

**NASA Announcement of Opportunity, NNH07ZDA0030
 "Explorer Program: Small Explorers (SMEX) and Missions of Opportunity."**

Questions From / Answers To Potential Proposing Community

Most Current Update: [Tuesday, February 5, 2008.](#)

Question Number	Date Received	Date Posted	Question	Answer
1	Wed, 28 Nov 2007	Tue, 11 Dec 2007	<p>Prior to the release of Amendment2 ...</p> <p>Words from AO regarding phases ...</p> <p>For the purposes of this AO, the NASA mission management processes are divided as follows.</p> <p>Formulation is divided into: Phase A - Concept and Technology Development; and Phase B - Preliminary Design and Technology Completion.</p> <p>Approval is the process for transitioning into Implementation, which for Explorer missions is the step leading to a Confirmation Review with the Associate Administrator for SMD.</p> <p>Implementation is divided into: Phase C - Final Design and Fabrication; Phase D - System Assembly, Integration and Test, and Launch (extending through in-orbit checkout, usually launch plus 30 days); Phase E - Operations and Sustainment; and Phase F - Closeout. Phase E is to include analysis and publication of data in the peer reviewed scientific literature and delivery of the data to an appropriate NASA data</p>	<p>The development timeline from the original AO was a generic template focused on <u>Explorer missions</u>; the SMEX addendum for ISS payloads redefines the development schedule according to <u>ISS milestones</u>...so, for all practical purposes...it appears to us that:</p> <p>NASA's mission management process Phase B would match up to ISS Opportunity's PDR, NASA's mission management process Phase C would match up to ISS Opportunity's CDR, NASA's mission management process Phase D would match up to ISS Opportunity's certification and integration.</p>

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			<p>archive.</p> <p>Since the ISS Opportunity specifically states ...</p> <p>Payloads would be required to complete ...PDR approximately 36 months before launch, CDR approximately 24 months before launch, and be delivered for certification and integration approximately 9 months before launch.</p> <p>This contradicts the combined PDR/CDR in the original AO. And as a result, will affect the phases, and the timeline for reviews (SRR, CR, PER, PSR, etc). Can you please provide a new lifecycle timeline including phase definition, phase duration, and reviews?</p>	
2a	Fri, 30 Nov 2007	Tue, 11 Dec 2007	What is the largest payload that could be launched on HTV?	HTV has constraints as do the platforms. Please refer to the <i>Payload Allowable Up-Mass & Volume Summary Table</i> on the last page of this Q&A document. For further reference, data are documented in D683-97497-01 Rev A and D684-11532-01 Rev B. Please note, however, these documents are ITAR-controlled and available to eligible parties via specific request emailed (with "SMEX AO" in Subject field) to: pdl.helpdesk@msfc.nasa.gov .
2b	Fri, 30 Nov 2007	Tue, 11 Dec 2007	Can we have more information on interfaces to HTV for a FRAM-based payload, and what are the load capabilities?	Please refer to the <i>Payload Allowable Up-Mass & Volume Summary Table</i> on the last page of this Q&A document. FRAM-based payloads still need to meet requirements (e.g., interface, data, power, etc.) as presented. For further reference, data are

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				documented in D683-97497-01 Rev A and D684-11532-01 Rev B. Please note, however, these documents are ITAR-controlled and available to eligible parties via specific request emailed (with "SMEX AO" in Subject field) to: pdl.helpdesk@msfc.nasa.gov .
2c	Fri, 30 Nov 2007	Tue, 11 Dec 2007	From the HTV Cargo Standard Interface Requirements Document, Unpressurized Cargo for Multi-purpose Type (NASDA-ESPC-2857 Rev. B, Part 2, Volume 3), p. 15. If it is assumed that <i>[payload]</i> is limited to load capabilities of the Active FRAM and that the HTV pallet will accommodate this interface, will the payload developer have to analyze the system loads (payload plus Active FRAM) to the HTV or will that be done by the HTV organization?	The payload developer will be given a launch environment and is responsible for performing analysis to assure that the payload and adapter assembly can withstand the launch environment. The payload developer is then obligated to provide this model so that the integrated analysis can be performed by JAXA.
2d	Fri, 30 Nov 2007	Tue, 11 Dec 2007	NASDA-ESPC-2857, Rev. B states that "the cargo provider shall provide the HTV with the cargo structural mathematical model that is verified in accordance with TBD". This means that <i>the [payload]</i> will need a loads model(s) of the Active FRAM. Who will provide the Active FRAM model to <i>[payload]</i> ? On the other hand, note that the ELC representative stated that the ELC will conduct the loads analyses of the complement of payloads provided on Active FRAMs.	The FRAM structural models will be provided by the ISS program. The integrated analysis of the ELC will be performed by the ISS program.
2e	Fri, 30 Nov 2007	Tue, 11 Dec 2007	What is the specific static and dynamic envelope for any particular payload on the HTV and the reference document specifying the constraints?	1 m x 0.8 m x 1.4 m Please note: these are the worst-case envelope data; it is not yet known whether they are static or

