



**NATIONAL AERONAUTICS AND SPACE ADMINISTRATION  
OFFICE OF INSPECTOR GENERAL**

---

---

**REVIEW OF NASA'S SELECTION OF  
DISPLAY LOCATIONS FOR THE  
SPACE SHUTTLE ORBITERS**

---

---

**SPECIAL REPORT**

---

---

**AUGUST 25, 2011**

## I. BACKGROUND AND SUMMARY OF FINDINGS

The Space Shuttle era began with the maiden voyage of Columbia on April 12, 1981, and came to a close in July 2011 after 135 missions, with Atlantis's return to Earth. In January 2004, President George Bush announced the Shuttle Program would end after construction of the International Space Station was complete. Subsequent to this announcement, NASA initiated a process to identify locations to display the soon-to-be-retired Space Shuttle Orbiters and other Shuttle Program artifacts. In this process, NASA sought to (1) place the Orbiters where they would be preserved for history and seen by the greatest number of visitors and (2) save taxpayer dollars by awarding the Orbiters to institutions that were willing to reimburse the Agency for the multi-million dollar cost of preparing them for display and transporting them to their new homes.

In 2008 and 2010, NASA published Requests for Information (RFIs) to “determine interest that may lead to selection of specific organizations to receive a Space Shuttle Orbiter.” In response, the Agency received expressions of interest from 29 organizations. NASA formed a team of civil servants (Recommendation Team) composed of individuals from various offices to review the RFI responses and make a recommendation to NASA Administrator Charles F. Bolden, Jr., regarding placement. On April 12, 2011, Administrator Bolden announced that the three Orbiters that had flown in space – Discovery, Atlantis, and Endeavour – would be placed, respectively, at the Smithsonian Institution's National Air and Space Museum, Steven F. Udvar-Hazy Center near Washington, D.C. (the Smithsonian), the Kennedy Space Center Visitor Complex in central Florida (Kennedy Visitor Complex), and the California Science Center in Los Angeles, California (Science Center). In addition, he announced that New York City's Intrepid Sea, Air, and Space Museum (Intrepid) would receive Enterprise, an Orbiter test vehicle currently on display at the Smithsonian. According to Bolden, he chose these locations to “provide the greatest number of people with the best opportunity to share in the history and accomplishments of NASA's remarkable Space Shuttle Program.”

The Administrator's announcement, while greeted with excitement at the chosen locations, was not well received by some members of Congress who represent geographic regions that will not receive an Orbiter. Some members raised concerns that in making its selections NASA failed to follow the law and instead allowed politics to dictate the result. In light of these concerns and public interest in the matter, the Office of Inspector General (OIG) examined NASA's process for selecting the Orbiters' new homes. During the course of our review, we interviewed more than a dozen NASA employees, including Administrator Bolden; Deputy Administrator Lori Garver; Associate Administrator for the Space Operations Mission Directorate William Gerstenmaier; Assistant Administrator for the Office of Strategic Infrastructure Olga Dominguez, the senior NASA official who led the selection process; and most of the current and former employees who participated in the process. We also interviewed officials from the four locations selected to receive an Orbiter. In addition, we reviewed dozens of NASA e-mails, briefing materials, interoffice memorandums, and timelines, as well as information submitted by the RFI respondents.<sup>1</sup>

---

<sup>1</sup> We did not verify the information provided by RFI respondents or the Recommendation Team's analysis of that information.

In summary, we found that NASA's decisions regarding Orbiter placement were the result of an Agency-created process that emphasized above all other considerations locating the Orbiters in places where the most people would have the opportunity to view them. The Agency was not required to and did not consider a location's ties to the Space Shuttle Program but, as directed by the 2010 NASA Authorization Act, considered whether the chosen locations had a connection to NASA's human spaceflight program.

With regard to its process, in response to the 2008 NASA Authorization Act the Agency provided to Congress a written disposition plan outlining its intentions to solicit information from interested parties and to use that information to determine where to place the Orbiters. In accordance with this plan, the Agency's Recommendation Team reviewed the information received in response to the RFIs, conducted additional research, scored the applicants on factors (such as annual museum attendance, regional population, access to international visitors, and ability to meet NASA's delivery schedule), and made a recommendation to the Administrator that, in addition to the Smithsonian, he select the three highest-scoring applicants. However, we found that the Team made several errors during its evaluation process, including one that would have resulted in a numerical "tie" among the Intrepid, the Kennedy Visitor Complex, and the National Museum of the U.S. Air Force (Air Force Museum) in Dayton, Ohio. Bolden told the OIG that had he been aware of this tie, he would have made the same decision regarding Orbiter placement because he believes the chosen locations will best serve NASA's goal to spur interest in science, technology, and space exploration.

We found no evidence that the Team's recommendation or the Administrator's decision were tainted by political influence or any other improper consideration. While the Administrator was subject to a great deal of pressure from members of Congress and other interested parties, we found no evidence that this pressure had any influence on the Administrator's ultimate decision on where to place the Orbiters. Moreover, we found no attempt by White House officials to direct or influence Bolden's decision making. We also found that NASA's process was consistent with applicable Federal law.

However, we found that some of the choices NASA made during the selection process – specifically, its decision to manage aspects of the selection as if it were a competitive procurement and to delay announcement of its placement decisions until April 2011 (more than 2 years after it first solicited information from interested entities) – may intensify challenges to the Agency and the selectees as they work to complete the process of placing the Orbiters in their new homes.

While we are not making specific recommendations for corrective action, we believe that as NASA completes this process, the Agency should:

- expeditiously review recipients' financial, logistical, and curatorial display plans to ensure they are feasible and consistent with the Agency's educational goals and processing and delivery schedules;
- ensure that recipient payments are closely coordinated with processing schedules, do not impede NASA's ability to efficiently prepare the Orbiters for museum display, and provide sufficient funds in advance of the work to be performed; and

- work closely with the recipient organizations to minimize the possibility of delays in the delivery schedule that could increase the Agency’s costs or impact other NASA missions and priorities.

## II. FACTS

### a. Introduction

NASA’s Space Shuttle era, which began with the maiden voyage of Columbia on April 12, 1981, ended after 135 missions when Atlantis landed at Kennedy Space Center on July 21, 2011. With the conclusion of the Space Shuttle Program came the need to decide where the three retired Orbiters – Discovery, Endeavour, and Atlantis – as well as the full-scale test vehicle, Enterprise, should be permanently displayed.<sup>2</sup> After a more than 2-year long process, NASA announced on April 12, 2011, that Discovery would reside at the Smithsonian, Endeavour at the Science Center, Atlantis at the Kennedy Visitor Complex, and Enterprise at the Intrepid.<sup>3</sup>

Although President Bush announced in 2004 that the Space Shuttle Program would end when assembly of the International Space Station was complete, it was not until 2007 that NASA began to seriously consider the question of what to do with the Orbiters once retired. Michael Griffin, who was NASA Administrator at the time, initially espoused the view that the Orbiters should be displayed at the NASA Centers with the greatest connection to the Shuttle Program and that the disposition decision should be made by the Administrator without soliciting public input. However, this approach would have required NASA to absorb the entire cost of “safing,” preparing for display, and transporting the vehicles to their new homes – a cost the Agency estimated at \$42 million for each of the flown Orbiters.<sup>4</sup> Based primarily on this factor, key civil servants at the Agency urged a different course – that NASA gauge the level of interest among museums and other organizations in paying for the privilege of owning and displaying an Orbiter. Ultimately, Griffin acquiesced to this view, and in December 2008, NASA issued its first RFI “to gather market research for NASA to make decisions regarding development of strategies for placement of Space Shuttle Orbiters and Space Shuttle Main Engines for public display after conclusion of [the Space Shuttle Program].”<sup>5</sup>

The NASA Authorization Act of 2008 required the Administrator to submit to Congress a detailed plan describing NASA’s proposed disposition process for the Orbiters and other Shuttle-related hardware.<sup>6</sup> In response, NASA produced a 27-page “Space Shuttle Program Transition

---

<sup>2</sup> Five Orbiters were manufactured and flew in space. However, in 1986 and 2003, respectively, Challenger and Columbia and their 14 crew members were lost in tragic accidents.

<sup>3</sup> Upon retirement, Space Shuttle Discovery had completed 39 flights, Endeavour 25 flights, and Atlantis 33 flights.

<sup>4</sup> “Safing” is the term NASA uses to describe the processes by which environmental and safety hazards, such as residual fuels and explosive ordinance, are removed from the Orbiters.

<sup>5</sup> The first RFI also referenced the possibility of acquiring the Shuttle’s main engines. However, NASA later decided to retain the engines.

