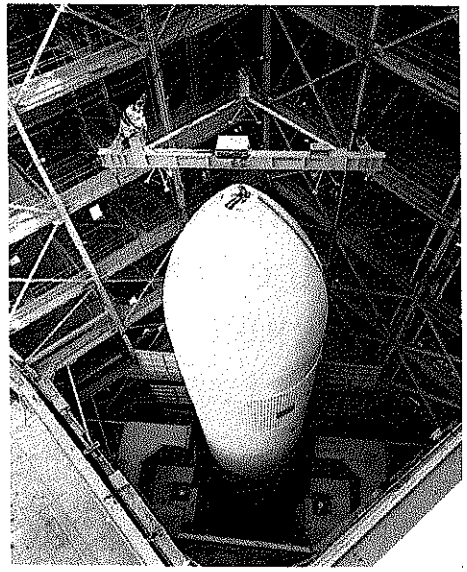
EAST TEST AREA

NORTH

Site Map of Marshall Space Flight Center
Huntsville, Alabama







General Description of Planned Work And Perspective In Context of Previous Testing

The Dynamic Test Stand (4550) was built in 1963 for dynamic testing of the Saturn V Rocket and in 1975 it was modified for testing of the Space Shuttle Vehicle (Orbiter + 2 Solid Rocket Boosters + External Tank).

NASA is now developing the next generation of manned (and unmanned) space vehicles, Aries I and Aries V, and plans to perform the dynamic testing of these new vehicles in the Dynamic Stand (4550).

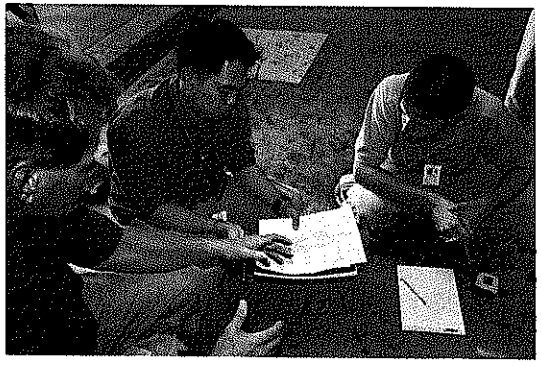
The stand was listed as a National Historic Landmark for the part it played in the testing of the Saturn Rocket and gained additional significance with the Space Shuttle Vehicle testing. The planned testing of the Aeries vehicles can only be seen as having a positive effect on the significance of this unique facility.

Proposed Mitigation

Although the work that will be done at 4550 is not adverse, the work will change the current interior configuration put in place for testing of the Space Shuttle Vehicle to a configuration that necessary for testing of the new Aries I and V vehicles. As stewards of this important and active structure, we do feel that some "mitigation" steps are needed.

Our plan is to document and interpret the structure to capture its past testing roles. To do this, we will;

1. Gather old photos and drawings into an electronic format and produce an electronic record (CD).
2. Extensively photograph the structure both inside and outside (already accomplished).



3. Have the structure documented and interpreted by the National Parks Service/Historic American Engineering Record (HAER). This latter effort is already underway and a team from HAER is on-site this summer.

Building & Project Information

MSFC's Dynamic Test Stand was designated as a National Landmark in 1984 as a part of the Man In Space Program.

It was evaluated in 2003 as a part of MSFC's Center wide Historic Assessment and again in 2007 as a part of a NASA-Wide Survey and Evaluation of Historic Facilities and Properties in the Context of the U.S. Space Shuttle Program. These surveys underscored the historic significance of this structure.

This project will modify the interior of the stand to accommodate testing of the Aeries I and Aeries V rocket systems. The exterior general appearance of the stand will not change, however the interior platforms that were added for the Space Shuttle testing will be removed and new platforms will be added to support the testing of the new rockets. In addition, much needed maintenance will be done to the stand that should improve the condition and integrity of the structure..

4550 General Building Data

NAME OF STRUCTURE:
Advanced Saturn Dynamic
Test Facility 4550

LOCATION: Marshall Space
Flight Center
Huntsville, Alabama

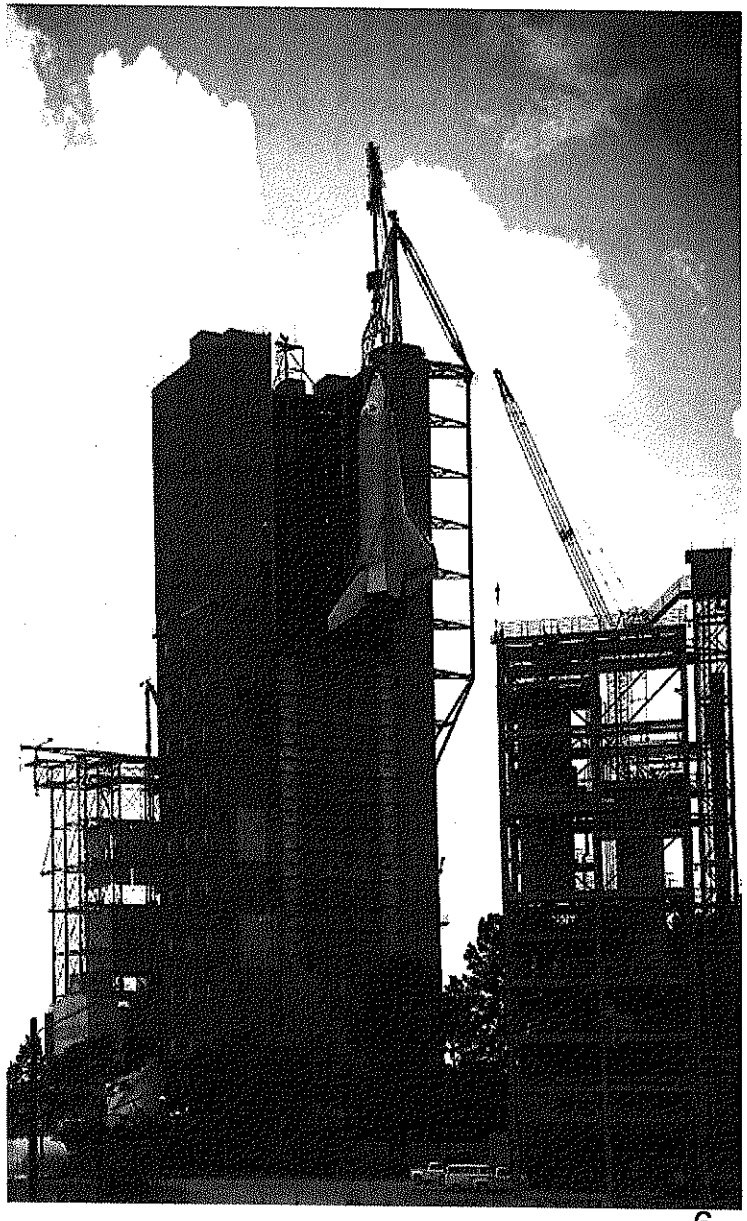
DATE(S) OF DESIGN: 1963
Modified in 1975/76 for Shuttle
testing

ARCHITECT/ENGINEER:
Maurice H. Connell & Associates

USE (ORIGINAL/PAST MODIVICATIONS/FUTURE):
Advanced Saturn Dynamic Test Facility (1963)
Space Shuttle Mated Ground Vibration Test Facility (1975)
Zero Gravity Drop Tower (1981)
Microgravity Drop Tower (2001)
Aeries I & V Dynamic Testing (2010)

NRHP ASSESSMENT: Eligible under Criteria A, and C.
(National Landmark Listing)

