

## **Request for Information (RFI)**

### **Introduction:**

This is a Request for Information (RFI) only and does not constitute a commitment, implied or otherwise, that the National Aeronautics and Space Administration (NASA) will take procurement action in this matter. Further, neither NASA nor the Government will be responsible for any cost incurred in furnishing this information.

NASA recognizes the interest by educational institutions, science museums, and other appropriate organizations in the acquisition of NASA Shuttle-related property following the last flight of the Space Shuttle. While NASA's priority is flying the remaining Shuttle missions safely, because of the quantity, complexity, and dispersion of the Space Shuttle Program (SSP) assets, successful Space Shuttle transition and retirement requires careful planning prior to program completion, currently scheduled for September 2010.

This RFI is being used to gather market research for NASA to make decisions regarding development of strategies for placement of Space Shuttle Orbiters and Space Shuttle Main Engines (SSMEs) for public display after conclusion of the SSP. NASA is seeking information from educational institutions, science museums, and other appropriate organizations about the community's ability to acquire and display a Space Shuttle Orbiter after the vehicles are retired from flight status.

NASA is interested in identifying whether potential recipient organizations are capable of bearing the full cost of Space Shuttle Orbiter safing and final display preparation, SSME assembly and final display preparation, and transportation. Orbiter safing includes items such as decontamination of hypergolic fuel systems and removal of other safety and environmental hazards from the vehicles. Organizations interested in receiving a Space Shuttle Orbiter for public display must be prepared to raise sufficient funding for Space Shuttle Orbiter safing, final display preparation, and transportation services.

Organizations interested in receiving a SSME for public display must be prepared to raise sufficient funding for SSME final display preparation and transportation services.

Organizations seeking an SSME may either independently contract and pay for engine assembly and display services, or accept the SSME as disassembled components for assembly by in-house staff. Organizations that ultimately receive an Orbiter or SSME will be responsible for all costs.

NASA will use the results of this RFI to determine interest that may lead to selection of specific organizations to receive a Space Shuttle Orbiter or SSME. The Orbiters and SSMEs may be directly transferred or donated to eligible recipient organizations under the authority provided by 40 U.S.C. 529.

**Background:**

NASA will cease SSP operations at all locations following completion of the last flight, currently scheduled to occur no later than September 30, 2010. The Government may elect to change the scheduled date for last flight. SSP retirement necessitates the disposition of all SSP assets and items no longer required by NASA, including the Space Shuttle Orbiters and SSMEs. Disposition of SSP property will be accomplished according to existing government policy and guidelines developed and managed by the General Services Administration (GSA).

The NASA Authorization Act of 2008 (P.L. 110-422) directs NASA to “submit to Congress a plan describing the process for the disposition of the remaining Orbiters and other Space Shuttle program-related hardware after the retirement of the Space Shuttle fleet.” NASA advised the Congress that it would begin discussions with the Smithsonian Institution, National Air and Space Museum regarding accession of a flown Space Shuttle Orbiter to the national collection. The National Air and Space Museum houses the national collection of aerospace artifacts. NASA also advised the Congress that the Agency would issue an RFI to gauge the level and scope of interest of U.S. organizations in acquiring the two (2) other Orbiters and other major flight hardware (such as the SSMEs) for public display once NASA’s programmatic requirements for the assets have been satisfied.

P.L. 110-422 further directs NASA to “terminate or suspend any activity of the Agency that, if continued between the date of enactment of this Act and April 30, 2009, would preclude the continued safe and effective flight of the Space Shuttle after fiscal year 2010 if the President inaugurated on January 20, 2009, were to make a determination to delay the Space Shuttle’s scheduled retirement.” NASA is issuing this RFI solely for planning purposes in order to give interested recipients time to make their interest in acquiring Space Shuttle Orbiters and/or SSMEs known and begin planning for that eventuality.

**SSP Hardware Addressed in this RFI:*****Space Shuttle Orbiters***

NASA’s Space Shuttle Orbiters (Figure 1) are the first reusable spacecraft capable of routinely launching into orbit like rockets and then returning to Earth as gliders. These unique crew and heavy cargo-carrying vehicles are the main element of the National Space Transportation System that has been the mainstay of the U.S. human spaceflight program for more than a quarter-century. The Space Shuttle Orbiters have and continue to perform a wide variety of scientific research and space operations missions, including the final assembly of the International Space Station.