<sup>6</sup> NASA Authorization Act of 2008 (Public Law 110-422) Section 613(a), “Disposition of Shuttle-Related Assets.”

and Retirement Personal Property Disposition Plan” (Property Disposition Plan) describing five “First Principles” it would strive to meet during the disposition process:

- support the safe completion of all remaining Space Shuttle missions;
- be disciplined, fair, transparent, and compliant with laws and regulations;
- provide personal property placement opportunities to preserve the history of the Space Shuttle Program;
- balance potential value to the public with the least cost to the taxpayer; and
- include appropriate stakeholders and subject matter experts in the planning phase of the disposition process.<sup>7</sup>

In the Property Disposition Plan, NASA indicated that it expected one flown Orbiter (most likely Discovery) would be placed at the Smithsonian and that it planned to issue an RFI to gauge interest by museums and other qualified institutions in acquiring the remaining Orbiters and other major flight hardware. NASA said only U.S. museums open to the public, U.S. governmental entities, or U.S. institutions dedicated to educational outreach would be considered. NASA also said that it would evaluate the information received in response to the RFI to develop further selection criteria and to make Orbiter placement determinations. Finally, the Agency indicated that it was interested in identifying recipient organizations that were capable of offsetting the high cost of Orbiter “safing,” display preparation, and transportation and that responding entities should be prepared to enter into reimbursable Space Act agreements with the Agency to cover these costs.<sup>8</sup>

#### **b. NASA Issues First Request for Information**

NASA issued an RFI in December 2008 seeking information from “educational institutions, science museums, and other appropriate organizations” about their interest in obtaining an Orbiter. NASA explained that it planned to transfer one flown Orbiter to the Smithsonian and that the other two flown Orbiters would be available for delivery no earlier than September 30, 2011, with a final delivery date of not later than May 21, 2012. In addition, NASA informed interested parties that the estimated \$42.8 million cost of obtaining a flown Orbiter was based on the following expenses: “safing” (\$14 million); preparation for museum display (\$20.5 million); and ferrying the Orbiter to an airport near the selected location on NASA’s specially modified Boeing 747 known as the Shuttle Carrier Aircraft (\$8.3 million).<sup>9</sup> NASA made clear that the \$42 million did not include the cost of transporting an Orbiter from the local airport to the display location, which was to be borne solely by the recipient. The

---

<sup>7</sup> Property Disposition Plan, page 6.

<sup>8</sup> Property Disposition Plan, page 23.

<sup>9</sup> Although NASA’s RFIs did not discuss Enterprise, because the vehicle is already on public display, the recipient of Enterprise will pay NASA only for costs associated with transporting the Orbiter to its final display location (\$8.3 million).

Agency also provided information about requirements for displaying an Orbiter, such as the need to provide a suitable climate-controlled indoor facility.

In the RFI, NASA made clear that responding organizations must be (1) a U.S. museum, institution, or organization dedicated to education or educational outreach, including NASA visitor centers; (2) a U.S. Federal agency, state, commonwealth, or U.S. possession or any municipal corporation or political subdivision thereof; or (3) the District of Columbia. The Agency requested that interested parties submit information about their accreditation, attendance, and financial profile, as well as about the population of the surrounding geographic area and the local infrastructure for transporting an Orbiter. NASA did not address the disposition of Enterprise in the RFI, although Agency officials told us they assumed the Smithsonian would return the vehicle to NASA for redistribution to another location in exchange for receiving a flown Orbiter.

By the March 2009 closing date, NASA had received responses from 21 entities interested in obtaining an Orbiter. Among them were the Kennedy Visitor Complex, Space Center Houston, and the U.S. Space and Rocket Center, which serve as the visitor centers for Kennedy Space Center, Johnson Space Center, and Marshall Space Flight Center, respectively. NASA also received expressions of interest from several prominent museums featuring air and space artifacts, including the Science Center, the Intrepid, the Air Force Museum, and the Museum of Flight in Seattle, Washington.

NASA formed the Recommendation Team, led by Dominguez, the Assistant Administrator for the Office of Strategic Infrastructure, to evaluate the ability of RFI respondents to pay for and display an Orbiter.<sup>10</sup> Although the members of this Team changed over time, for the bulk of the relevant period the group was composed of Sue Kinney, Director of Logistics, Office of Strategic Infrastructure; Robert Sherouse, Transition Manager, Office of Strategic Infrastructure; Jonathan Krezel, Space Shuttle Office Transition and Retirement Lead, Space Operations Mission Directorate; Mark Batkin, Attorney Advisor, Office of the General Counsel; Courtney Graham, Associate General Counsel, Office of the General Counsel; Mike Curie, Public Affairs Specialist, Office of Communications; and Rick Irving, Legislative Affairs Specialist, Office of Legislative and Intergovernmental Affairs.<sup>11</sup>

**Figure 1. Enterprise on Display at the National Air and Space Museum’s Steven F. Udvar-Hazy Center**



Source: “Space Shuttle Program Transition and Retirement Personal Property Disposition Plan,” November 2008

<sup>10</sup> The Office of Strategic Infrastructure is responsible for, among other things, managing the retirement and transition of all Space Shuttle Program property and equipment.

<sup>11</sup> Sherouse replaced Richard Wickman as an Office of Strategic Infrastructure representative in July 2009, and Krezel replaced Joel Kearns as the Space Operations Mission Directorate representative in February 2010. The Team received technical assistance from two contract employees, Ed Core and Dave Tomczyk, both data analysts for the Futron Corporation, but neither was a Team member or participated in the decision-making process.

The Recommendation Team determined that 11 of the 21 respondents met the basic requirements of being a U.S. museum, educational institution, or governmental entity and had a credible proposal for paying for, transporting, and displaying an Orbiter. The Team rated each of the 11 organizations based on the information contained in their responses and additional information the Team obtained from publicly available resources. Each respondent received points for the following criteria: Funding Capability; Funding Source; Transportation Effort (i.e., difficulty in transporting an Orbiter to its final display site); Transfer Date; Attendance; Mission Tie to Shuttle; Facility (i.e., whether an adequate display facility existed or would need to be built); Past Ability to Raise Funds; and Regional Population.

In July 2009, approximately 4 months after NASA received the RFI responses, Charles F. Bolden, Jr., was confirmed as NASA Administrator. Bolden, a former astronaut and Marine Corps aviator, piloted or commanded four Shuttle missions between 1986 and 1994, including missions aboard Discovery and Atlantis.

### **c. Bolden Instructs the Team to Focus on Access to Greatest Number of Visitors**

The Recommendation Team began reviewing the RFI responses prior to Bolden's arrival at NASA and concluded its first round of analysis without specific direction from him. The Team developed five possible options for placing the Orbiters, which were presented to Bolden on November 23, 2009. Consistent with the 2008 RFI, under all five options, one flown Orbiter would be placed at the Smithsonian. Under the Team's preferred option at the time, the remaining three Orbiters would be displayed at NASA visitor centers. Specifically, the Team suggested Endeavour be placed at the Kennedy Visitor Complex, Atlantis at Space Center Houston, and Enterprise at the U.S Space and Rocket Center. The Team's other options were:

- Government-Only Alternative: Orbiters to the Kennedy Visitor Complex, Space Center Houston, and the Air Force Museum.
- Geo-political Alternative: Orbiters to the Kennedy Visitor Complex, Space Center Houston, and the Museum of Flight.
- Request for Proposal (RFP) – Competitive Placement: use a formal, competitive bid process to determine the winning locations.
- Hybrid RFI and RFP Placement: place two Orbiters at NASA visitor centers and decide placement of the third based on a competitive RFP process.

Following the presentation, Bolden told the Team that he did not believe a location's connection to the Space Shuttle Program or to NASA generally should be a consideration in deciding where to place the Orbiters. Rather, it was Bolden's preference that the Agency choose locations where the Orbiters would be seen by the largest number of visitors and thus serve NASA's goal of expanding outreach and education efforts to spur interest in science, technology, and space exploration. Accordingly, he instructed the Recommendation Team that in addition to the criteria of attendance and regional population, NASA should also consider a location's access to international visitors and place the most emphasis on these three factors.

According to a written summary of the meeting by one Team member, “[s]trongest preference cited a geographic placement that offers the greatest potential foot traffic, regional and international access.”<sup>12</sup>

#### **d. NASA Issues a Second RFI**

Before making a decision regarding Orbiter placement, Bolden asked the Team to do additional work to ensure a fair process. Among the issues that he asked be given further consideration were the legal authority under which NASA would provide an Orbiter to a non-NASA entity and, given that several key assumptions had changed since issuance of the first RFI, whether NASA should consider issuing a second RFI.

The Team subsequently determined there was a sound legal basis for transferring legal title of the Orbiters to private entities and requesting reimbursement for the work needed to prepare and transport them for display. The Team also concluded that there were several good reasons to seek further public comment before finalizing selection decisions. First, since issuance of the original RFI, NASA had decided that it would not seek reimbursement for the cost of “safing” the Orbiters. Accordingly, the total price for obtaining a flown Orbiter had fallen from \$42.8 million to \$28.8 million. Second, given changes in the Space Shuttle Program flight schedule, the locations chosen would now be expected to take delivery of the Orbiters between July and December 2011, 5 to 10 months earlier than the May 2012 date stated in the first RFI, thereby reducing the time available for the institutions to raise the necessary funds. Accordingly, on January 15, 2010, NASA issued a second RFI.

By the response deadline of February 19, 2010, NASA had received expressions of interest from 29 entities, including many of the entities who had responded to the first RFI. As was the case with its evaluation of respondents to the first RFI, the Team determined that not all the respondents were eligible institutions or had a credible proposal and therefore excluded 16 of the 29 respondents after an initial review. The Team further evaluated the remaining 13 institutions, which are listed in alphabetical order below together with their locations and the abbreviations the Team used to identify them on the table reprinted on page 9.