INTEGRITY: Excellent



4550 Building Information

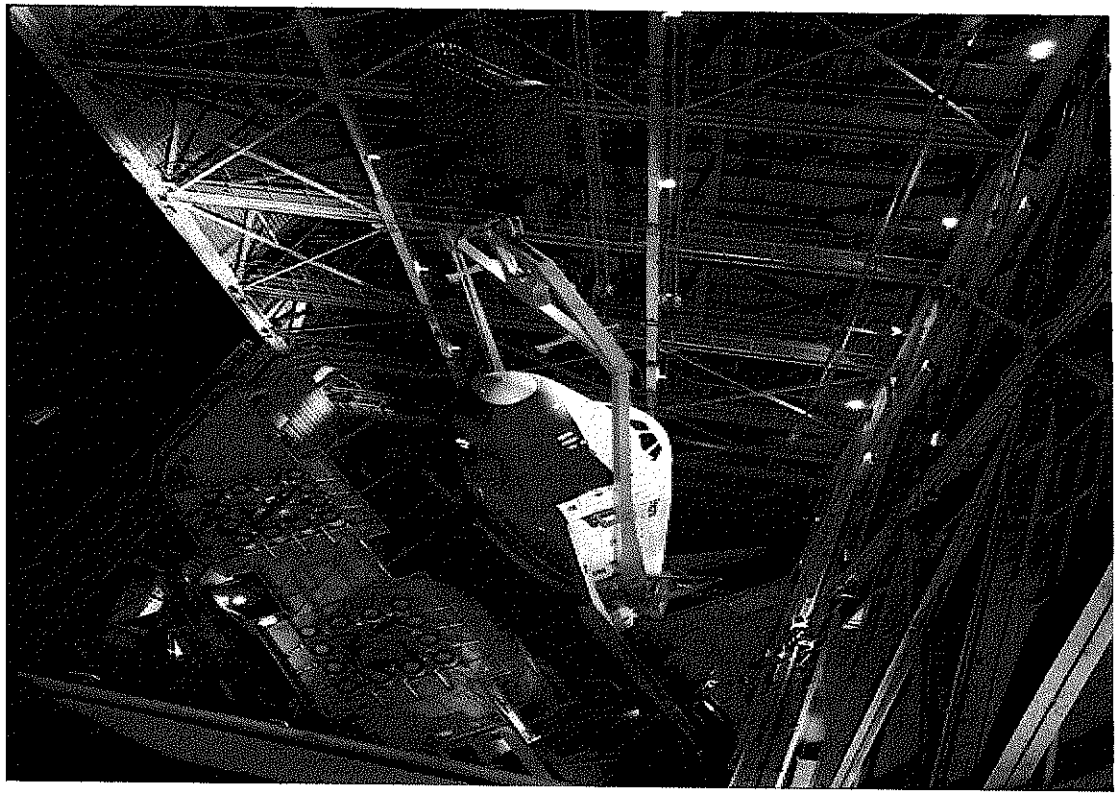
Building 4550 was first built as a dynamic test stand for the Saturn V. The main steel framing of the tower is 360' tall, with the height of the structure increased by another 115' when the topmost 200-ton derrick is fully extended.

Originally 101' square for the Saturn V testing, the stand was enlarged to accommodate the Space Shuttle and is now 125' (north/south elevations) by 101' (east/west elevations) in footprint. The reinforced concrete base of the Tower measures 125'" by 101'.

Corrugated metal siding sheathes the test stand. Two small hoist houses sit at the base of Building 4550 on its east and west facades. Hoist houses contain derrick hoist machinery and air compressors. Other features of the test stand include a drop tube running the height of the steel framing on the north facade, two loading deck levels at 120' and 216' with movable side beams, landings for the 16 levels of the stand, a 175-ton derrick at level nine on the east façade, an elevator,

4550 Building Information - Continued

two heated and air-conditioned instrumentation and control shelters, and two reinforced concrete tunnels for connective cables. A one-story, reinforced concrete terminal structure, Building 4551, stands immediately adjacent at the west base of the test stand and contained instrumentation and controls. The stand is also equipped with high pressure air and nitrogen piping, as well as industrial and potable water systems.



Note: North face shown with roof and sliding doors removed

Test Stand 4550 Statistics

MSFC Dynamic Test Stand

- Located in East Test Area
- 360 feet tall; 15 levels (24 ft / level)
- max overall height 425 ft with crane
- Built 1963

Past Ground Vibration Test (GVT) programs at TS 4550

- Saturn V
- Space Shuttle Launch Stack Configurations (1974-78)

Roof opens approx. 50' x 74'

- via removable panels
- 2 (3 panels in pic) bays x 3 bays;
- each bay = 24 ft or 25 ft wide
- 50ft wide x 74ft deep opening

North face opens approx. 50' x 144'

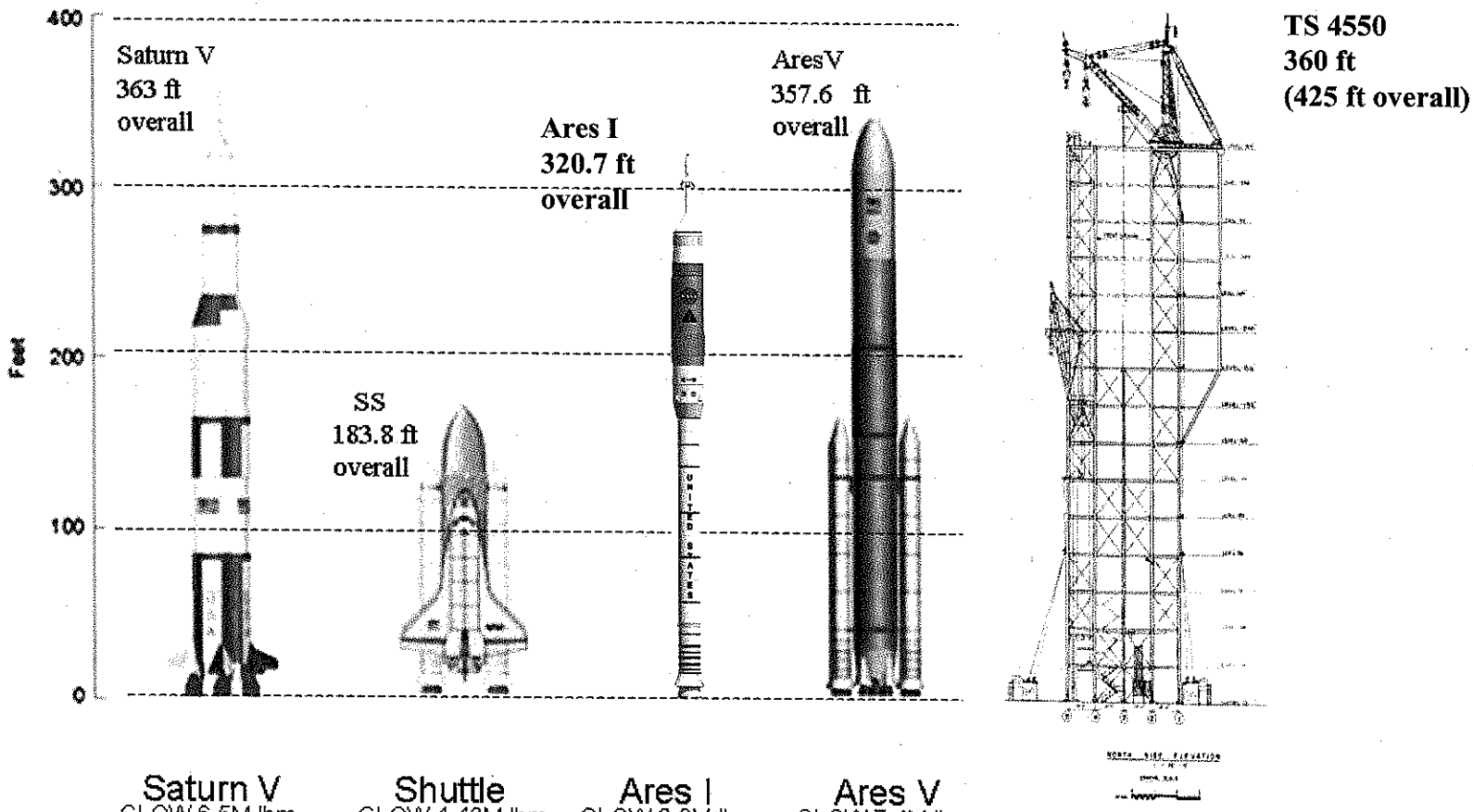
via vertical sliding doors

- 2 (3 panels in pic) bays x 6 floors;
- each bay = 24 ft or 25 ft wide
- each floor = 24 ft tall
- 50 ft wide x 144 ft tall opening