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				dynamic. <i>Response regarding document reference in process.</i>
2f	Fri, 30 Nov 2007	Fri, 11 Jan 2008	<i>[One reference]</i> stated that there may be up to a 5 inch differentiation between the HTV and ELC height allowances. Can this be confirmed, and if so, what documents should be used for reference?	Use 5" for time being until JAXA provides written concurrence. These are the best data we have available at this time.
2g	Fri, 30 Nov 2007	Tue, 11 Dec 2007	Will simulators be provided to the payload developer to test payload-to-pallet form/fit/function for the HTV and ELC?	ELC: Each payload developer will be issued a portable simulator for initial payload development and testing. After the payload is delivered to KSC, it will be tested with a simulator that provides the same mechanical and electrical/ data interfaces as the ELC. A final test will be performed after the payload is integrated onto the ELC. This final test will be preformed with the ELC connected to a simulator that simulates the truss interfaces that the ELC will use. HTV: Only has 50Vdc heater power. There is no simulator for test. For the JEM-EF payload, STEP (Suitcase Test Environment for Payloads), a portable simulator, will be provided to verify payload command and data handling function.
2h	Fri, 30 Nov 2007	Tue, 11 Dec 2007	Where will the simulators be located?	ELC: The simulators will be located at KSC with the exception of the portable simulator which will be provided to the payload developer to use at his home facility JEM-EF: STEP will be provided to the payload developer at its home location. NASA/Marshall Space Flight Center payload support is the sustaining organization of STEP.

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2i	Fri, 30 Nov 2007	Mon, 14 Dec 2007	What are the generic on-dock dates for training, simulations, and flight integration?	Dates for training and simulations are based on the ISS Increment start ; date for instrument flight integration are based on the <u>launch</u> and can vary depending on the carrier, etc. The technical document, "SSP 57057, ISS Payload Integration Template, Revision C, September 2007," is references all the generic milestones for payload use. If you can be more specific with the data you are requesting, your answer can be narrowed down. Or, you can obtain the document and locate the data yourself via specific request emailed (with "SMEX AO" in Subject field) to: pdl.helpdesk@msfc.nasa.gov .
2j	Fri, 30 Nov 2007	Tue, 11 Dec 2007	What flight and simulation hardware, if any, will be provided as GFE to the payload developer?	ELC: The payload developer will be provided an Express Pallet Adapter and a portable simulator. The schedule dates that the simulator is made available to the payload developer will be coordinated with other users.
2k	Fri, 30 Nov 2007	Tue, 11 Dec 2007	If <i>[payload]</i> is displayed outside of stowed configuration and outside normal payload envelope of ELC payload, but not within main EVA translation path, then besides sharp-edge control, is it required to have any other EVA features such as an EVA override for returning it to a stowed configuration?	If a payload is deployed outside the nominal envelop, an exception will have to be processed. The necessity to be re-stowed within the original envelop will be analyzed on a case by case basis.
2l	Fri, 30 Nov 2007	Tue, 11 Dec 2007	The most current manifest for ELCs implies that we will be exchanged with other payloads resident on ELC locations desirable by <i>[payload]</i> . What are the implications with respect to placing <i>[payload]</i> on the ELC as well as any payload that is to replace <i>[payload]</i> after its mission is complete (see next question)?	Payloads will be mounted on the ELC in locations that meet the individual payload requirements. Payloads will only be exchanged with other payloads if there is a manifest constraint that cannot be avoided. NASA plans to fly additional external payloads after the end of the Shuttle program and currently there is no capability to return ELC payloads after the Shuttle program ends. If there is a