- Adler Planetarium, Chicago, Illinois (Adler Planetarium)
- Brazos Valley Museum of Natural History/Bush Library and Texas A&M, College Station, Texas (GW & Texas A&M)
- California Science Center, Los Angeles, California (CSC)
- Evergreen Aviation and Space Museum, McMinnville, Oregon (Evergreen)
- Intrepid Sea, Air, and Space Museum, New York, New York (Intrepid)
- Kennedy Space Center Visitor Complex, Florida (KSC)

---

<sup>12</sup> According to this contemporaneous memorandum, the Team also agreed that “the Orbiters should be more broadly shared with greater emphasis placed on U.S. locations with larger regional populations which have not traditionally hosted a major NASA presence.” The memorandum also noted that after considering Bolden’s preferences, the “[c]onsensus . . . determination” was that the Orbiters should be placed at the Smithsonian, the Kennedy Visitor Complex, the Intrepid, and the Science Center.



- March Field Air Museum, Riverside, California (March Field)
- Museum of Flight, Seattle, Washington (MOF)
- National Museum of the U.S. Air Force, Dayton, Ohio (NMUSAF)
- San Diego Air and Space Museum, San Diego, California (San Diego)
- Space Center Houston, Houston, Texas (JSC)
- Tulsa Air and Space Museum & Planetarium, Tulsa, Oklahoma (Tulsa)
- U.S. Space and Rocket Center, Huntsville, Alabama (USSRC)

The Team awarded points to each of these respondents based on the following nine criteria:

- Commitment to Funding (Yes = 15 points; No = 0 points): commitment to fund display preparation, ferry flight, and transportation from the local airport to the display location.
- Funding Risk (Have Funds = 10 points; Must Finance/Fundraise = 5 points): ability to readily fund the costs of displaying an Orbiter.
- Facility Availability (Existing or Under Construction = 10 points; Can Build to Meet Deadline = 5 points): whether respondent had a facility to house an Orbiter upon receipt.
- Transportation Effort/Risk (Low = 10 points; Moderate = 5 points; High = 0 points): ability to transport an Orbiter from the local airport to the display site.
- Meet Delivery Schedule (Yes = 10 points; No = 0 points): ability to meet NASA's delivery schedule.
- Attendance (Over 800,000 = 15 points; 300,000 to 800,000 = 10 points; 50,000 to 300,000 = 5 points; Less than 50,000 = 0 points): annual attendance.
- Regional Population (Over 12 million = 10 points; 1 million to 12 million = 5 points; Less than 1 million = 0 points): based on metropolitan population estimates obtained from the U.S. Department of Commerce's Census Bureau.
- International Access (Over 2 million = 15 points; 1 million to 2 million = 10 points; Less than 1 million = 5 points): based on data obtained from the U.S. Department of Commerce's Office of Travel and Tourism Industries.
- Museum Certification (American Association of Museums or Smithsonian Affiliate) (Yes = 10 points; No = 0 points): certification or accreditation, if any, with the American Association of Museums or the Smithsonian Institution.

The three institutions that received the highest point totals were the Intrepid, the Science Center, and the Kennedy Visitor Complex. Accordingly, the Team recommended to Bolden that Orbiters be awarded to these institutions. The Administrator accepted the recommendation.

The Team created a table summarizing the results of its rankings. Below, we reprint the June 2010 version of this table, which supported the Team’s February 2011 formal written recommendation to the Administrator.<sup>13</sup>

**Table 1. Recommendation Team Scoring Matrix as of June 2010**

2010 Criteria	Intrepid	CSC	KSC	MOF	NMUS AF	San Diego	Evergreen	Adler Planetarium	March Field	JSC	Tulsa	USSRC	GW & Texas A&M
Commitment to Funding	15	15	15	15	15	15	15	15	15	15	15	15	15
Funding Risk	5	5	5	10	5	5	5	5	5	5	5	5	5
Facility Availability	5	5	10	10	10	5	10	5	5	5	5	5	5
Transportation Effort/Risk	10	5	10	10	10	5	5	5	10	5	10	5	0
Meet Delivery Schedule	10	10	10	10	10	10	10	10	10	10	10	10	10
Attendance	10	10	15	5	15	5	10	10	10	10	5	10	5
Regional Population*	10	10	5	5	5	5	0	5	5	10	0	0	0
International Access	15	15	15	5	5	10	5	10	15	5	5	5	5
American Assoc of Museums or Smithsonian Affiliate	10	10	0	10	0	10	10	10	0	0	0	0	10
<b>Subtotal</b>	<b>90</b>	<b>85</b>	<b>85</b>	<b>80</b>	<b>75</b>	<b>70</b>	<b>70</b>	<b>75</b>	<b>75</b>	<b>65</b>	<b>55</b>	<b>55</b>	<b>55</b>
Years of Operations	28	60	40	45	87	47	40	80	30	24	13	40	13
Entry Fee (Adults)	22	0	38	15	0	15	20	10	8	14	7	20	7
Geographic Region	NE	W	SE	W	MW	W	W	MW	W	S	S	S	S
Legend:	Max	Min	Note										
Commitment to Funding	15	0	15 = Yes / 0 = No										
Funding Risk	10	5	10 = have funds / 5 = must Finance/Fundraise										
Facility Available	10	5	10 = existing or under construction / 5 = can build to meet deadline										
Transportation Effort/Risk	10	0	10 = low / 5 = moderate / 0 = high										
Meet Delivery Schedule	10	0	10 = Yes / 0 = No										
Attendance	15	0	15 = < .8m / 10 = .79M to .3M / 5 = .29M - .05M / 0 = > .049M										
Regional Population	10	0	10 = < 12M / 5 = 11.9M - 5M / 5 = 4.9 - 1M / 0 = > 1M										
International Access	15	5	15 = < 2M / 10 = 1.9-1M / 5 = > 1M										
American Assoc of Museums or Smithsonian Affiliate	10	0	10 = Yes / 0 = No										
	105	15											
*Population pulled from <a href="http://www.census.gov/popest/metro/metro.html">http://www.census.gov/popest/metro/metro.html</a>													
* International Travelers <a href="http://www.infoplease.com/world/statistics/top-destinations-us-2007.html">http://www.infoplease.com/world/statistics/top-destinations-us-2007.html</a>													

**e. NASA Repeatedly Delays Public Announcement of Orbiter Placement Decision**

Soon after the responses to the second RFI had been analyzed and the locations selected based on the Team’s recommendation, NASA managers began to consider when to publicly announce the Agency’s decision. For a variety of reasons that we detail in the section that follows, no announcement was made until April 2011 – more than 2 years after receipt of responses to NASA’s first RFI.

<sup>13</sup> As discussed in more detail later in this report (page 13, section II h.), the June 2010 table contained errors that were not discovered until just prior to or after the public announcement.

The first date NASA considered for a public announcement was May 7, 2010. However, William Gerstenmaier, Associate Administrator for NASA's Space Operations Mission Directorate and the senior official in charge of the Shuttle Program, asked Bolden to delay the announcement until after the planned May 14, 2010, launch of the STS-132 mission. Gerstenmaier told us that his request was based on his concern that the announcement would create a "distraction" for the Shuttle workforce. He said he wanted to convey the message to the Shuttle workers that, "We have a real job. These are not museum pieces yet. These are real flying articles and I wanted them [the Shuttle workers] to focus on the mission in front of them." Bolden supported Gerstenmaier's request to delay the announcement until late June 2010.

Although NASA had made it clear that institutions selected to receive a flown Orbiter would be expected to pay NASA \$28.8 million, Smithsonian officials told NASA they were having difficulty with fundraising and thought it unlikely they could come up with this funding. The Smithsonian was in a unique position compared to other interested institutions. As curator of the National Collection of space artifacts, the Smithsonian has since 1967 had an opportunity to stake a first claim on all of NASA's history-making spacecraft. Under a Memorandum of Agreement renewed in 2008, NASA agreed to "offer to transfer to" the Smithsonian all space artifacts with historical significance after they are no longer of use to NASA. Bolden told the OIG that discussions with the Smithsonian over whether NASA would require payment from the museum contributed to the decision to postpone the public announcement beyond June 2010. Ultimately, NASA decided not to insist on payment from the Smithsonian.

On July 16, 2010, while negotiations with the Smithsonian about payment continued, NASA Chief of Staff David Radzanowski sent an e-mail to Shilpa Phadke, Deputy Director of White House Cabinet Affairs, informing her that NASA planned to publicly announce its decision on July 27, 2010, and that the Orbiters would be awarded to the Smithsonian, Intrepid, Science Center, and Kennedy Visitor Complex. In addition, Radzanowski provided Phadke with a list of Congress members and state and local officials interested in the Orbiter disposition issue and a timeline of planned events leading up to the announcement. According to Radzanowski, soon after he sent this e-mail, the White House asked Bolden to consider delaying the announcement out of concern that a negative reaction from key members of Congress might interfere with ongoing negotiations over NASA's budget and authorization bills. Radzanowski said the White House asked NASA to gauge the sentiment in Congress about making the Orbiter disposition announcement in the middle of these negotiations.