Due to the significance of the Space Shuttle Orbiters and the role they have played in the Nation’s space program, special attention will be paid to ensuring they will retire to appropriate places. NASA is keenly aware of the essential value of these key assets to

the space program's rich history; the Agency is therefore committed to making placement decisions that are determined to be in the best interest of the American taxpayer.

NASA's current plan is to transfer one flown Orbiter to the National Air and Space Museum. The remaining two flown Orbiters would be placed in storage at the John F. Kennedy Space Center until final placement decisions are made. The Orbiters would be available for donation no earlier than September 30, 2011. NASA desires to ferry the Orbiters to their final destinations no later than May 31, 2012. Assembled SSMEs will not be installed in, nor included with, the Orbiters.

NASA estimates the total cost to be incurred by a recipient organization for safing one Orbiter, preparing it for final display, and delivery by ferry flight to a U.S. destination airport at approximately \$42 million. This \$42 million estimate includes a \$6 million cost to air ferry the Orbiter by Shuttle Carrier Aircraft from the Kennedy Space Center to a U. S. destination airport. This early estimate is based on specific assumptions by NASA about the minimum tasks which must be performed for public display of a Space Shuttle Orbiter. The estimate is subject to change. It does not take into account special measures that may be required in specific situations such as transporting the Orbiter long distances over public roadways which may require removal of light posts and traffic signals or transport by barge over water. Additional preparation tasks such as fabrication of engine bay covers or mock nozzles, open payload bay door display configuration, and lighting on the vehicle would also increase costs to recipients. The Orbiters will not be disassembled for transportation or storage.

### ***Space Shuttle Main Engines (SSMEs)***

The SSMEs (Figure 2) are the liquid hydrogen-liquid oxygen engines located at the aft end of the Space Shuttle Orbiter. These unique, reusable power plants provide propulsion during the ascent of the Space Shuttle, with each engine generating 490,800 lbs. of thrust. Overall, each SSME weighs approximately 7,800 lbs.

Current planning calls for the SSMEs to be retired along with the Space Shuttle fleet. In the immediate future, however, NASA will retain flight-worthy engines for technical mitigation and potential programmatic reuse within NASA or the Department of Defense until final disposition decisions are made. At least six (6), but potentially as many as ten (10), non-flight-worthy unassembled or partially assembled but largely complete SSMEs will be available for donation as early as mid-2009. Current, obsolete, and scrap components would be brought together by NASA into unassembled or partially assembled display engine "kits." Depending on availability of engine components, some "kits" may require mock components to make a complete engine display. Recipient organizations would be responsible for transporting, assembling and preparing the engines "kits" for display using in-house staff or through separate agreements with aerospace contractors. The total estimated cost to be incurred by a recipient organization for assembling a complete SSME for static display is in the range of \$400,000 – \$800,000, exclusive of shipping costs. Shipping costs will be borne by the recipient

organization. The estimate is subject to change. Assembly costs will vary based on the existing state of assembly of each engine “kit”, the level of fidelity desired for the final display item, and other variables. Additional preparation tasks such as fabrication of display stands or mock engine components would also increase costs to recipients.

### **Special Considerations:**

It should be noted that the organizations that ultimately receive a Space Shuttle Orbiter or SSME hardware must abide by the International Traffic in Arms Regulations (ITAR) restrictions placed on the items. The Orbiters and SSMEs fall under the purview of the U.S. Munitions List (USML), as defined in the ITAR (22 CFR120-130) and are export controlled. The Space Shuttle Orbiters and SSMEs shall not be transferred to foreign persons (ITAR 120.16), in the U.S. or abroad, or exported out of the U.S., without notification to NASA and the specific approval/export license from the Department of State Directorate for Defense Trade Controls (<http://www.pmddtc.state.gov/>). Violations of these regulations are punishable by fine, imprisonment, or both.

As noted above, NASA plans to initially retain flight-worthy SSMEs for technical mitigation and potential programmatic reuse. The Space Shuttle Orbiters that would be available for donation after the end of the program would be offered without flight SSMEs.

Air ferry of Orbiters by Shuttle Carrier Aircraft would require U. S. destination airports to have 8,000 to 10,000 feet runways depending on the altitude and atmospheric temperature of the landing site, and the final weight of the Orbiters being delivered.