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				need to replace a payload after its mission is complete, it will either be jettisoned or stored at a location that frees the ELC science site for use by the replacement payload.
2m	Fri, 30 Nov 2007	Tue, 11 Dec 2007	Currently, the ELC position on the P3 truss is shown on the lower side of the truss; will it be considered for the upper side instead?	We are requesting an equal number of Zenith and Nadir sites on the ELC for payload operations.
2n	Fri, 30 Nov 2007	Tue, 11 Dec 2007	The <i>[payload]</i> mission has duration of at least 1.5 years. It is not required that the payload be returned to Earth. We assume that when our term is completed, there may be another payload(s) that will be manifested in our place. By what means will that exchange take place and how should we prepare for our disposal (e.g. exchange to an HTV for demise or removal and release from the ELC as an independent entity)?	The exchange of the payload will be via EVA or EVR transfer. There is an extensive approval process that has to be completed to jettison a payload, however, there are currently no requirements levied on a payload to support jettison of the payload.
2o	Fri, 30 Nov 2007	Tue, 11 Dec 2007	Regarding handling assumptions, are the following facts true? (1) <i>[payload]</i> is a FRAM-based payload, (2) EVR is the default method for exchange of <i>[payload]</i> from the HTV to the ELC.	Payloads going to the ELC and Columbus will use FRAM-based adapters that will be supplied by NASA to the payload developer. The method used to transfer payloads between the HTV and the ELC can be either EVR or EVA, and provisions for both methods are built into the EXPRESS pallet adapter. EVR is supposed to be prime method of payload deployment; however, we will be using both methods to transfer payloads.
3	Tue, 4 Dec 2007	Tue, 11 Dec 2007	I need to access SSP 30425 for the purpose of determining requirements for a candidate ISS experiment design for response to the NASA Small Explorer (SMEX) and Missions of Opportunity Solicitation: NNH07ZDA003O. In searching the NASA website, I found the	These documents are ITAR-controlled and available to eligible parties via specific request emailed (with "SMEX AO" in Subject field) to: pd1.helpdesk@msfc.nasa.gov

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			document listed as: http://www1ep.jsc.nasa.gov/esdprojects/X38/documents/ssp30425RevB.pdf However this address is not accessible to me. Is there an alternate place where I may obtain it?	
4a	Tue, 4 Dec 2007	Tue, 11 Dec 2007	A recent Amendment to the 2007 Small Explorer and Mission of Opportunity AO has identified opportunities for ISS payloads to be funded through the NASA/Science Mission Directorate. The Japanese HTV is identified as the "access to space" with NASA controlling the manifest. Who pays for the launch cost? Is the proposal to SMD supposed to account for this cost or is it covered by the Science Operations Mission Directorate?	HTV launch cost is covered by the JEM launch offset agreement with JAXA, and thus, these costs are not passed to the payload developer.
4b	Tue, 4 Dec 2007	Tue, 11 Dec 2007	For a payload/experiment attached to the JEM-EF, can an EVA be used to put the experiment in final configuration?	Yes.
4c	Tue, 4 Dec 2007	Tue, 11 Dec 2007	If yes to the EVA question above, who pays for the cost of EVA planning and execution?	EVA costs are a standard service provided by NASA and are not passed on to the payload developer. Developers are responsible for providing the data to NASA that are required to plan and implement the EVA, and should be aware that there are additional integration and safety requirements associated with EVA placements and retrievals
5	Tue, 4 Dec 2007	Tue, 11 Dec 2007	Can scientists or engineers in the ISS Payloads office be included as collaborators in a SMEX/MO proposal?	ISS Payloads personnel cannot be included as investigators or collaborators or provide letters of support for any SMEX proposals as this would