Bolden and Radzanowski told us that the feedback they received from lawmakers was that it was not the right time for NASA to announce the Orbiter placement decision. According to Bolden and to notes of their conversations, then Congressman Bart Gordon of Tennessee, who chaired the House Science and Technology Committee, told Bolden that he was concerned such an announcement could upset ongoing, delicate negotiations regarding NASA's authorization bill. Gordon also told Bolden he feared that if NASA made the announcement before the authorization issues were settled, Congress might attempt to preempt the process and choose the Orbiter locations itself. Gordon said he wanted to avoid Congress choosing the locations and possibly preventing NASA from receiving reimbursement from Orbiter recipients. Bolden told us that based on his conversations with Gordon, he decided to delay any announcement about disposition of the Orbiters until after Congress completed work on NASA's authorizing legislation.

## f. NASA Authorization Act Becomes Law

On October 11, 2010, the President signed the NASA Authorization Act of 2010 (Public Law 111-267). Section 603 of the Act contains the following language regarding Orbiter placement:

Upon the termination of the Space Shuttle program as provided in section 602, the . . . Orbiter vehicles shall be made available and located for display and maintenance through a competitive procedure established pursuant to the disposition plan developed under section 613(a) of the National Aeronautics and Space Administration Authorization Act of 2008 (42 U.S.C. 17761(a)), with priority consideration given to eligible applicants meeting all conditions of that plan which would provide for the display and maintenance of Orbiters at locations with the best potential value to the public, including where the location of the Orbiters can advance educational opportunities in science, technology, engineering, and mathematics disciplines, and with an historical relationship with either the launch, flight operations, or processing of the Space Shuttle Orbiters or the retrieval of NASA manned space vehicles, or significant contributions to human space flight. The Smithsonian Institution, which, as of the date of enactment of this Act, houses the Space Shuttle Enterprise, shall determine any new location for the Enterprise.<sup>14</sup>

In response to the legislation, the Recommendation Team analyzed the previously selected locations against the Section 603 criteria and determined that no changes to its recommendation to the Administrator were required. According to one member, the Team concluded that given their large regional populations, attendance figures, and access to domestic and international tourists, the sites NASA had selected could be described as having “the best potential value to the public.” In addition, the Kennedy Visitor Complex and the Science Center both had “an historical relationship” with the Shuttle Orbiters – the Orbiters had been launched from Kennedy Space Center and were designed and assembled in southern California, not far from the Science Center. Similarly, the Intrepid had ties to the larger NASA human space flight program: before becoming a museum, the Intrepid aircraft carrier was the primary vessel used to recover astronauts after ocean splashdown during NASA’s Mercury 7 and Gemini 3 missions.

**Figure 2. Mission Patch from First Space Shuttle Launch (STS-1)**



Having satisfied themselves that the Authorization Act did not require changes to their placement decisions, NASA officials again considered a timetable for a public announcement. The earliest date they considered was November 15, 2010, shortly after the scheduled landing of STS-133.<sup>15</sup> However, during these discussions they also considered for the first time the possibility of delaying the announcement until April 12, 2011, the 30th anniversary of the first Space Shuttle launch.

The Space Operations Mission Directorate representative on the Recommendation Team, Jonathan Krezel, expressed serious misgivings about postponing the announcement until April 2011. His primary concern was that delaying the

<sup>14</sup> In exchange for receiving a flown Orbiter, the Smithsonian returned the title to Enterprise to NASA on April 7, 2011.

<sup>15</sup> STS-133, the final flight of Discovery, was subsequently delayed until February 24, 2011, after cracks were discovered in its external fuel tank. Discovery returned to Earth on March 9, 2011.

announcement by 6 months would provide the selected locations less time to raise the money they would need to fund display preparation of the Orbiters as well as construction of display facilities. This was of particular concern to the Space Operations Mission Directorate because if the recipients were not ready to take delivery of the Orbiters when NASA hoped to transfer them, NASA would have to absorb the additional expenses associated with housing and supporting the Orbiters longer than planned. According to Krezel, it would cost NASA approximately \$490,000 a month to maintain and support the aircraft and crew needed to ferry the Orbiters to their final destinations and approximately \$110,000 a month for the energy, operations, and maintenance to house an Orbiter at Kennedy Space Center. However, Krezel and other senior NASA officials also remained concerned about congressional reaction to any Orbiter placement announcement, particularly because Congress had yet to enact the Agency's 2011 budget. For this reason, the Agency continued to postpone the public announcement.

On January 14, 2011, the Recommendation Team met with Bolden and reiterated its earlier recommendation that the Orbiters be placed at the Smithsonian, Science Center, Intrepid, and Kennedy Visitor Complex. Bolden agreed. That same day, Radzanowski alerted Jim Kohlenberger, the Chief of Staff of the White House Office of Science and Technology Policy, that Bolden was considering announcing NASA's selection decision on January 25, 2011. However, the President was scheduled to deliver his State of the Union address that evening, and Kohlenberger urged NASA to wait until a later date to make the announcement. NASA agreed.

#### **g. NASA Chooses an Announcement Date**

On January 31, 2011, Radzanowski informed the Recommendation Team that, despite the continued uncertainty regarding fiscal year (FY) 2011 funding, Bolden had decided to make the Orbiter placement announcement on April 12. Bolden told us that to avoid any further delays, he committed to this date in public testimony before the House Appropriations Subcommittee on Commerce, Justice, and Science in early March.

On February 10, Dominguez submitted a memorandum to Bolden containing the Team's recommendation regarding Orbiter placement. In the memorandum, Dominguez wrote that based on the RFI responses and its independent research, the Team agreed that its recommendations would provide the "greatest number of people with the best opportunity to share in the history and accomplishments of NASA's remarkable Space Shuttle Program." The memorandum did not include a recommendation regarding which Orbiter should be assigned to each location. On February 28, 2011, Bolden formally concurred with the Team's recommendation by signing the memorandum.

Radzanowski and other senior NASA officials met with Chris Lu, the White House Cabinet Secretary, on March 21, 2011, to discuss NASA's intention to announce the Orbiter display locations on April 12. During the meeting, the NASA officials confirmed that the selected locations were the same ones NASA had informed the White House of the previous July. According to Radzanowski, Lu told them that the White House had been receiving pressure to influence NASA's decision but did not want to do so. However, given the mounting pressure, Lu urged NASA to stick to its timetable and avoid any further delays with the announcement.

## **h. NASA Conducts Final Review of the Scoring Process**

With the April 12, 2011, announcement a week away, Bolden asked the Recommendation Team to take one final look at the decision-making process to ensure it was “clean” and that NASA had “left no stone unturned.” Accordingly, with assistance from aides to the Administrator, the Team revisited the scoring it had used to recommend the final sites. According to one Team member, this was “a last chance opportunity to validate the end-to-end process, to fix any errors, and to ensure ‘due diligence’ prior to the announcement.”

As a result of this re-examination, the Team adjusted scores for several respondents. For example, the Intrepid and the Science Center each received an additional 5 points because the Team realized it had erroneously recorded their reported annual attendance levels as below 800,000, when they were both actually above that number. In addition, the Team had mistakenly scored the Intrepid as accredited by the American Association of Museums when, in fact, it was not. As a result, its score was adjusted downward by 10 points. Conversely, the Team had mistakenly treated the Air Force Museum as unaccredited, so it gained 10 points.<sup>16</sup> These adjustments resulted in the Science Center receiving a total of 90 points and the Intrepid and the Kennedy Visitor Complex each receiving 85 points, reaffirming these three sites as the highest-scoring locations.

Reprinted on the next page is the chart Administrator Bolden was given prior to finalizing his decision regarding Orbiter placement. The chart reflects the rankings of the 13 respondents following the adjustments the Team made in the days immediately prior to the April 12, 2011, public announcement.<sup>17</sup>

---

<sup>16</sup> The OIG found that during this final review NASA staff failed to note that at some point late in the process the Air Force Museum’s score for “Transportation Effort/Risk” had been mistakenly reduced from 10 points to 5 points. We discuss this error in more detail on page 18 (section II k.) of this report.

<sup>17</sup> Subsequent to the creation of the June 2010 scoring matrix (Table 1), but sometime before creation of the final scoring matrix of April 2011 (Table 2), the Recommendation Team changed the basis for scoring three of the nine selection criteria: Attendance, Regional Population, and International Access. Specifically, “Attendance” changed to: Over 800,000 = 15 points; 20,000 to 800,000 = 5 points; and Less than 20,000 = 0 points; “Regional Population” changed to: Over 8 million = 10 points; 800,000 to 8 million = 5 points; Less than 800,000 = 0 points; and “International Access” changed to: Over 2 million = 15 points; 650,000 to 2 million = 10 points; Less than 650,000 = 5 points. These changes do not appear to have materially affected the outcome of the Team’s analysis.