Launch Vehicle Comparisons and TS 4550

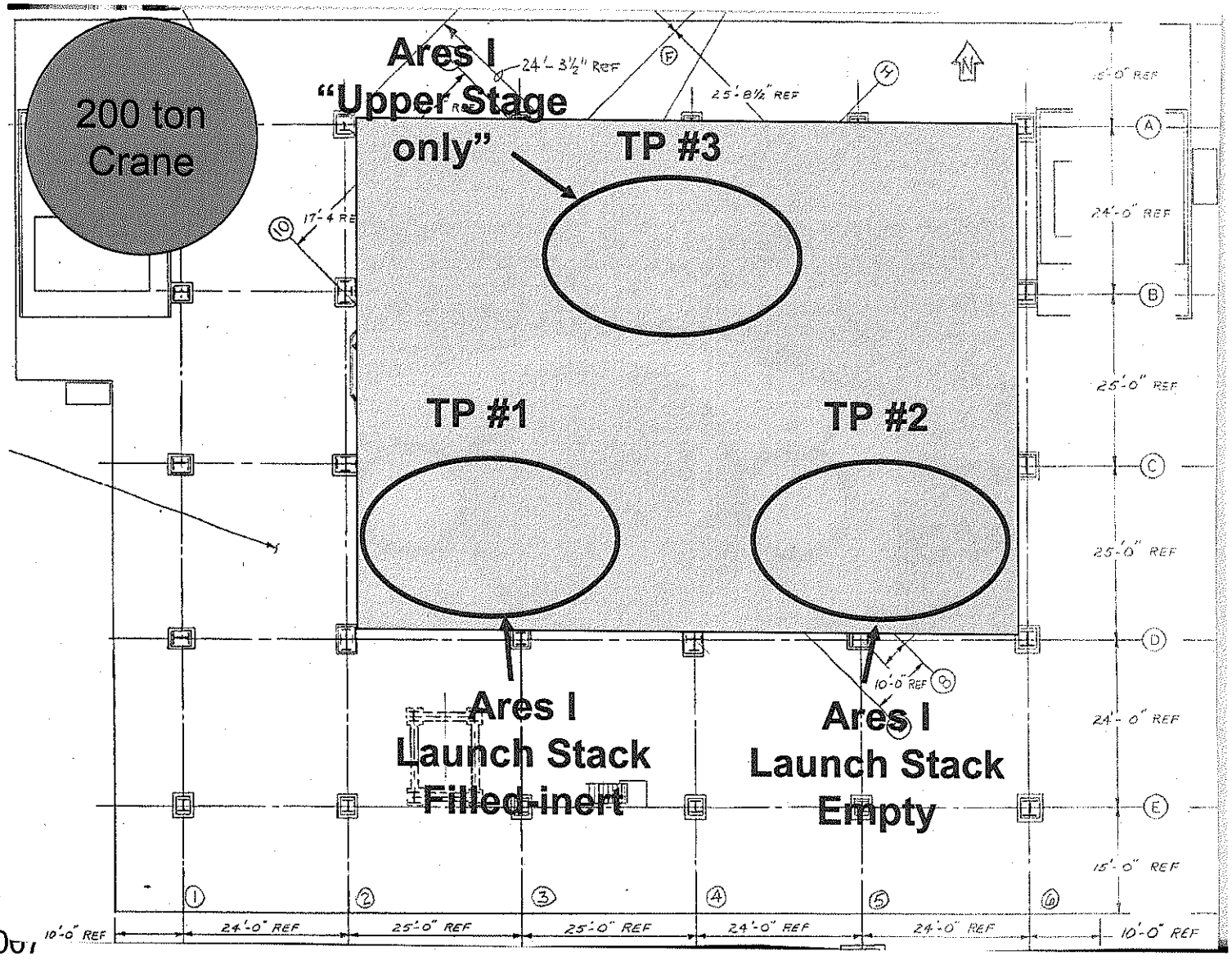
Note: NTS (only approximate scale)

Note: Heights shown do not include an additional 14+ feet for HDS height



Saturn V	Shuttle	Ares I	Ares V
GLOW 6.5M lbm	GLOW 4.43M lbm	GLOW 2.0M lbm	GLOW 7.4M lbm
		Crew Launch Vehicle (CLV)	**Cargo Launch Vehicle (CaLV)**