The Space Shuttle Orbiters and SSMEs may not be displayed outdoors. Responders should be aware that the Orbiters and SSMEs will require suitable climate-controlled indoor display space.

Responders should take into consideration that the Orbiters and SSMEs may contain hazardous materials and require proper handling. Although NASA will take necessary precautions to decontaminate the hardware and remove or render safe known safety and environmental hazards, it may not be possible to completely remove all residual hazards from the hardware. NASA will clearly identify any unusual hazards that are not removed, prior to transferring the hardware to final recipient organizations.

There is a limited quantity of support items and tools that may be necessary to transport, assemble, and display the Space Shuttle Orbiters and/or SSMEs. NASA intends to loan available support items to the organizations receiving the hardware, however this requirement may be waived at NASA's discretion based on government needs and requirements at the time the hardware is transferred. Loan of support items and tools would be negotiated with the recipient organizations.

## **Responding to this RFI:**

Organizations responding to this RFI 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.

RFI responses must include:

- Name of the primary point of contact for the response
- Academic faculty or business title
- Institution or organization affiliation
- Email address
- Phone
- Identification of other key individuals who collaborated on the RFI response
- A brief summary (300 word limit) description of previous relevant experience in displaying assets of National significance.

## **RFI Questions:**

NASA is requesting responses to the following questions:

1. Would your organization be interested in acquiring an Orbiter and/or SSME? For what purpose and at what location?
2. Please explain your organization's approach to raising funding necessary for Orbiter safing and final display preparation, SSME assembly and final display preparation, and transportation services.
  - a. What would be the proposed source(s) of funding?
  - b. What is the estimated amount of time needed to raise sufficient funds to display an Orbiter and/or SSME?
3. The Space Shuttle Orbiters and SSMEs may not be displayed outdoors, and will require suitable climate-controlled indoor display space. Please provide your organization's capabilities to appropriately house, protect, display, and curate a Space Shuttle Orbiter and/or SSME.
4. Given these financial and curatorial requirements stated in this RFI, what is the earliest date your organization could accept the transfer of an Orbiter and/or SSME?
5. What is the benefit to the Nation of displaying a Space Shuttle Orbiter and/or SSME at your facility? In your response, please identify:

- a. How you would use these assets to inspire the American public and students in particular;
  - b. Other specific educational or education outreach opportunities; and
  - c. How you would you assess, evaluate, and measure these objectives.
6. Provide the techniques and interpretive strategies that you would use to enhance the display of these artifacts and increase the public's ability to understand the Nation's space exploration agenda.
7. What additional assets, tools, or expertise would your organization request from NASA in order to display these assets to the American public?

Topics which organizations should also include the following in an Appendix in as much detail as reasonably possible:

- Mission Statement
- Organizational Chart
- Nature of Governing Authority
- Accreditation or other relevant credential
- Collection Ownership and Management Policy
- Attendance Figures for each of the past 5 years
- Population of geographic area in which organization is located
- Local infrastructure for transporting a Space Shuttle Orbiter, once offloaded from the Shuttle Carrier Aircraft, to the final display location
- Budget and Resources profile including endowments over the past 5 years
- Number of Web Page Hits for each of the past 5 years

Please note that RFI responses including the Appendix must not exceed 25 pages in length. Use single-spaced, 12-point, Times New Roman font.

The following file naming convention should be used: SSP\_RFI\_firstinitial\_lastname.doc  
For example: Angela Rodriguez would name her file SSP\_RFI\_A\_Rodriguez.doc

Authorized file formats include: Adobe Acrobat versions 6 - 8 (.pdf) Microsoft Word versions 2000 – 2003 (.doc) and Microsoft Excel versions 2000 – 2003 (.xls)

Although all comments received will be carefully reviewed and considered for inclusion in any possible later action, the initiators of this request make no commitment to include any particular recommendations. Respondents will not be notified of the results of the review.

No solicitation exists; therefore, do not request a copy of the solicitation. If a solicitation

is released it will be synopsised in the FedBizOpps and on the NASA Acquisition Internet Service. It is the responsibility of potential offerors/bidders to monitor these sites for the release of any solicitation or synopsis.