**Table 2. Recommendation Team Scoring Matrix as of April 11, 2011**

Criteria	NASM	CSC	Intrepid	KSC	Adler	Evergreen	GW & Brazo	SCH /JSC	March Field	MOF	NMUS AF	San Diego	Tulsa	USSRC
Commitment to Funding	For National Collection	15	15	15	15	15	15	15	15	15	15	15	15	15
International Access (1)		15	15	15	10	5	5	5	15	5	5	15	5	5
Attendance		15	15	15	5	5	0	5	5	5	15	5	5	5
Regional Population (2)		10	10	5	10	5	0	10	10	5	5	5	5	0
Meet Delivery Schedule		10	10	10	10	10	10	10	10	10	10	10	10	10
Funding Risk		5	5	5	5	5	5	5	5	10	5	5	5	5
Facility Availability		5	5	10	5	10	5	5	5	10	10	5	5	5
Transportation Effort/Risk		5	10	10	5	5	0	5	10	10	5	5	10	5
AAM or Smithsonian Affiliate (3)		10	0	0	10	10	0	0	0	10	10	10	0	10
		90	85	85	75	70	40	60	75	80	80	75	60	60
Geographic Region	E	W	NE	SE	W	W	S	S	MW	W	W	MW	W	SE

(1) International Access – [https://tinet.ita.doc.gov/outreachpages/download\\_data\\_table/2007\\_states\\_and\\_cities.pdf](https://tinet.ita.doc.gov/outreachpages/download_data_table/2007_states_and_cities.pdf)  
 (2) Regional Population – <http://www.census.gov/popest/metro/cbsa-est2009-annual.html>  
 (3) AAM <http://www.aam-us.org/museumresources/accred/list.cfm?mode=state> Smithsonian Affiliate <https://affiliations.si.edu/Map.Asp?MenuID=7#1>

“NASM” refers to the Smithsonian’s National Air and Space Museum. The Recommendation Team did not evaluate the Smithsonian because, as the curator of the National Collection of space artifacts, it was already slated to receive a flown Orbiter.  
 Green denotes the highest possible ranking for that criterion; yellow denotes the next best ranking; and red denotes the lowest ranking.

Source: NASA.

As previously noted, the Recommendation Team’s February 28 memorandum to the Administrator did not include a recommendation regarding which Orbiter should be assigned to which location. On April 11, 2011, the day before the announcement, Bolden met with his aides and members of the Recommendation Team to discuss the placement of specific Orbiters. The Team’s recommendation was that Discovery be awarded to the Smithsonian, Atlantis to the Kennedy Visitor Complex, Endeavour to the Intrepid, and Enterprise to the Science Center. However, Bolden was concerned that under this scenario all three flown Orbiters would be placed on the East Coast, with the Intrepid receiving a flown Orbiter even though the Science Center had received a higher overall score. Team members told Bolden that they had not recommended placement of a flown Orbiter at the Science Center because of concerns that its added weight – approximately 195,000 pounds compared with about 156,700 pounds for Enterprise – would make it more difficult to transport the vehicle the roughly 15 miles from

Los Angeles International Airport to the display location.<sup>18</sup> Not wanting to arbitrarily discount the Science Center's assertion that it could transport a flown Orbiter to its facility, Bolden instructed a member of his staff to call the Science Center to find out if it would prefer to receive a flown Orbiter, in which case he would send Endeavour to California. When contacted, Center representatives indicated they would prefer a flown Orbiter.

The Team also contacted the Intrepid and the Kennedy Visitor Complex to confirm they were still interested in receiving an Orbiter and that they were willing to accept any of the vehicles. Both institutions responded affirmatively to these inquiries. In addition, so as not to tip NASA's hand before the official announcement by contacting only the selected locations, the Team also contacted the other "eligible" respondents. During these phone calls, the Air Force Museum and the U.S. Space and Rocket Center told NASA officials for the first time that they did not believe they would be able to secure the \$28.8 million necessary to pay NASA for a flown Orbiter.<sup>19</sup>

In an e-mail sent early that afternoon, an aide to the Administrator notified the Team that Bolden had verbally approved the final Orbiter placements.<sup>20</sup>

Two hours later, Bolden testified before the Senate Appropriations Subcommittee on Commerce, Justice, Science, and Related Agencies concerning NASA's FY 2012 budget request. During the hearing Senator Sherrod Brown of Ohio asked Bolden to explain NASA's process for deciding where the Orbiters would be sent. Senator Brown had the following exchange with Bolden:

**BROWN:** I never heard you or your top assistant or the White House or anyone else talk about this commission that supposedly was put together four years ago that will apparently decide the disposition policy with the NASA authorization law that set up guidelines and the role that the commission is playing. Could you explain . . . who is the one that's . . . going to decide.

**BOLDEN:** Is this a commission on deciding where the Orbiters go?

**BROWN:** That's my understanding.

---

<sup>18</sup> This difference is attributable to the systems needed for space travel that were never installed on Enterprise.

<sup>19</sup> According to the Team, Air Force Museum officials told them that they could only pledge \$14 million that they hoped to receive in a pending 2012 appropriations request and \$14 million of "in-kind" services. NASA officials deemed these terms unacceptable.

<sup>20</sup> In the e-mail sent at 1:57 p.m., April 11, 2011, the aide advised Team members that:

Just briefed Charlie on the results of this morning's phone calls to the RFI respondents [to] verify the interest/ability to receive an orbiter. His placement decision is as follows:

Discovery-NASM  
Atlantis-KSCVC  
Endeavour-CSC  
Enterprise-Intrepid.

Please update ALL documents to reflect this final placement decision!



BOLDEN: If there is such a thing, I don't know about it. And -- and I am going to make the decision, probably when I get back over to my office this afternoon. So if I need to consult with them, somebody should tell me really quick.

After the hearing, Bolden returned to his office where he was presented with a memorandum memorializing the specific Orbiter placement decisions he had made prior to testifying. Bolden signed the memorandum shortly before 6:15 p.m.<sup>21</sup>

#### **i. NASA Announces Orbiter Display Locations**

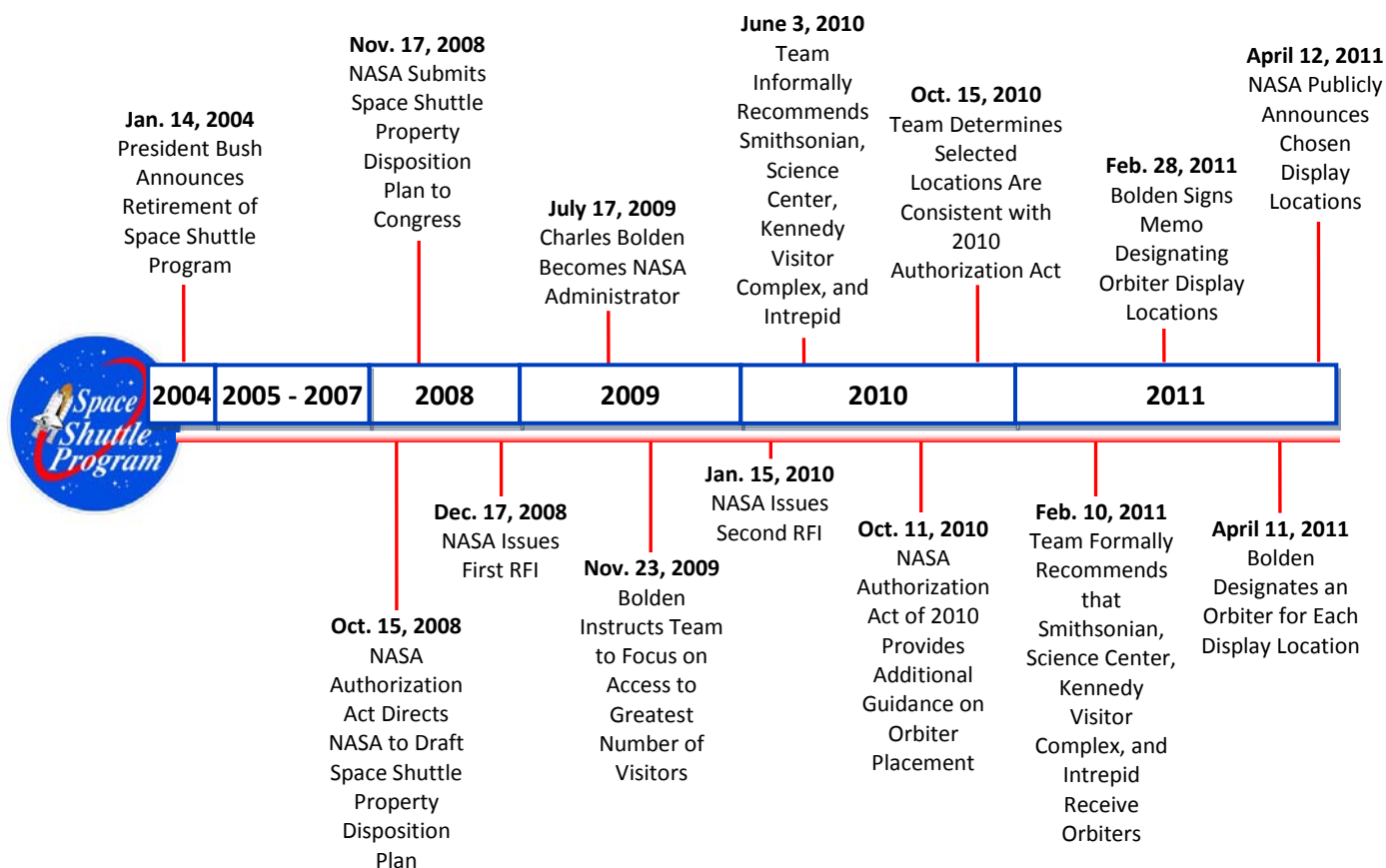
On April 12, 2011, the 30th anniversary of the first Shuttle flight, Bolden announced NASA's decision regarding disposition of the four Orbiters during a public ceremony at Kennedy Space Center. At the ceremony, Bolden stated that the locations NASA had chosen would "provide the greatest number of people with the best opportunity to share in the history and accomplishments" of the Space Shuttle Program. He also noted that each location had "a noteworthy legacy of preserving space artifacts and providing outstanding access to international visitors."