Proposed Ares I Test Position Locations at TS 4550

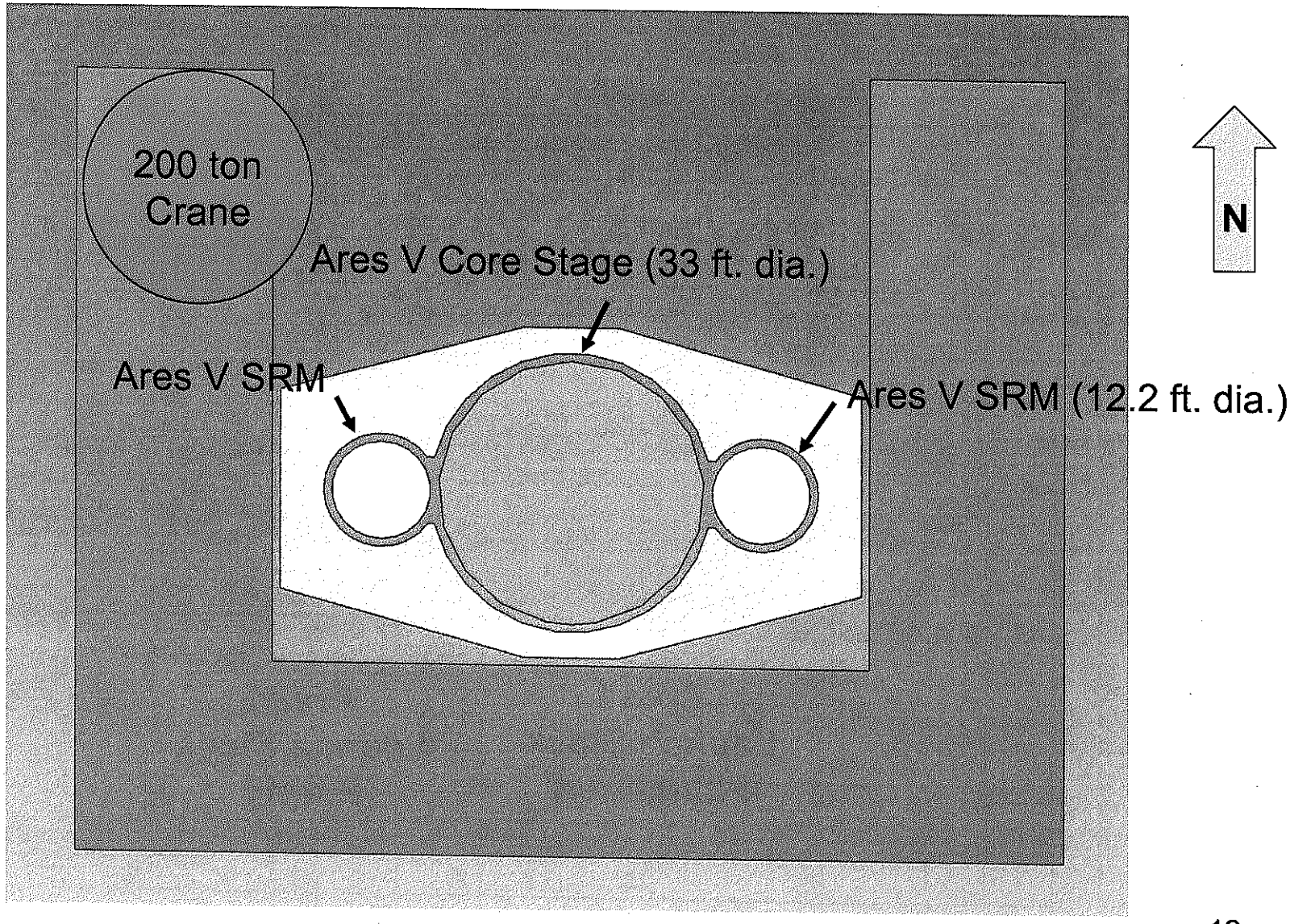


North

Future -- Ares V at TS 4550

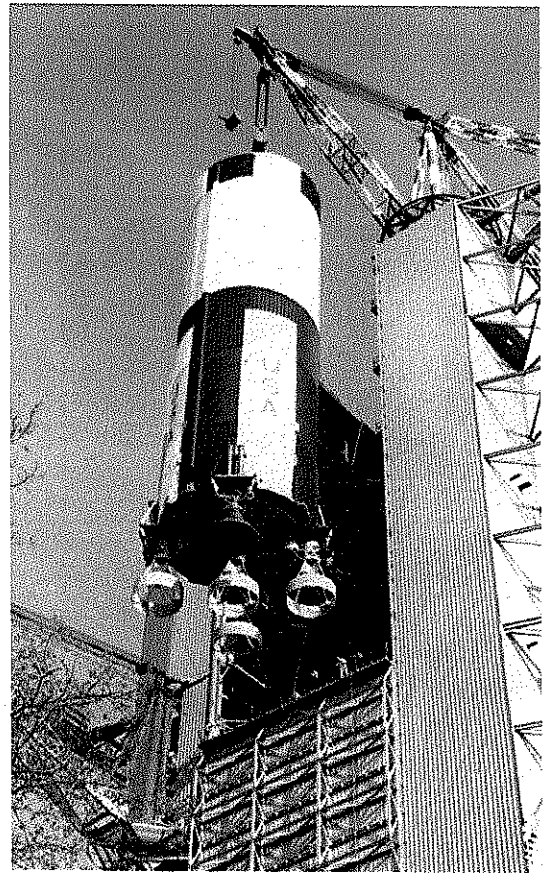
Ares V

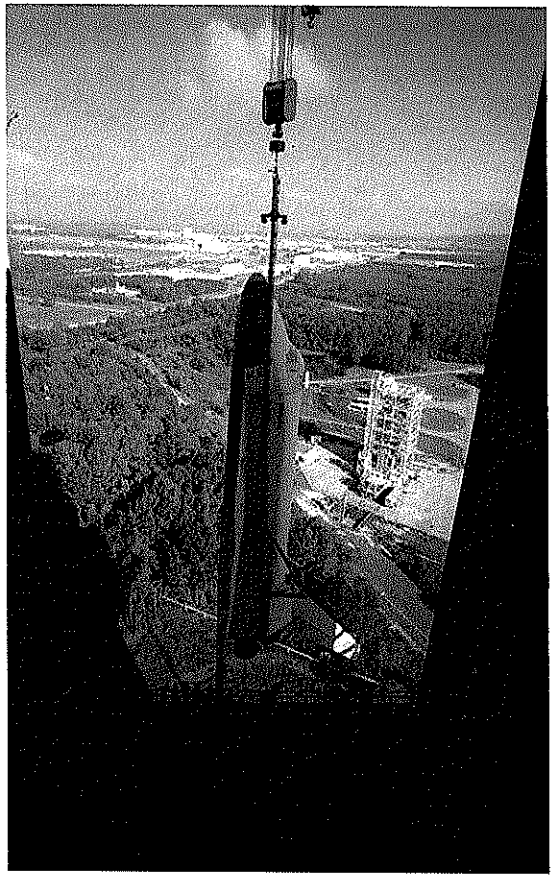
Cargo Launch Vehicle (CaLV)



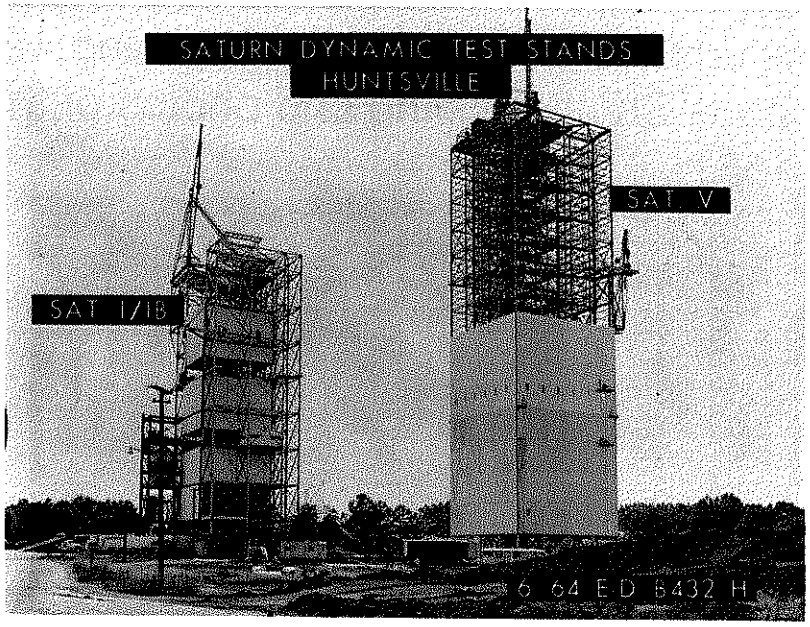
Photos of 4550

The following pages are included to show photos of building 4550 during the Saturn V and Space Shuttle testing and photos of the adjacent Control Building 4551.