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				constitute a conflict of interest.
6	Wed, 5 Dec 2007	Tue, 11 Dec 2007	Do you have any new information as to when the TIM will take place?	The Briefing in Support of Small Explorer Missions of Opportunity AO will take place on Wednesday, December 19, 2007. The teleconference will begin at 9:00 AM. Central Time and end at 12:00 PM noon for the briefing portion. A question and answer period is scheduled from 1:00 PM to 4:00 PM Central time for those who are interested in further discussion. Pre-registration is required and due by Tuesday, December 18, at 1:00 PM Central time. For more specific information and details, including registration instructions, please see http://www1.fbo.gov/spg/NASA/HQ/OPHQDC/NNH07ZDA003O/Modification%2003.html
7	Wed, 12 Dec 2007	Wed, 12 Dec 2007	I am interested in attending the SMEX AO informational telecon briefing next Wed, Dec. 19 th . Is this a telecon that can be joined by anyone, anywhere? Or do I have to be in attendance at Johnson Space Center? In other words, could I listen in on the telecon from my office here in San Antonio?	JSC in-person attendance is not required to participate in the Briefing in Support of Small Explorer Missions of Opportunity AO, which will take place next Wednesday, December 19, 2007. Some people are attending in person, and some are participating via teleconference. The teleconference will begin at 9:00 AM. Central Time and end at 12:00 PM noon for the briefing portion. A question and answer period is scheduled from 1:00 PM to 4:00 PM Central time for those who are interested in further discussion. Pre-registration is required and due by Tuesday, December 18, at 1:00 PM Central time. For more specific info and details, including registration instructions, please see http://www1.fbo.gov/spg/NASA/HQ/OPHQDC/NNH07ZDA003O/Modification%2003.html
8	Wed, 12 Dec 2007	Wed, 12 Dec 2007	Can a proposal be made for participation in an international collaboration already planned for launch on HTV to ISS? What if	Yes, proposals for participation in international experiments are acceptable. If such a proposal is selected an appropriate international agreement for

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			NASA would need to provide part of the launch resources in order to participate?	sharing of launch resources will be made by SOMD. These resources would come from the NASA allocation for HTV launch that is being made available to SMD-supported investigations through this announcement.
9	Wed, 12 Dec 2007	Wed, 12 Dec 2007	Is the SMEX opportunity for access to ISS as a platform limited to external (unpressurized) payloads mounted outside ISS?	No, the flight opportunity to ISS also includes payloads that would be used in the internal (pressurized) volume of ISS, either in the WORF (Window Observational Research Facility) or other internal payload support systems.
10	Fri, 14 Dec 2007	Fri, 14 Dec 2007	Can the Hexapod pointing platform be utilized by an external payload proposing to this AO?	The Hexapod is owned by the ISS Program, but is not currently scheduled for transportation to or integration with ISS. As part of the proposal, arrangements must be made with SOMD to secure its use and coverage for integration.
11	Fri, 14 Dec 2007	Fri, 11 Jan 2008	With which platforms is Hexapod compatible?	Hexapod is compatible with the Columbus and the ELC. The Hexapod horizon sensor will have to be reoriented if the payload is mounted on the ELC.
12	Mon, 17 Dec 2007	Mon, 17 Dec 2007	Is it an oversight that this document is not easily accessible to interested parties? Is there another site that contains this and other documents of related scope that is perhaps missed? "SSP 30425, Space Station Program Natural Environment Definition for Design, International Space Station Alpha, Revision B, February 8, 1994" is referred to extensively in the NSPIRES NOI, and it seems this should be reference material that others might be interested in as well.	No, there is no oversight. These technical documents are ITAR-controlled for export control purposes; however, they are available to eligible parties via specific request emailed (with "SMEX AO" in Subject field) to: pdل.helpdesk@msfc.nasa.gov .
13	Mon 17, Dec 2007	Fri, Jan 2008	Are quantitative field of view data for various external mount points (JEM-EF, Columbus	The External Payload Quantitative views are in Manipulator Analysis, Graphics, and Integrated