**Response Submission Deadline:**

Responses to this RFI must be submitted no later than 11:59 PM Eastern Standard Time, on March 17, 2009. RFI submissions will be accepted as email attachments only. All responses must be sent to [HQ-SSP\\_RFI@mail.nasa.gov](mailto:HQ-SSP_RFI@mail.nasa.gov), with “SSP RFI Response” in the subject line.

An email confirmation of receipt from NASA will be sent within a one-week period to the designated point of contact.

**Point of Contact for Inquiries and Submissions:**

Inquires regarding this proposal may be directed to NASA Headquarters, Office of Infrastructure, Mail Stop 4G74, 300 E Street SW, Washington D.C., 20546, fax 202-358-2826, telephone (toll free) 1-877-283-1977, or electronic mail at [HQ-SSP\\_RFI@mail.nasa.gov](mailto:HQ-SSP_RFI@mail.nasa.gov) with “SSP RFI Inquiry” in the subject line. Inquiries must be received within 30 calendar days from the date the RFI is issued. Responses to all inquiries received by this deadline will be posted electronically and made publicly available at [www.nasa.gov/transition/](http://www.nasa.gov/transition/) within 45 calendar days from the date the RFI is issued.

**DISCLAIMER**

NASA will not publicly disclose proprietary information obtained as a result of this RFI. To the full extent that it is protected by law and regulations, information identified by a respondent as Proprietary or Confidential will be kept confidential.

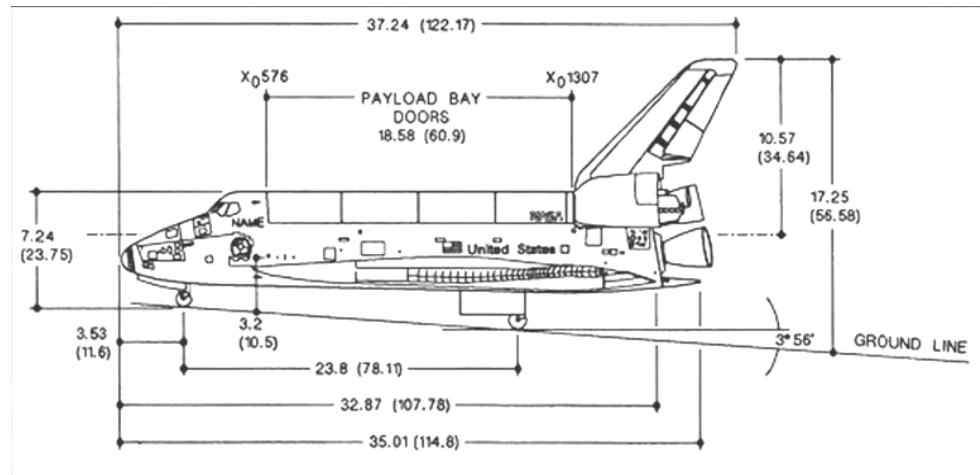
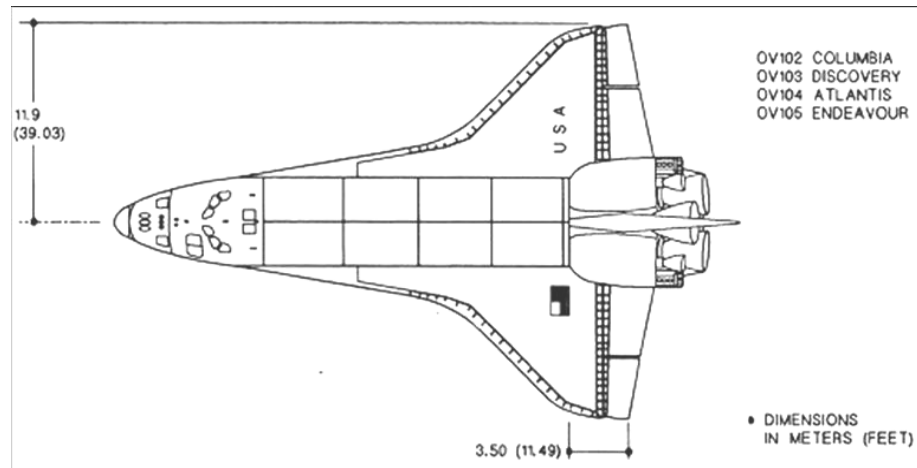
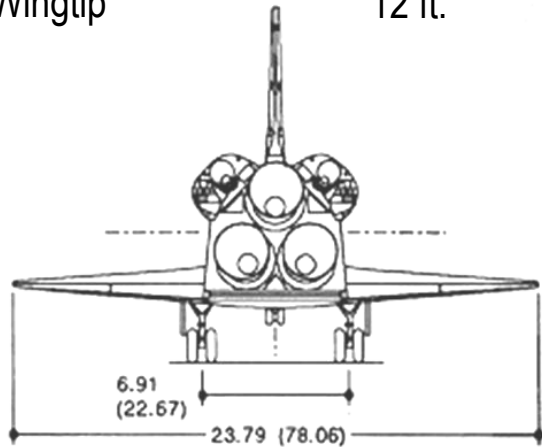
This RFI may also be found electronically at [www.nasa.gov/transition/](http://www.nasa.gov/transition/).