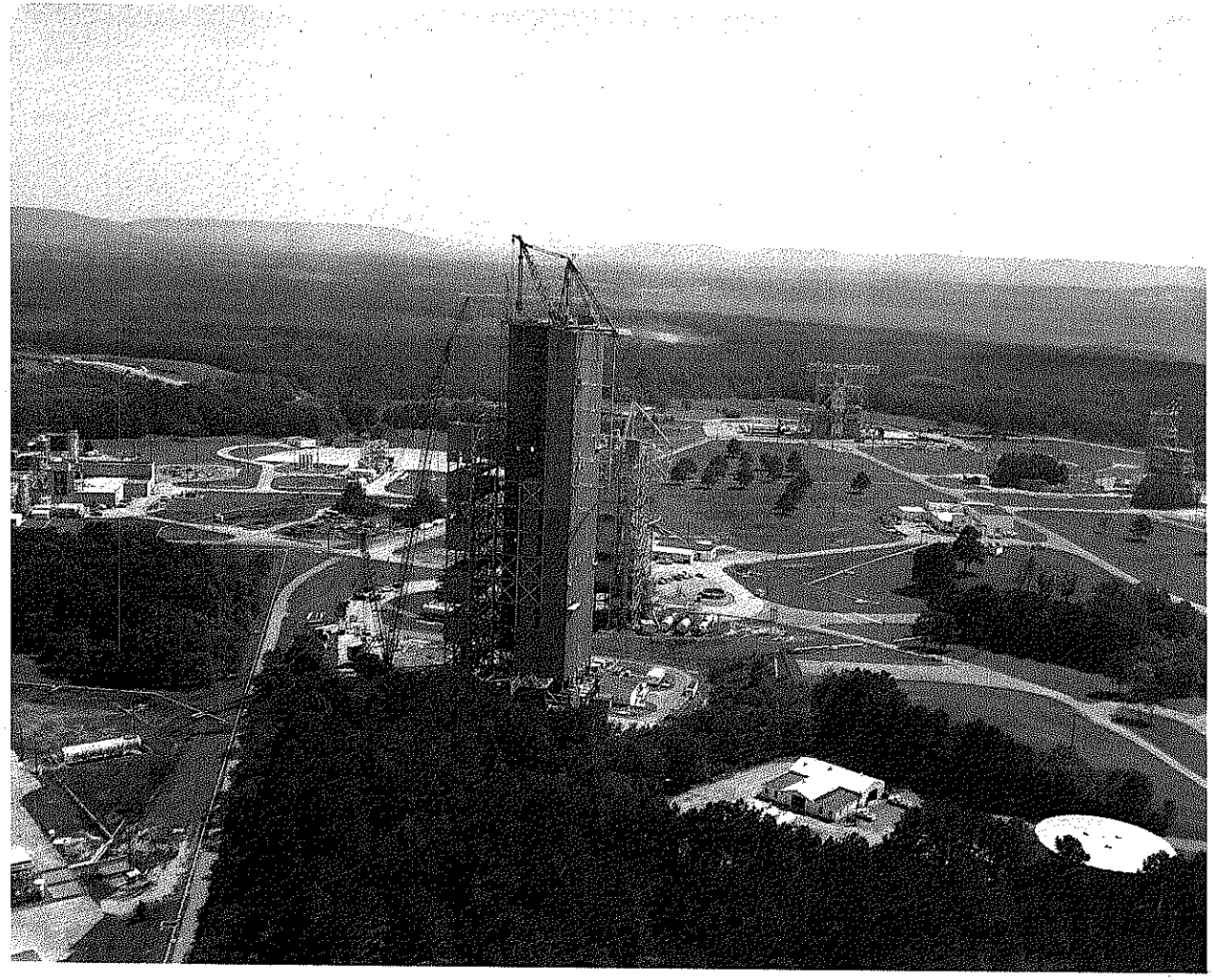
Photos of 4550



4550 Under Construction

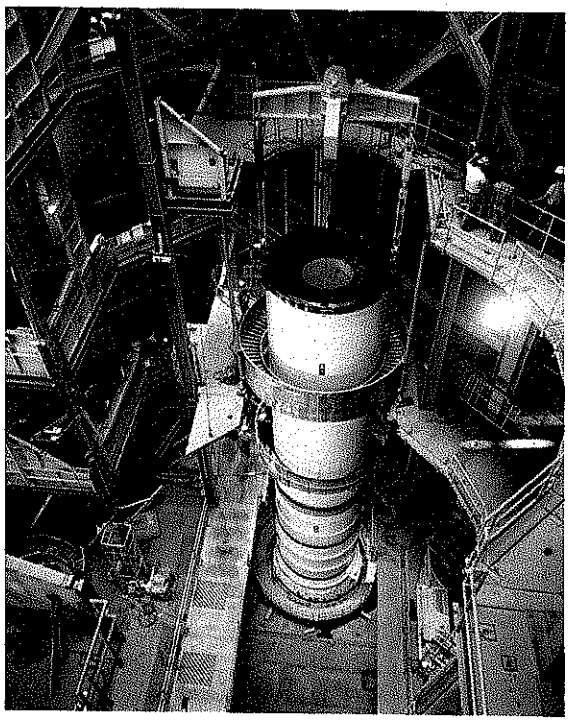
Saturn V Being Hoisted into Stand

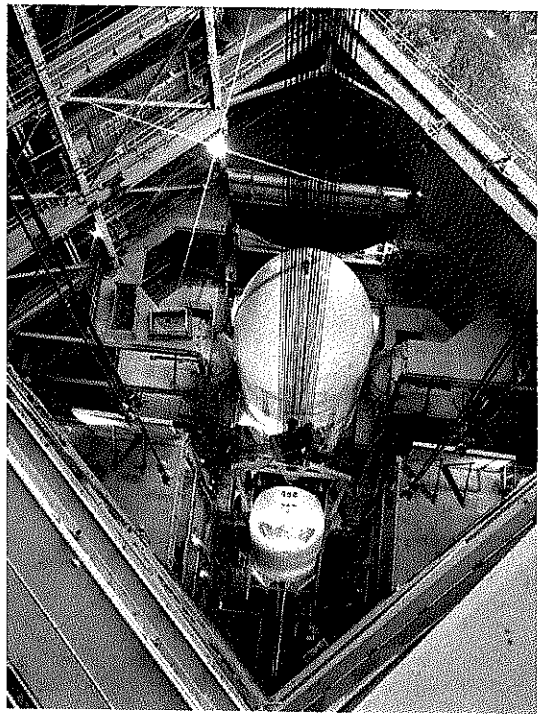
Photos of 4550

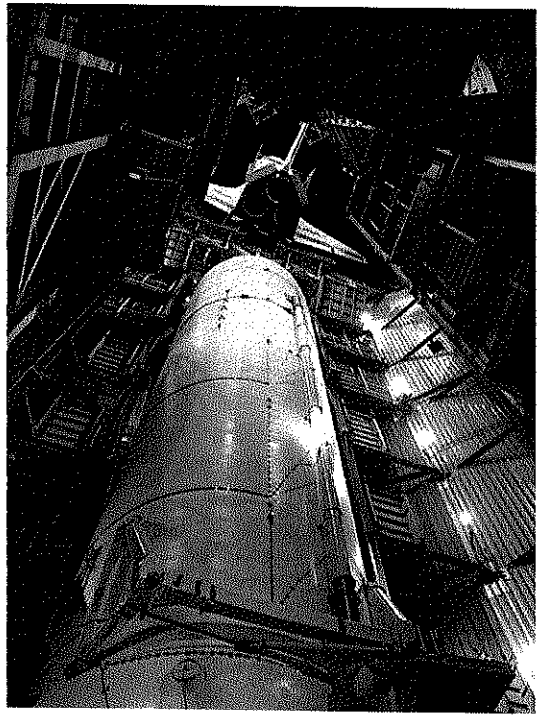


Enlargement of 4550 in 1976 For Shuttle Testing

Photos of 4550

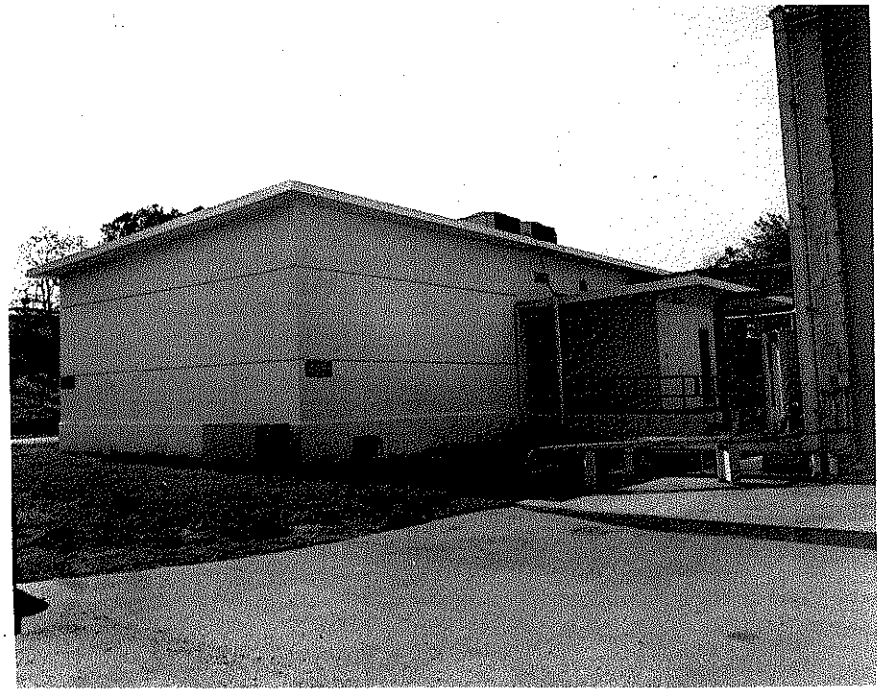




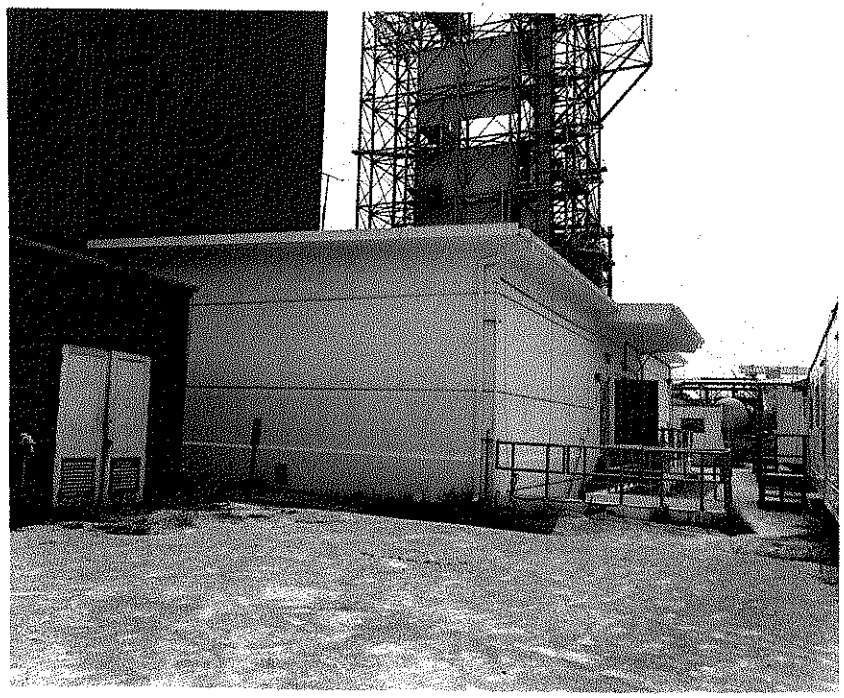


Space Shuttle Testing

4551



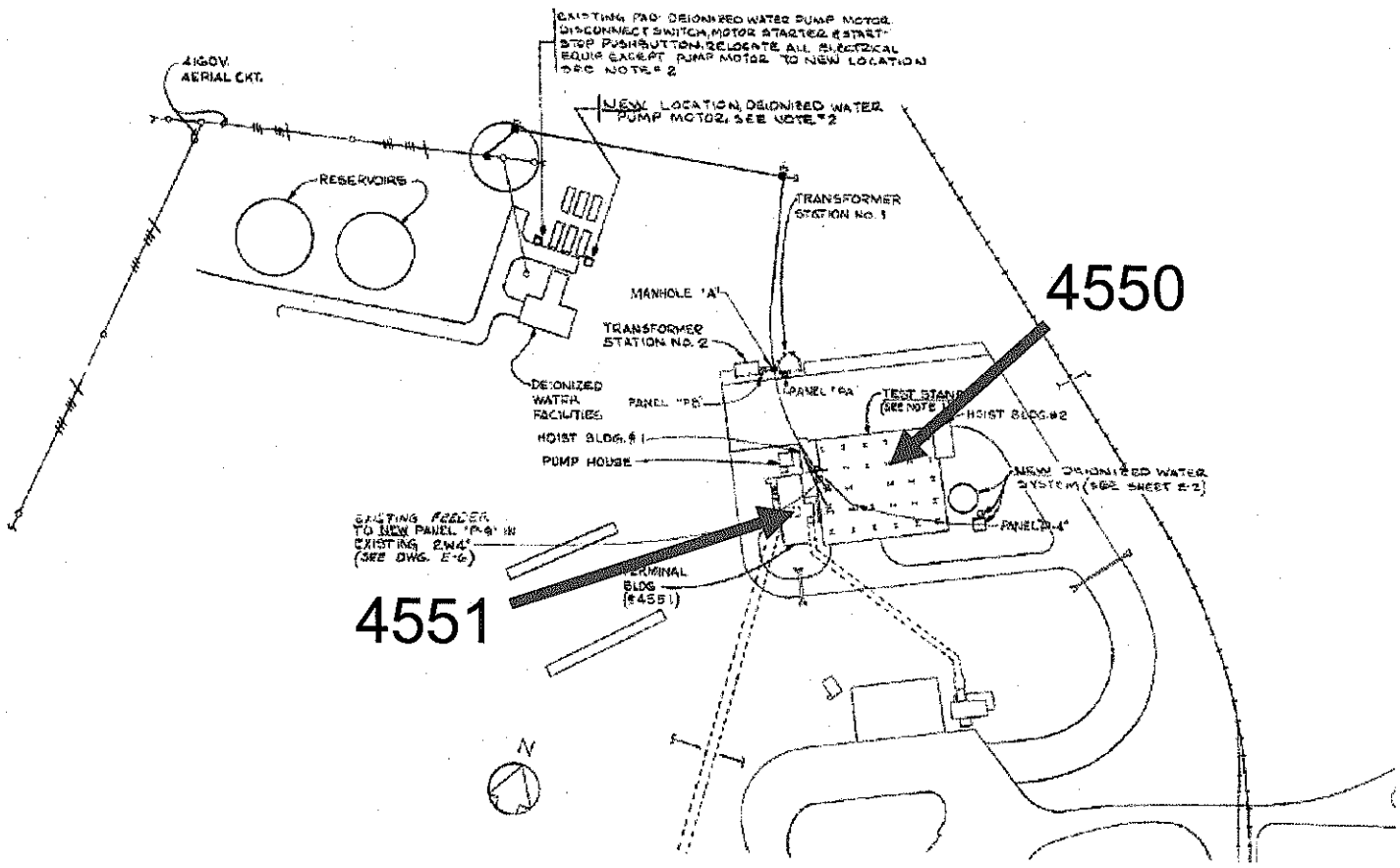
Southeast Corner



Northwest Corner

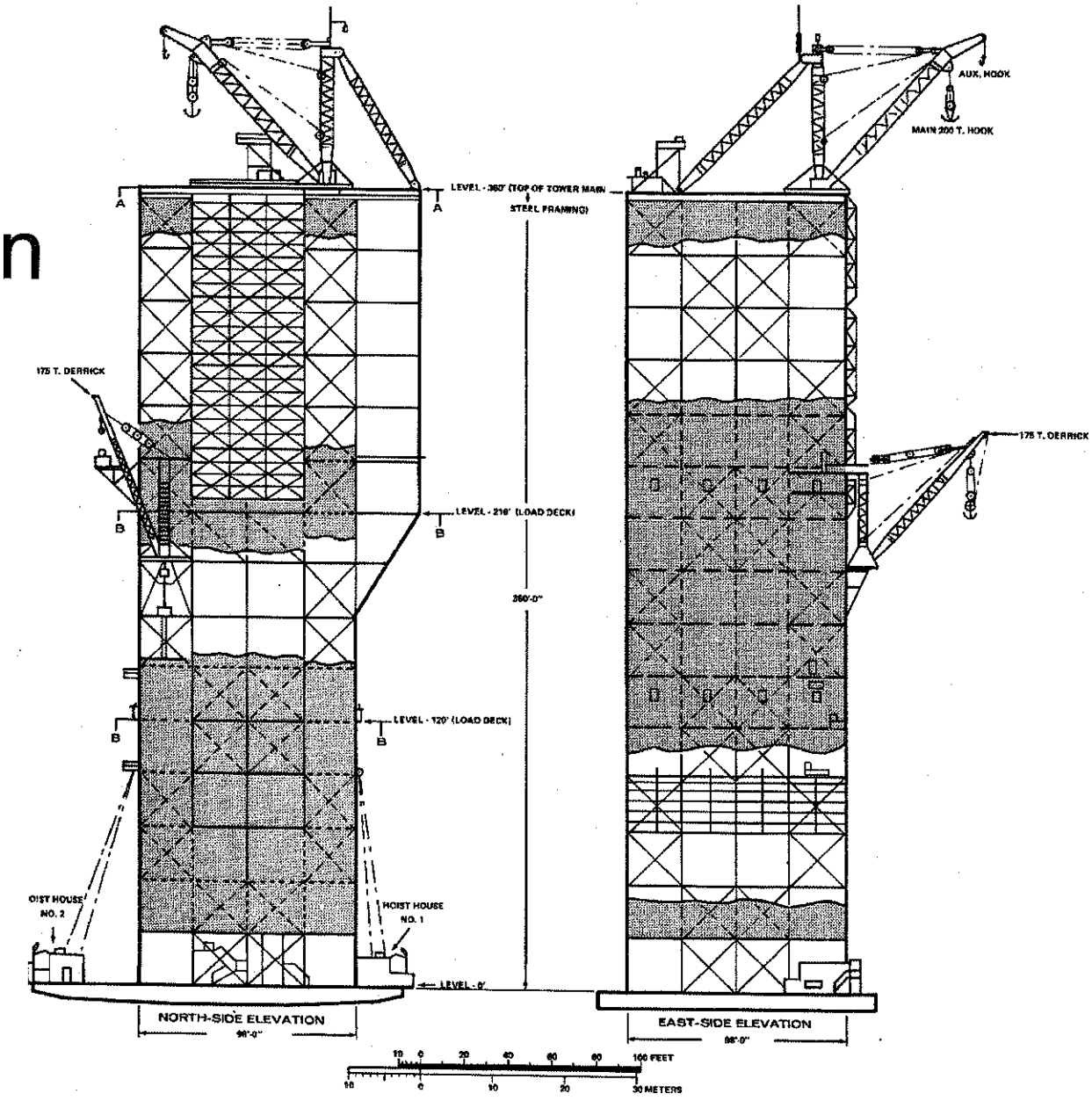
Drawings

- TS 4550 Site Plan drawing