Following Bolden's announcement, Dominguez participated in a media teleconference during which she made a statement and took questions from reporters. Dominguez told reporters that the selection process had been "supported and managed" by career civil servants "who used criteria outlined in [the RFI] as well as the direction provided by Congress" in NASA's 2008 and 2010 Authorization Acts to make a recommendation to the NASA Administrator regarding Orbiter placement. She also told the reporters that the Administrator had accepted the Team's recommendation. She said that NASA had "proceeded in compliance with" the Property Disposition Plan submitted to Congress in 2008 and had "conducted research to evaluate each location's regional population and potential for broad domestic and international access." She also said that NASA had based its decision on "information regarding the financial aspects of the Orbiter transfer process, information on quality and availability of facilities, options for transporting the Orbiters, attendance levels, size of regional population, [and] access to transportation," among other factors. In response to a question about whether NASA had considered the locations' historical ties to the Space Shuttle Program, Dominguez pointed to the Science Center's proximity to the southern California locations where the Shuttles were designed and built, Kennedy Space Center's launch facilities, and Intrepid's role as the recovery ship for some of NASA's early space missions. She also noted that NASA's Goddard Institute for Space Science is located in New York City.

---

<sup>21</sup> Bolden's statement to Senator Brown that he was going to make the decision about Orbiter placement "probably when I get back to my office this afternoon" did not elicit any follow-up questions from Senator Brown or other Committee Members. While we understand that Senator Brown's question placed Bolden in a difficult position in light of the public announcement planned for the following day, his response appeared to us to be inconsistent with the e-mail sent earlier that afternoon to the Recommendation Team. When we asked Bolden about this apparent inconsistency, he told us that, in his view, the decision was not official until he signed the formal memorandum after the hearing.

**Figure 3. Timeline of Significant Events in Orbiter Placement Process**



**j. Placement Decision Draws Criticism**

Bolden’s announcement immediately generated criticism from several members of Congress, in particular members from Texas, home of Johnson Space Center, and Ohio, home of the Air Force Museum. Sixteen members of the Texas delegation subsequently wrote a letter to Bolden decrying what they called the “Houston Shuttle Snub.” Other members introduced legislation to undo the Agency’s decision.<sup>22</sup>

Senator Brown of Ohio wrote to the OIG requesting an investigation of “the policies and practices of [NASA’s] disposition of Space Shuttle Program-related property.” In his letter, Senator Brown raised concerns about whether under the Federal Property and Administrative Services Act (Property Act), a 1949 statute governing disposal of excess Government property, NASA was required to first offer the retired Orbiters to other Federal agencies, such as the Department of Defense. Senator Brown, who had advocated on behalf of the Air Force Museum’s bid for an Orbiter, said it was his understanding that under the Act “if the Space

<sup>22</sup> On April 16, 2011, Congressman Jason Chaffetz of Utah introduced H.R. 1536, the “Space Shuttle Retirement Act” to establish sites in Texas, Florida, California, and Virginia as the final homes of the retiring Orbiters.

Shuttle Orbiters are declared surplus to NASA's needs, they first shall be offered to other federal agencies before they can be offered to any organization outside the federal government.”

In requesting an “internal investigation” of the “policies and programs” NASA used to allocate the four Orbiters, Senator Brown also asked the OIG to determine whether the Recommendation Team met the requirements of the Federal Advisory Committee Act (FACA), a Federal statute (5 U.S.C. Appendix 2) that sets requirements for the establishment and operation of any group created by the Government to provide advice to the Government that includes non-Government employees, and whether NASA followed the same process to select a location for Enterprise as it did for the other flown Orbiters. In addition, he requested more information about the selection criteria NASA had used and the composition of the Recommendation Team.

#### **k. Additional Error Found in Scoring Matrix**

When the OIG began its examination of NASA's decision-making process, the Agency had difficulty producing the final chart the Team had given Bolden to support its recommendation. In May 2011, a Team member produced a chart that purportedly was the final version. Relying on this information, the OIG conducted its review and completed a draft report, which it provided to Team members and other NASA officials for a factual accuracy review. After reading the OIG draft, Team members informed us that the chart we had been provided was not, in fact, the final iteration. Thereafter, aides to the Administrator provided us with the chart reproduced on page 14 of this report (Table 2), and informed us that this was the chart on which the Administrator had based his decision.

When we showed this chart to members of the Recommendation Team, they informed us that it contained a significant error – the chart reflects 5 points for “Transportation Risk/Effort” for the Air Force Museum when the site should have received 10 points in this category. Team members said that they had consistently rated the Museum a low risk for the anticipated difficulty of transporting an Orbiter because the airport was just 5 miles away on an adjacent property. The Team attributed the mistake, which they said was unintentional, to a “cut and paste” error made during finalization of the chart. However, correction of this error results in a total of 85 points for the Air Force Museum and results in a three-way tie among it, the Intrepid, and the Kennedy Visitor Complex. Because this fact could have affected the Administrator's placement decision, we informed him of the error and asked for his response.

Bolden told us that while it was disappointing that this error had not been caught prior to his final decision, had he been informed of a tie he would have made the same decision. He said this was because the Air Force Museum was unable to commit to raising the \$28.8 million required to reimburse NASA for an Orbiter and because the Intrepid and the Kennedy Visitor Complex had larger regional populations and better access for international visitors. He noted that during his travels as Administrator he had visited many of the top-scoring institutions and that in addition to the information provided by the Team he relied on his own subjective view of the sites' strengths and weaknesses to reassure himself that he was making the correct decision.

### **III. OIG ANALYSIS**

#### **a. Summary**

The process NASA used to select Orbiter display locations did not violate Federal law or regulations. In addition, although members of Congress and other elected officials and interested parties tried to influence the selection process by repeatedly contacting the Administrator, the Recommendation Team was insulated from this lobbying effort and this outside pressure did not influence the decision regarding the choice of Orbiter locations. Nor did we find that the White House exerted any influence over the decision of which sites would receive an Orbiter.

However, we found that to avoid actions that might intensify outside pressure or raise the appearance that NASA favored one potential candidate location over another, the Recommendation Team managed aspects of the decision-making process as if it were a competitive procurement and observed a self-imposed communications blackout after issuance of the first RFI. For this reason, NASA did not discuss with the candidates the logistics of payment schedules or display and transportation requirements from the time it received responses to its first RFI in March 2009 until after it made the public announcement more than 2 years later.

In addition, we found that during its evaluation of the candidates' proposals the Team made a series of errors, including one that had it been caught would have resulted in a three-way tie among the Air Force Museum, the Intrepid, and the Kennedy Visitor Complex. However, when informed of this error, Bolden said he would not have changed his placement decision because the Air Force Museum could not commit to raising the necessary funds and because he believed more people would have access to the Orbiters at the selected locations.

In addition, for a variety of reasons including concern about negative congressional reaction and possible interference with ongoing negotiations over NASA's budget and authorization bills, the Agency repeatedly delayed announcing which sites had been selected as final display locations. This shortened the timeframe available for the recipients to raise the funds required to reimburse the Agency for Orbiter display preparation and transportation costs.

Finally, although not the primary focus of this review, we found that the selected organizations appear to be on track to raise the necessary funds, prepare facilities to house and display the Orbiters, and take delivery of the vehicles in accordance with NASA's current schedule. However, we also found that NASA will need to deftly manage a series of challenges as it works with these organizations to complete the process of readying and transporting the Orbiters to their new homes.

First, NASA has required recipients to develop plans for financing the costs associated with receiving their Orbiter, transporting it to the temporary or final display location, and displaying the Orbiter in a manner befitting its significance. NASA will need to ensure that the plans provided in response to this requirement are satisfactory. Second, NASA needs to decide on the payment schedules required to enable the Agency to complete the Orbiter preparation work on schedule. Last, although it currently appears that the recipients will be able to receive and display the Orbiters in accordance with NASA's schedule, NASA and the recipients must

work to avoid any significant delays and the additional costs to the Agency such delays could engender.

#### **b. NASA's Selection Process Did Not Violate Federal Laws or Regulations**

As previously noted, Senator Brown raised a number of questions about NASA's Orbiter disposition process. In particular, he questioned whether NASA had complied with applicable rules and regulations related to the disposal of excess Government property. He suggested that under the Property Act, once the Orbiters were declared "surplus to NASA's needs" they should have first been offered to other Federal agencies, such as the Department of Defense, before they were made available to non-governmental entities. We examined this issue and concluded that NASA's actions were consistent with its legal obligations.