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			external racks, etc.) publicly available somewhere? There are visual FOV representations from TP-2007-214768 (Overview of Attached Payload Accommodations and Environments on the International Space Station), but it would be useful to have numbers for modeling and design purposes.	<p>Kinematics (MAGIK) action items 2206 and 2207. They are available at http://iss-www.jsc.nasa.gov/ss/issapt/magik/ActionItems/web/AI_index.html If access is not available, specific request can be emailed (with "SMEX AO" in Subject field) to: pdl.helpdesk@msfc.nasa.gov.</p> <p>However, please note, the payload should assume viewing requirements can be met. If selected, NASA will work to get critical data for the specific payload design.</p>
14	Mon, 17 Dec 2007	Mon, 17 Dec 2007	Can I propose to use the Low Temperature Microgravity Physics Facility (LTMPF) on the ISS?	<p>The LTMPF had gone as far as pre-CDR before it was terminated. Since it has been terminated, there are no funds currently allocated for completion of the LTMPF, there are no plans for the completion of the LTMPF, and it is not manifested for launch to the ISS. The Science Mission Directorate, which is sponsoring this AO and will be funding the selected proposals, is not offering the LTMPF as a facility to successful proposers. If you require the LTMPF for your experiment, then you must include the LTMPF as part of your proposal. Your proposal must include a plan for completing the LTMPF sufficient to support your experiment otherwise the LTMPF will not exist. Your proposed budget must include sufficient funding to complete the LTMPF.</p>
15	Wed, 19 Dec 2007	Thu, 20 Dec 2007	Can the participant attendance roster from the Briefing in Support of Small Explorer Missions of Opportunity AO (SMEX AO) on Wednesday, December 19, be made available to potential proposers for networking purposes and possible teaming arrangements?	<p>No, we do not release attendance list. However the SMEX AO (Section 7.1.6) offers a teaming page at http://explorers.larc.nasa.gov/team.html</p>

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16	Wed, 19 Dec 2007	Thu, 20 Dec 2007	ISS Partner Missions of Opportunity proposals with launch provided by the Partner were solicited in the original Announcement of Opportunity with a due date of January 15, 2008. Amendment 2 solicited ISS Missions of Opportunity proposals with US-provided launch on the HTV with a due date February 12, 2008. Which of these due dates is applicable for ISS Partner MO proposals that require use of the US allocation on the HTV?	The latter due date of February 12, 2008, is applicable because those proposals are using the U.S. allocation of HTV.
17	Wed, 19 Dec 2007	Thu, 20 Dec 2007	During the teleconference for the SMEX AO amendment, it was mentioned that there are several missions scheduled at present to be installed at various mounting locations aboard the station. Is there a website or document that lists the currently scheduled/approved ISS missions, and where these payloads were be mounted?	Proposers should identify their needs and requirements, and if their payload is selected, those requirements will be used in strategic planning to ensure the external facility that meets those requirements will be available at the required time.
18	Wed, 19 Dec 2007	Thu, 20 Dec 2007	Is there an acronym list available for the presentation charts used in the Briefing in Support of Small Explorer Missions of Opportunity AO (SMEX AO)?	Yes, an acronym list is currently being developed and can be made available to eligible parties via specific request emailed (with "SMEX AO" in Subject field) to: pdل.helpdesk@msfc.nasa.gov .
19a	Wed, 2 Jan 2008	Fri, 11 Jan 2008	Launch environment: The response to question 2c [of this matrix] as currently posted states that "The payload developer will be given a launch environment [for the HTV]." Is this available during the proposal period?	The HTV launch environment is outlined in the HTV Cargo IRD. For the JEM-EF payload, please refer to "NASDA-ESPC-2857A, Part 2 Volume 2, paragraph 3.4.6. Environmental Conditions" For the FRAM (ExPA) payload, please refer to "NASDA-ESPC-2857B, Part 2 Volume 3, paragraph 3.5.5. Environmental Conditions."

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				Please note: for a FRAM-type payload, the new launch environment is listed in the new revision, which does not contain all of the earlier content.
19b	Wed, 2 Jan 2008	Fri, 11 Jan 2008	Payload mass: The JAXA document at http://idb.exst.jaxa.jp/edata/021110/199810K02110050/199810K02110050.html states that "If the weight of the [JEM-EF] payload exceeds 500 kg ..., a technical coordination will be performed." Can you describe this coordination, and should this be started in the proposal process to verify feasibility?	<p>If a payload exceeds 500 kg, an exception must be processed with JAXA which means they will perform a special structural analysis. We could not get this analysis completed as a part of the proposal process due to the amount of lead time that would be required.</p> <p>However, please note, negotiation would be conducted on a case-by-case basis. Outcome of negotiation cannot be guaranteed. Proposers cannot be advised on how to handle.</p>
19c	Wed, 2 Jan 2008	Fri, 11 Jan 2008	Payload attachment during launch: What is the volume envelope for a payload that uses the FRAM attachment system to the launch carrier? Specifically, can a "full size" JEM-EF payload (1850 x 1000 x 800 mm) use a FRAM interface for launch to the JEM-EF?	The maximum height is to be addressed in question 2F. Due to the size of the FRAM, it can only be mounted on the side of a JEM-EF payload that interferes with the robotic clearances. It can be done but it would require a modification to the FRAM and would limit the number of sites that the payload is compatible with on the JEM-EF.
19d	Wed, 2 Jan 2008	Wed, 9 Jan 2008	Attachment points at JEM-EF: Chart 52 of the 12/19 presentation identifies JEM-EF attachment point #9 as being occupied by JAXA payload "SEDA-AP." During the discussion I believe someone said that this payload will operate for three years. Can we assume that this attachment will be available for a mission of opportunity payload after the SEDA-AP payload has completed its operations?	The proposal can list site requirements and constraints. NASA would negotiate access to specific or equivalent site with all parties.