- Saturn V Testing Configuration Elevations
- Saturn V Testing Configuration Plans
- Space Shuttle Testing Configuration Elevations
- Space Shuttle Testing Configuration Plans

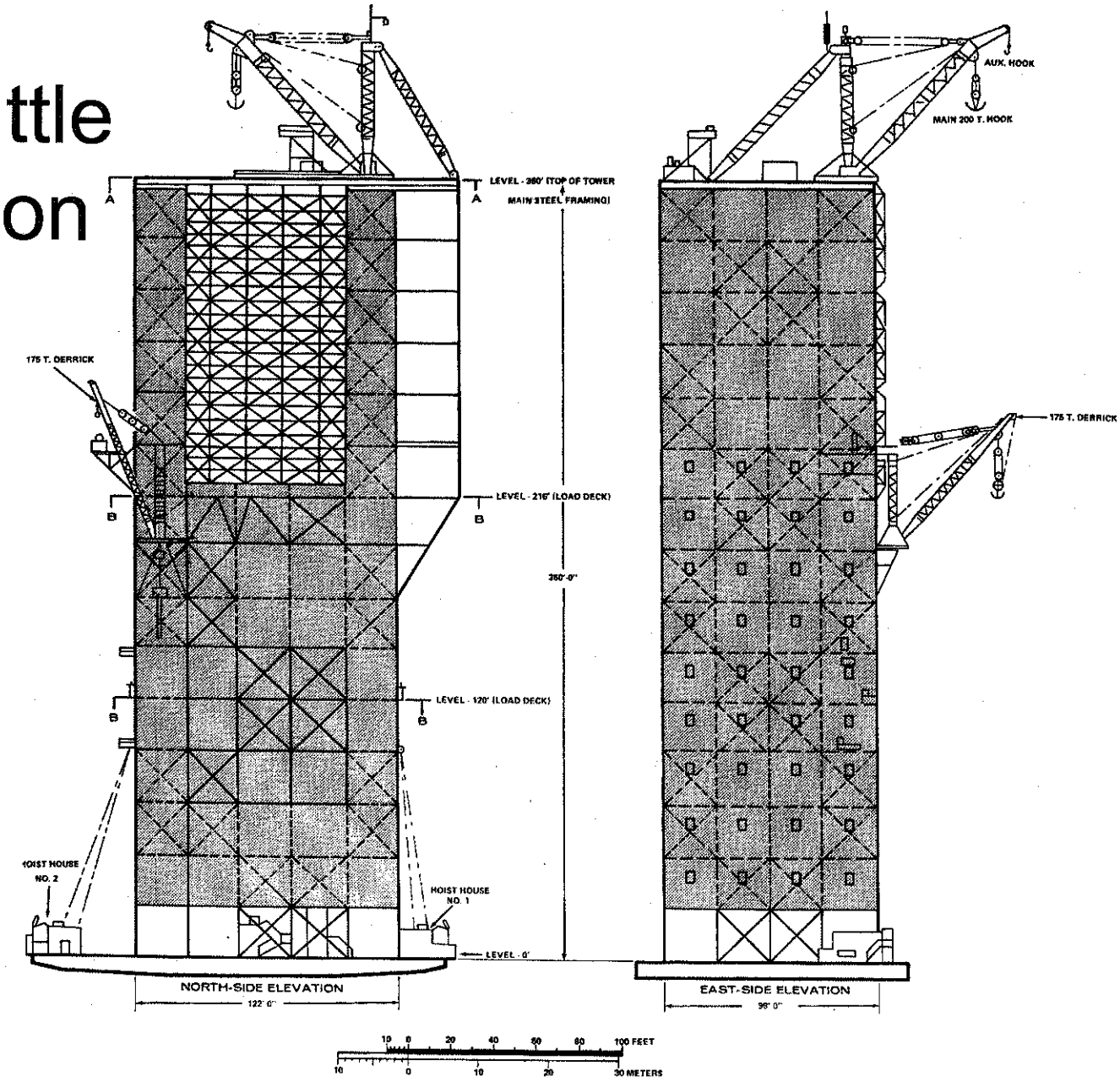

4160V.
AERIAL CKT.
RESERVOIRS
NEW LOCATION, DEIONIZED WATER
PUMP MOTOR, SEE NOTE #2
TRANSFORMER
STATION No. 1
4550
MANHOLE 'A'
TRANSFORMER
STATION No. 2
DEIONIZED
WATER
FACILITIES
PANEL "PB"
PANEL "PA"
HOIST BLDG. #1
PUMP HOUSE
HOIST BLDG. #2
NEW DEIONIZED WATER
SYSTEM (SEE SHEET E-2)
PANEL "A"
TO NEW PANEL
EXISTING 2W4"
(SEE DWG. E-6)
TERMINAL
BLDG
(#4551)
4551
N