The Property Act governs the management of federally owned property. One of the primary purposes of the Property Act was to create the General Services Administration (GSA) in order to simplify the procurement, use, and disposal of Government property. The Property Act assigned the GSA Administrator responsibility for supervision over the disposition of excess and surplus Federal property.<sup>23</sup> As Senator Brown pointed out, the Property Act establishes a hierarchal process for disposing excess Government property, and it requires each executive agency within the Government to:

- transfer excess property under its control to other Federal agencies, and
- obtain excess property from other Federal agencies.

Absent other legislative direction, excess NASA property is disposed of in accordance with the Property Act.

However, the Property Act did not govern disposition of the retired Orbiters. As directed by the 2008 NASA Authorization Act, on November 17, 2008, NASA submitted to Congress a detailed plan describing the process it intended to use to dispose of the Orbiters. Under this plan, NASA informed Congress that it would issue an RFI to identify potential recipients of the Orbiters and evaluate placement alternatives among museums, governmental entities, and educational institutions based on the information it received. In the 2010 NASA Authorization Act, Congress formally ratified NASA's plan by directing that the Orbiters be made available and located for display through a competitive procedure established pursuant to the plan, and set forth certain broad criteria NASA should consider. Accordingly, it is this legislation and the NASA plan rather than the Property Act that governed NASA's obligations relating to disposition of the Orbiters.

We found that NASA followed the process outlined in its 2008 Property Disposition Plan and that its selections were consistent with the criteria set forth in the 2010 Authorization Act. As promised, the Agency solicited public input, weighed the relative strengths and weaknesses

---

<sup>23</sup> "Excess property" is property under the control of a Federal agency that is no longer required for its responsibilities. "Surplus property" means any property declared excess by a Federal agency and determined by the GSA Administrator to no longer be required by the Federal Government.

of the respondents, and chose Orbiter display locations that fit the broad criteria of sites that “can advance educational opportunities in science, technology, engineering, and mathematics disciplines” and that have “an historical relationship” with either the Shuttle Program or the “retrieval of NASA manned space vehicles.”

Senator Brown also questioned whether NASA complied with FACA, which sets requirements for the establishment and operation of any group established by the Government to provide advice to the Government that includes non-Government employees. As the Recommendation Team was composed solely of NASA civil servants, with no non-Government employees participating in the Orbiter disposition decision, FACA does not apply.

### **c. Outside Pressure Did Not Influence NASA’s Decision**

Bolden told the OIG that he received more political and public pressure regarding the issue of where to display the Shuttle Orbiters than any other issue during his 2 years as NASA Administrator. Bolden said many members of Congress, as well as state and local elected officials, tried to influence his decision through personal phone calls, letters, and comments they made to the media. Bolden also said he was contacted by family members of the Columbia crew who died in 2003 and by the candidate organizations themselves.

Bolden was emphatic that even though politicians and others tried to sway him to award an Orbiter to their city or state, neither politics nor his personal preferences played any role in his decision. He was equally adamant that he did not speak with the President about the decision and that he was not pressured by anyone in the White House to decide in a particular way.<sup>24</sup>

Members of Bolden’s staff also told us that the White House went out of its way not to influence NASA’s decision. NASA Chief of Staff Radzanowski said that although he “kept expecting” pressure to be exerted by the White House, it never was. Moreover, all the members of the Recommendation Team we spoke with agreed that Bolden insulated them from the outside pressure he was receiving from congressional, state, and local leaders. Dominguez said the Team “was totally protected from the political process.” Indeed, all of the current and former NASA civil servants we interviewed said that they saw no evidence that politics or political pressure affected the process, the Team’s recommendation, or Bolden’s ultimate decision.

In addition to deflecting pressure from politicians, Bolden told us he also put aside his personal preferences in order to make the best selections for NASA and the Nation. Bolden said that if it had been strictly a personal decision, his preference would have been to place an Orbiter in Houston. He noted that “[a]s a resident of Texas and a person who . . . spent the middle of my Marine Corps career in Houston, I would have loved to have placed an Orbiter in Houston.” However, he said he could not ignore that Space Center Houston had relatively low attendance rates and provided significantly lower international access than the locations selected.

---

<sup>24</sup> Several days after the announcement, President Obama told a television reporter that neither he nor the White House had anything to do with the Orbiter placement decision. A video of the interview can be seen at <http://www.wfaa.com/news/texas-news/President-Obama-talks-with-News-8--120141169.html>.

#### **d. NASA Did Not Initiate Communication with Potential Recipients During the Decision-Making Process**

To avoid the appearance that NASA favored one applicant over another, the Recommendation Team managed aspects of the decision-making process as if it were a competitive procurement and observed a self-imposed communications blackout after the issuance of the first RFI. Although Team members responded to occasional questions posed by RFI respondents, NASA did not communicate with the potential recipients about the details or status of the Orbiter placement process during the more than 2-year period when it was making its decision. As a result, NASA did not discuss with the recipients details about the logistics of displaying and transporting an Orbiter until after the public announcement.

NASA included in the RFIs the basic information for obtaining and displaying an Orbiter, including high-level cost and schedule requirements, special considerations such as having a suitable climate-controlled indoor facility, and approximate Orbiter dimensions. In response to the RFIs, NASA obtained information from applicants such as attendance at their facilities; local population figures; organizational structure and accreditation information; and preliminary information regarding the organization's ability to pay the costs associated with receiving and transporting an Orbiter to its final display location.

However, the RFIs did not provide applicants with all the information that would have been helpful to formulate realistic plans. For example, the RFIs did not explain the 19-ton difference between a flown Orbiter and Enterprise, which could impact a recipients' logistics and display plans, or the cost differential between Enterprise (\$8.3 million) and a flown Orbiter (\$28.8 million). Nor did NASA officials perform site visits or obtain detailed financial, logistical, or display plans from the applicants until after announcing the final display locations.<sup>25</sup> Although at one point in the process the Agency considered performing site visits of the finalists to acquire more detailed information and verify the required effort and feasibility of transporting an Orbiter to each location, it ultimately rejected this option for fear it would be a "public affairs nightmare." Instead, NASA decided to accept the possibility that a serious issue might arise with one of the selectees in order to avoid the risk that follow-up contact with these organizations would intensify public interest in the selection process and increase lobbying of the Agency. As Dominguez told us, the Recommendation Team simply trusted that the information provided in response to the RFIs was accurate.

Although NASA has not identified any issues that would preclude the selected organizations from receiving and displaying an Orbiter or meeting the timetable NASA has set for delivery, we believe NASA could have reduced this risk by communicating with the potential recipients regarding the logistics of funding, display, and transportation earlier in the process. Moreover, now that the placement decision has been made, NASA and the Orbiter recipients will have to work diligently to avoid delays to the delivery schedule that could cause the Agency to incur additional expense or impact other NASA programs. For example, the Orbiters will be

---

<sup>25</sup> When asked about this by the OIG, Bolden said until late in the process he had mistakenly believed the Team had, in fact, conducted site visits. In hindsight, Bolden said the Team's failure to visit the locations in advance of the decision was "probably the most disappointing thing in the whole process."

transferred to airports near the selected locations via the Shuttle Carrier Aircraft, which NASA spends approximately \$490,000 per month to maintain. NASA currently plans to decommission the Shuttle Carrier Aircraft by September 2012 once all Orbiters are delivered and use spare parts from the Aircraft for the Stratospheric Observatory for Infrared Astronomy (SOFIA) Program.<sup>26</sup> If a recipient is not prepared to take delivery by this date, the Agency could face additional costs, as well as potential impacts to the SOFIA Program.

**e. NASA’s Repeated Delays in Announcing Orbiter Display Locations Shortened Recipients’ Time to Raise Funds**

NASA initially intended to allow recipients between 12 to 18 months to raise the funds to pay NASA to prepare for display and transport the Orbiters. However, due to a variety of circumstances, including a desire to avoid any negative congressional reaction and possible interference with ongoing negotiations over NASA’s budget and authorization bills, the Agency repeatedly delayed announcing which sites had been selected as final display locations. As a result, the Agency significantly shortened the time recipients will have to raise these funds. As shown in Table 3, under the schedule in effect at the time of publication of this report the selected locations will have only 6 to 10 months to raise these funds.

**Table 3. Orbiter Payment and Delivery Schedule**

<b>Orbiter</b>	<b>Recipient</b>	<b>Funding Due Date</b>	<b>Estimated Funding Due<sup>a</sup> (in millions)</b>	<b>Time Allowed to Obtain Funding<sup>b</sup> (in months)</b>	<b>Orbiter Delivery Date</b>
Discovery	Smithsonian	N/A <sup>c</sup>	N/A <sup>c</sup>	N/A <sup>c</sup>	April 2012
Endeavour	Science Center	October 2011	\$28.8	6	June 2012
Enterprise	Intrepid	January 2012	\$8.3	9	April 2012
Atlantis	KSCVC	February 2012	\$20.5	10	February 2013

<sup>a</sup> NASA’s prime Space Shuttle processing contractor, United Space Alliance, established Orbiter display preparation and transportation costs 2 years ago based on the estimated number of hours associated with each task and contractor costs and labor rates. NASA expects to update these cost estimates before United Space Alliance undertakes the work. The differences in estimated funding due for each vehicle is related to the display preparation required and differences in costs to transport the vehicles to their respective display locations.