Approximate Dimensions and Weight

Wing span	78 ft.
Length	122 ft.
Height	56 ft.
Tread width	22 ft.
Dry Weight	151,000 lbs

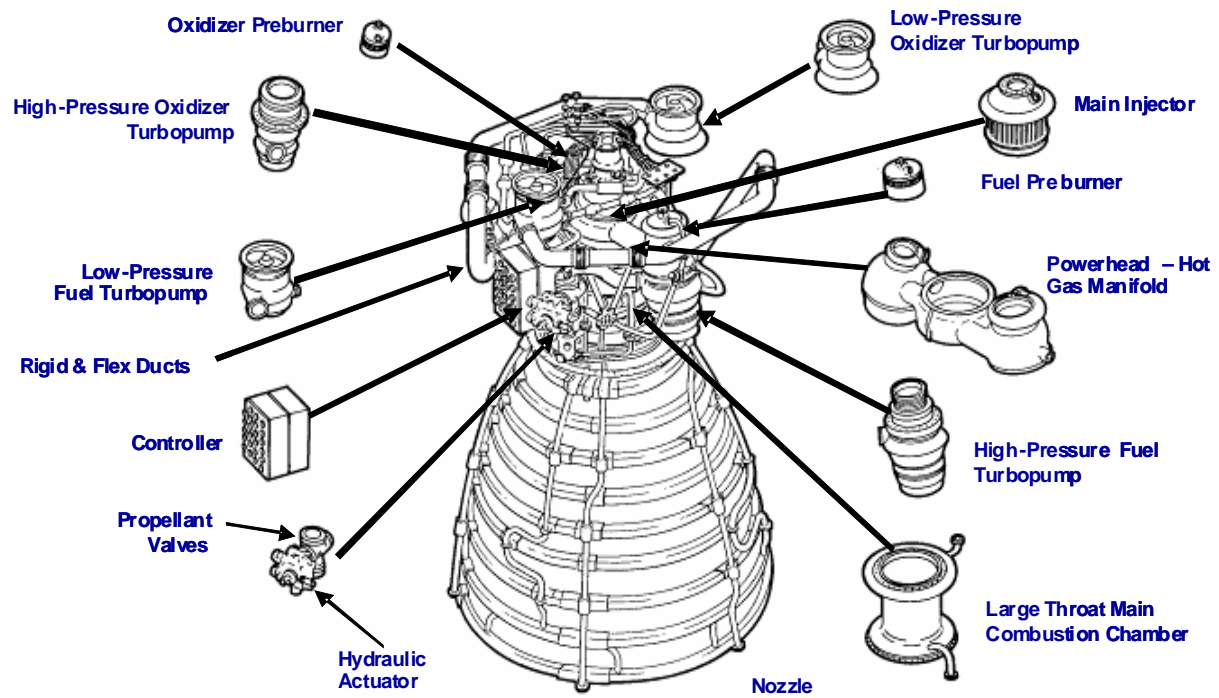
Minimum Ground Clearances

Body Flap	12 ft.
Main Gear Door	3 ft.
Nose Gear Door	3 ft.
Wingtip	12 ft.



**FIGURE 1 – Space Shuttle Orbiter**





### Approximate Dimensions and Weight

Height.....14.0 ft.  
 Diameter.....7.5 ft.  
 Weight.....7,800 lbs.

FIGURE 2 – Space Shuttle Main Engine and Major Components (Exploded View)