Site Plan

Saturn V Configuration Elevations

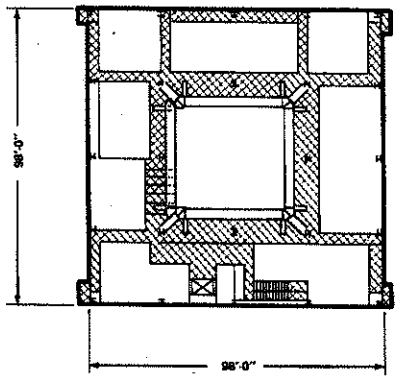


Space Shuttle Configuration Elevations

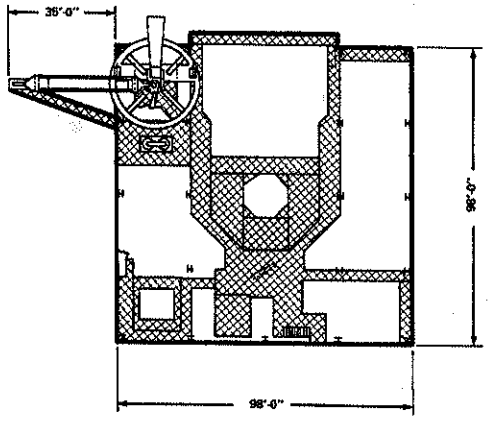


8/7/2007

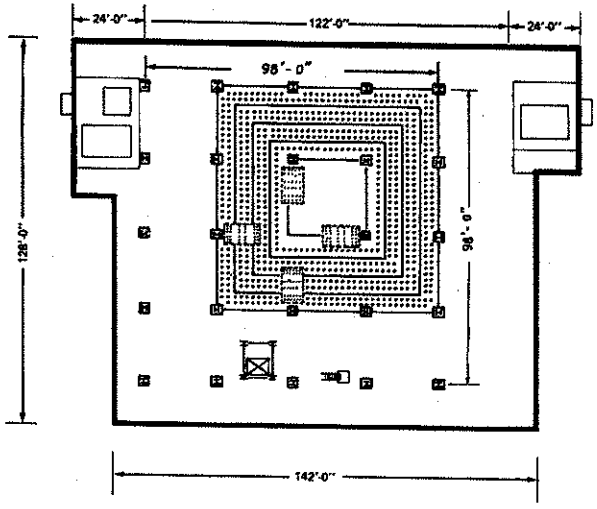
Saturn V Configuration Plans



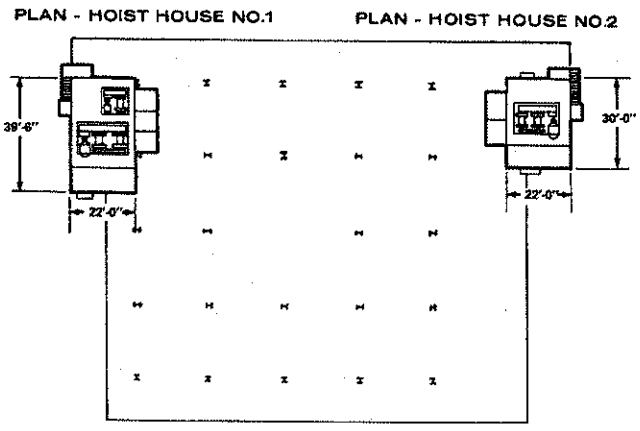
LOAD DECK - LEVEL 120'&216'

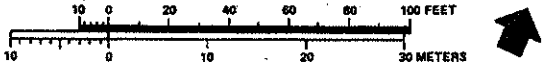


LOAD DECK - LEVEL 360'



FOUNDATION PLAN





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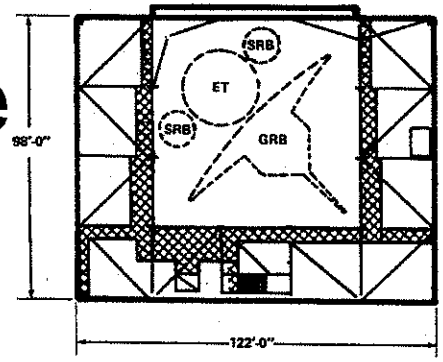
Space Shuttle Configuration Plans



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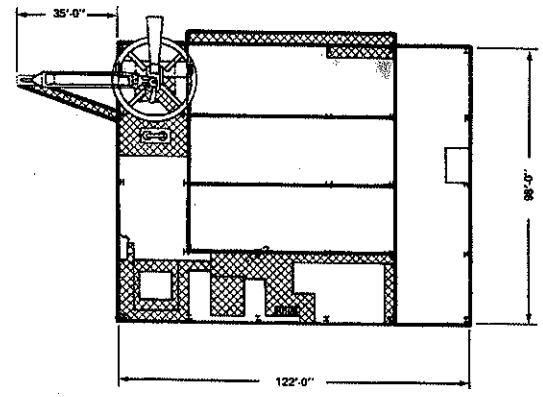
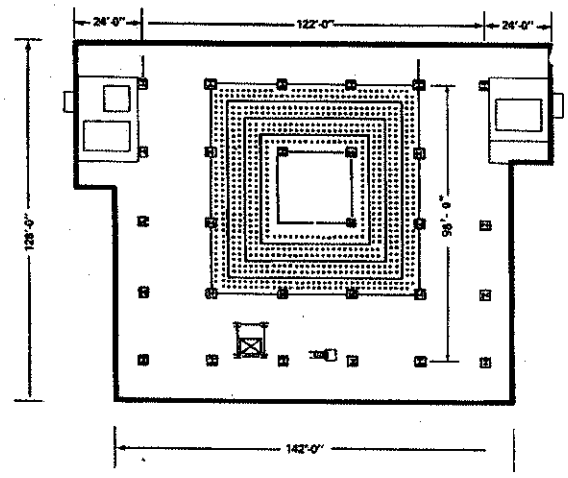


LOAD DECK - LEVEL 360'



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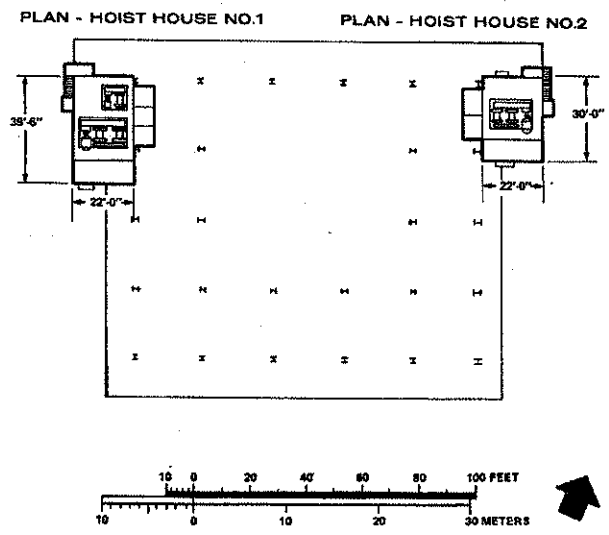

OFFICE OF THE MAYOR

100 HUGHES ROAD
MADISON, ALABAMA 35758

ARTHUR S. "SANDY" KIRKINDALL
MAYOR

(256) 772-5602/5603
FAX (256) 772-3828

CITY OF MADISON

September 26, 2007

Mr. Allen Elliott, Manager
Environmental Engineering and Occupational Health Office
Attn: AS10
N A S A
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Dear Mr. Elliott,

Thank you for your letter dated September 24, 2007 regarding the draft EA and FONSI for the Constellation Program.