<sup>b</sup> Time Allowed to Obtain Funding shows the number of months between the date NASA informed the selectees that they would receive an Orbiter (April 12, 2011) and the date each recipient must provide the required funding.

<sup>c</sup> NASA is bearing the \$26.5 million cost of preparing and ferrying Discovery to the Smithsonian.

Source: NASA’s “Orbiter Delivery Timeline Overview,” June 28, 2011, and interviews of NASA officials

NASA officials told us they are considering allowing the recipients to make payments in installments as the Agency works to ready the Orbiters for display. However, NASA’s discretion in this regard is not unlimited. As noted above, this work will be performed pursuant

<sup>26</sup> SOFIA is an airborne observatory that will complement the Hubble, Spitzer, Herschel, and James Webb space telescopes and major Earth-based telescopes. The heart of SOFIA is a German-built 100-inch telescope installed in a modified 747’s rear fuselage. The instrumentation aboard the aircraft is expected to provide astronomical observations not possible from ground- or space-borne observatories.



to funded Space Act agreements with the Orbiter recipients. Accordingly, before starting the display preparation work on a particular Orbiter, NASA must receive money from the Orbiter's new owner sufficient to fund the work.<sup>27</sup> If the Agency proceeds with display preparation work before receiving reimbursable funds, the Agency cannot retroactively charge the recipients for that work and would therefore absorb those costs. Accordingly, NASA must ensure that any payment schedules negotiated with the Orbiter recipients are closely coordinated with the Orbiter processing schedule to provide sufficient funds in advance of the work to be performed.

#### **f. Recipient Plans for Receiving and Displaying Orbiters**

Despite NASA's repeated delays in announcing the Orbiter placement decision, it appears that the Smithsonian, Science Center, the Intrepid, and Kennedy Visitor Complex are on track to raise the necessary funds, prepare facilities to house and display the Orbiters, and take delivery of the vehicles when required to avoid additional costs to the Agency. Below we briefly summarize the status of each vehicle and the recipients' current plans.

#### **Discovery**

NASA selected the Smithsonian to receive Discovery. NASA began after-mission processing and "safing" preparation activities on Discovery in March 2011 after the vehicle returned from its final mission. NASA plans to complete the processing activities required for display by January 2012 and store Discovery in the Vehicle Assembly Building or Orbiter Processing Facility at Kennedy Space Center until April 2012, when it will be ferried on the Shuttle Carrier Aircraft to Dulles International Airport and transported to the nearby Udvar-Hazy Center for display. Discovery will replace Enterprise, which will then be moved to the Intrepid.<sup>28</sup> The Smithsonian's logistics plan was submitted to NASA in June 2011, and its exhibit plan is due in August. Title transfer is planned for February 2012, but because NASA is funding all of Discovery's display preparation and ferrying costs, a finance plan was not required.

#### **Endeavour**

NASA selected the Science Center to receive Endeavour. NASA began after-mission processing and "safing" preparation activities on Endeavour in June 2011 after the Orbiter returned from its final mission. NASA plans to complete the processing activities required for display by May 2012, and store Endeavour in Kennedy's Vehicle Assembly Building until June 2012, when the Orbiter will be ferried from Kennedy to Los Angeles International Airport on the Shuttle Carrier Aircraft. The Science Center may use a refurbished "overland transporter" to move Endeavour by road about 15 miles to a temporary display facility adjacent to the Science Center.<sup>29</sup> Endeavour will be displayed at the temporary facility until the permanent facility is

---

<sup>27</sup> NASA Policy Directive 1050.1I, "Authority to Enter into Space Act Agreements," December 23, 2008.

<sup>28</sup> Because NASA has certified Enterprise safe for only one ferry flight, to transport it as efficiently as possible from the Smithsonian to the Intrepid, delivery of Discovery to the Smithsonian and delivery of Enterprise is scheduled to happen sequentially.

<sup>29</sup> NASA used the overland transporter in the early days of the Shuttle Program to transport Orbiters from Palmdale, California, where they were assembled to Dryden Flight Research Center at Edwards, California.

completed in 2016. In the permanent facility, the Science Center plans to display Endeavour in a vertical position as if on a launch pad. However, Endeavour will be displayed in the temporary facility in a horizontal position. The Science Center submitted its logistics plan to NASA in May 2011, including details on how it plans to transport the Orbiter from the airport to its temporary display facility. The exhibit and finance plans are due in August 2011. NASA completed a formal site visit in August 2011. Title transfer will occur and initial funding will be due in October 2011. Display preparation is scheduled to begin in January 2012.

### **Enterprise**

Enterprise is slated for the Intrepid. NASA plans to transport Enterprise from the Udvar-Hazy Center to John F. Kennedy International Airport (JFK) in New York City in April 2012 after it delivers Discovery to the Udvar-Hazy Center. Enterprise will be stored in a temporary, climate-controlled tent inside a JFK hangar, where it will be available for limited viewing until March 2014. It will then be transported by barge to the Intrepid. The Intrepid submitted its logistics plan to NASA in June 2011, which was followed by a NASA site visit. Its exhibit and finance plans are due in August 2011. Title transfer and initial funding are due in January 2012, when NASA will begin preparing the vehicle for ferrying.

### **Atlantis**

NASA selected the Kennedy Visitor Complex for placement of Atlantis. After Atlantis returned from its final mission on July 21, 2011, NASA began the after-mission processing and “safing” preparation activities and plans to complete all processing activities required for display by September 2012. Atlantis will then be stored in Kennedy’s Vehicle Assembly Building until February 2013, with tour-group viewing opportunities during that period. The Visitor Complex is currently negotiating with Kennedy Space Center officials for an additional storage period at a suitable Center facility until the permanent display facility is ready. As currently planned, Atlantis will be moved to its permanent facility in February 2013 and will be ready for permanent display in July 2013. The Visitor Complex plans to display Atlantis in a raised, tilted, horizontal position in its permanent facility. The Visitor Complex submitted its logistics plan on August 5, 2011. The exhibit and finance plans are due by the end of August 2011, and initial funding is due in February 2012.<sup>30</sup>

---

<sup>30</sup> The Kennedy Visitor Complex is located on NASA property and operated under a concessionaire’s agreement with DNC Parks & Resorts at KSC, Inc. (DNC), a subsidiary of Delaware North Companies, Inc. The DNC has agreed to use private funds to construct the facility in which the Orbiter will be displayed and reimburse NASA the cost of preparing Atlantis for display. However, NASA will retain title to the Orbiter and will also own the display building.

## IV. CONCLUSION

The Nation's fleet of Space Shuttle Orbiters – the mainstay of the U.S. human spaceflight program for more than a quarter century – completed its final mission with the safe return of Atlantis on July 21, 2011. Following an internal process in which a team of NASA civil servants weighed the relative merits of 29 organizations and made a recommendation to the Administrator, NASA decided to place the retired Orbiters on permanent display at the Smithsonian near Washington, D.C.; the Science Center in Los Angeles; the Intrepid in New York City; and the Kennedy Visitor Complex in central Florida. The selection criteria NASA used favored sites where the Orbiters would be viewed by the largest number of people rather than the location's ties to the Shuttle Program or to NASA more generally. The decision to weigh attendance, regional population, and access to international visitors above all other criteria – a decision made by the NASA Administrator – was determinative in deciding which locations ultimately received Orbiters.

**Figure 4. Final Space Shuttle Launch (STS-135), July 8, 2011**



**Source: NASA/Tony Gray and Kevin O'Connell (KSC-2011-5424)**

We found that in making its placement decision NASA complied with applicable laws and regulations and that its decision-making process was not improperly influenced by external pressure. In addition, we found that the NASA Recommendation Team made an error that resulted in the Administrator receiving inaccurate information about the score of one of the applicants. However, the Administrator told us that this error was immaterial to his final decision. Finally, NASA appears on schedule to transfer the vehicles to their new homes when required to avoid additional costs to the Agency. To successfully complete this process, NASA will need to confirm that the recipients' detailed plans for financing, transporting, and displaying the Orbiters are satisfactory and decide whether to accept installment payments for Orbiter display preparation and transportation costs. Finally, NASA and the selected organizations will need to work cooperatively to avoid delays to the delivery schedule that could result in added expenses to the Agency or adversely impact other NASA programs.

While we are not making specific recommendations for corrective action, NASA should:

- expeditiously review recipients' financial, logistical, and curatorial display plans to ensure they are feasible and consistent with the Agency's educational goals and processing and delivery schedules;
- ensure that recipient payments are closely coordinated with processing schedules, do not impede NASA's ability to efficiently prepare the Orbiters for museum display, and provide sufficient funds in advance of the work to be performed; and
- work closely with the recipient organizations to minimize the possibility of delays in the delivery schedule that could increase the Agency's costs or impact other NASA missions and priorities.