The City of Madison has no comment on the draft EA and FONSI for the TS 4550.

Thank you for the opportunity to comment. Please feel free to contact my office if I can be of further assistance.

Sincerely,

Arthur S. Kirkindall
Mayor

National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Mr. Terry Hazle
(AMSAM-RA-DEM
Building 4488
Redstone, Arsenal, AL 35898

September 24, 2007

Dear Terry Hazle:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

The Draft EA and Draft FONSI are also available for public review at the Main, Madison, and Triana Branches of the Huntsville-Madison County Public Library and at the External Relations Office at MSFC. To receive copies of the Draft EA and Draft FONSI, contact Mr. Allen Elliott, Mail Code AS10, Environmental Engineering and Occupational Health Office, Marshall Space Flight Center, Alabama 35812, Phone: (256) 544-0662, Email: Allen.Elliott@nasa.gov or Mr. Shar Hendrick, Mail Code CS30, External Relations Office, Marshall Space Flight Center, AL 35812, Phone: (256) 544-2030, Email: Shar.Hendrick@nasa.gov. Comments on the Draft EA and Draft FONSI must be provided in writing by mail or email and must be postmarked by October 24, 2007, the end of the 30-day public comment period.

Under the Proposed Action, TS 4550 would be modified and operated to conduct IVGVT in support of the Constellation Program. The proposed modification of TS 4550 would involve upgrading utility and mechanical systems and remodeling the test position infrastructure within the interior of the building. The exterior walls and support structure of TS 4550 would not require any architectural modifications. The EA assesses the potential impacts of the Proposed Action and the No-Action Alternative of maintaining existing conditions.

National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Honorable Sandy Kirkendall
Mayor of Madison
100 Hughes Road
Madison, Alabama 35758

September 24, 2007

Dear Sandy Kirkendall:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Representative Sue Schmitz
P.O. Box 12
Toney, AL 35773-0012

September 24, 2007

Dear Sue Schmitz:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Alabama State Clearinghouse
Department of Economic and community
P.O. Box 2929
3645 Norman Bridge Road
Montgomery, AL 36105-0939

September 24, 2007

Dear Alabama State Clearinghouse:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

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Under the Proposed Action, TS 4550 would be modified and operated to conduct IVGVT in support of the Constellation Program. The proposed modification of TS 4550 would involve upgrading utility and mechanical systems and remodeling the test position infrastructure within the interior of the building. The exterior walls and support structure of TS 4550 would not require any architectural modifications. The EA assesses the potential impacts of the Proposed Action and the No-Action Alternative of maintaining existing conditions.

National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of: NASA/MSFC
Mail Code CS30
ATTN: Mr. Shar Hendrick
MSFC, AL 35812

September 24, 2007

Dear Shar Hendrick:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Senator Hinton Mitchem
412-A Gunter Avenue
Guntersville, AL 35897

September 24, 2007

Dear Senator Hinton Mitchem

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Representative Randy Hinshaw
P.O. Box 182
Meridianville, AL 35749

September 24, 2007

Dear Randy Hinshaw:

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National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Honorable Marvelene Freeman
Mayor of Trina
640 Sixth Street
Triana, AL 35758

September 24, 2007

Dear Marvelen Freeman:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Congressman Robert Cramer
5th Congressional District of Alabama
626 Clinton Avenue, West
Huntsville, AL 35801

September 24, 2007

Dear Robert Cramer:

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National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Elizabeth Ann Brown, Deputy SHPO
Alabama Historical Commission
468 South Perry Street
Montgomery, AL 36130-0900

September 24, 2007

Dear Elizabeth Ann Brown:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

J.I. Palmer, Jr., Regional Administrator
Environmental Protection Agency
Region IV
61 Forsyth St., SW
Atlanta, GA 30303

September 24, 2007

Dear J.I. Palmer:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Honorable Mike Gillespie, Chairman
Madison County Commission
Madison County Courthouse
Huntsville, AL 35801

September 24, 2007

Dear Mike Gillespie:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Senator Lowell Barron
P.O. Box 65
Fyffe, AL 35971

September 24, 2007

Dear Lowell Barron:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

NASA/MSFC
Mail Code CS20
ATTN: Ms. Kim Newton
MSFC, AL 35812

September 24, 2007

Dear Kim Newton:

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George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

ply to Attn of: NASA/MSFC
Mail Code CS20
ATTN: Mr. Mike Wright
MSFC, AL 35812

September 24, 2007

Dear Mike Wright:

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National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Refuge Manager
USFWS Wheeler Wildlife Refuge
ply to Attn of: Rt. 4 Box 35603
Decatur, AL 35603

September 24, 2007

Dear Refuge Manager:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of: NASA/MSFC
Mail Code CS20
ATTN: Mr. Dom Amatore
MSFC, AL 35812

September 24, 2007

Dear Dom Amatore:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

NASA/MSFC
Mail Code CS30
ATTN: Ms. Rosa Kilpatrick
MSFC, AL 35812

September 24, 2007

Dear Rosa Kilpatrick:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Representative Ray Garner
P.O. Box 395
Madison, AL 35758

September 24, 2007

Dear Ray Garner:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

ly to Attn of:

NASA/MSFC
Mail Code JP01
ATTN: Mr. Dan Dumbaucher
MSFC, AL 35812

September 24, 2007

Dear Dan Dumbacher:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of: NASA/MSFC
Mail Code EV60
ATTN: Mr. Lewis Wooten
MSFC, AL 35812

September 24, 2007

Dear Lewis Wooten:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Onis "Trey" Glenn 111, Director
Alabama Department of Environmental
Management
1400 Coliseum Blvd.
Montgomery, Alabama 36110-2059

September 24, 2007

Dear Onis Trey Glenn:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Representative Howard Sanderford
P.O. 16023
Huntsville, AL 35802-1971

September 24, 2007

Dear Mr. Sanderford:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Honorable Loretta Spencer
Mayor of Huntsville
P.O. Box 308
308 Fountain Circle
Huntsville, AL 35801

September 24, 2007

Dear Loretta Spencer:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

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National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Senator Richard Shelby
Huntsville International Airport
1000 Glenn Hearn Boulevard # 20127
Huntsville, AL 35824

September 24, 2007

Dear Senator Richard Shelby:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Representative Laura Hall
P.O. Box 3367
Huntsville, AL 35810

September 24, 2007

Dear Laura Hall:

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National Aeronautics and Space Administration
George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Senator Tom Butler
136 Harrington Drive
Madison, AL. 35758

September 24, 2007

Dear Tom Butler:

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National Aeronautics and Space Administration

George C. Marshall Space Flight Center
Marshall Space Flight Center, AL 35812

Reply to Attn of:

Representative Albert Hall
RT. 1 P.O. Box 275
Gurley, Alabama 35748

September 24, 2007

Dear Albert Hall:

The Draft Environmental Assessment (EA) and Draft Finding of No Significant Impact (FONSI) for the Modification and Operation of Test Stand (TS) 4550 in Support of Integrated Vehicle Ground Vibration Testing (IVGVT) for the Constellation Program, George C. Marshall Space Flight Center (MSFC), have been prepared and are now available for public review and comment. The documents can be viewed at this website: http://www.nasa.gov/mission_pages/constellation/main/eis.html.

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APPENDIX B

Public Involvement

NOTICE OF PUBLIC COMMENT PERIOD FOR THE DRAFT ENVIRONMENTAL ASSESSMENT AND DRAFT FINDING OF NO SIGNIFICANT IMPACT

Modification and Operation of Test Stand 4550 in Support of Integrated Vehicle Ground Vibration Testing for the Constellation Program

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
GEORGE C. MARSHALL SPACE FLIGHT CENTER

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The Draft EA and Draft FONSI are available for public review at the NASA External Relations Office at MSFC and at the following Branches of the Huntsville-Madison County Public Library:

Main Branch - 915 Monroe St. SW, Huntsville, AL 35801, Phone: (256) 532-5940

Madison Branch - 130 Plaza Blvd, Madison, AL 35758, Phone: (256) 461-0046

Triana Branch - 280 Zierdt Road, Triana, AL 35756, Phone: (256) 772-3677

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September 23, 2007

STATE OF ALABAMA
MADISON COUNTY

Before me, Holly Dawn Hunter, a Notary Public in and for Said State and County, personally appeared Marcey Brown, known to me, who being by me first duly sworn, deposes and said person is a Legal Advertising Representative of the Huntsville Times, a newspaper published and printed at Huntsville, Madison County, Alabama, and that the attached legal notice was published in said newspaper on

Sept 23 2007

Marcey Brown
Legal Advertising Representative

Sworn to before me this the

16th **day of** Oct 2007

Holly Dawn Hunter
Notary Public

My commission expires August 7, 2011