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20	Mon, 7 Jan 2008	Wed, 9 Jan 2008	We were told that answers to questions posed during the 19 December 2007 ISS TIM would be posted "soon". Now, 2.5 weeks later, we really need these answers so we can finish up our proposal. Will you post these answers soon? When will you post the answers?	Transcription of the TIM questions and answers, including an acronym list culled from the presentation package, is still in process but nearing completion. Since personnel recently returned from holiday off-time, we are working to finish the task as swiftly as possible to accommodate and post for all proposers' availability/access. You will be notified as soon as this occurs.
21a	Thu, 10 Jan 2008	Mon, 14 Jan 2008	<p>The Amendment 2 of the SMEX AO states that: "Payloads would be required to complete PDR approximately 36 months before launch, CDR approximately months before launch, and be delivered for certification and integration approximately 9 months before launch."</p> <p>The leaders of the Dec. 19th TIM stated that payload delivery to the launch site is required between 3 and 5 months to JAXA before launch.</p> <p>We made the TIM leaders aware of the inconsistency, and they said they would get back to us. They have not. Could someone please officially clarify:</p> <p>The number of months required for payload delivery prior to launch?</p>	<p>ISS development milestones are different; please refer to answer number 1 in this matrix.</p> <p>HTV mission hardware development contains analytical milestones that are set at L-minus-14 months, indicating that PDR would be held at approximately L-minus-24 months.</p>
21b	Thu, 10 Jan 2008	Mon, 14 Jan 2008	<p>Could someone please officially clarify from the 12/19/07 TIM:</p> <p>Is there a required delivery to KSC for anything? If so, by how many months prior to launch?</p>	For the HTV payload, the on-dock date at the launch site is set at L-minus-5 months. There is nothing to deliver to KSC, according to the current process baseline. Note: This is subject to change but shall not present any impact to the payload developer.

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21c	Thu, 10 Jan 2008	Mon, 14 Jan 2008	<p>Could someone please officially clarify from the 12/19/07 TIM:</p> <p>Is there a required delivery to JSC for anything? If so, by how many months prior to launch?</p>	<p>If you are referring to hardware, no, there is no required hardware delivery to JSC. However, if you are referring to other deliverables, there is a required safety review to be conducted at JSC. The date is negotiable, however, Phase 0/1 shall be performed before CDR and Phase 2 shall be performed no later than 3 months after CDR.</p>
21d	Thu, 10 Jan 2008	Mon, 14 Jan 2008	<p>Is there a mechanical model of the exposed pallet of the HTV that proposers can have access to?</p>	<p>No. Dimensional drawings are available for future reference after a payload is selected.</p>
21e	Thu, 10 Jan 2008	Fri, 11 Jan 2008	<p>Based on the Technical Interchange Meeting with JSC, 12/19/07, a number of documents associated with the Japanese (JAXA) HTV vehicle are theoretically available for reference. We have access to and have searched EDMS for these documents but have not been able to locate the documents listed below. Could you please provide a link to the documents below:</p> <ul style="list-style-type: none"> • JHX-TBD HTV Thermal Mathematical Model • KAE-01005 HTV Electrical Design Standard • KAE-01006 HTV Environmental Design Standard • JCX-95068 JEM Environmental Design Standard • NASDA-ESPC-2857 Rev. B, Part 2, Vol. 2 & Vol. 3 	<p>These documents were specifically requested via email to pd1.helpdesk@msfc.nasa.gov, and sent directly to the individual requesting them.</p>

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22a	Mon, 14 Jan 2008	Mon, 14 Jan 2008	<p>We are working on a SMEX MO that would occupy an ELC slot on the ISS after a JAXA HTV flight to orbit. We are trying to figure out to where and when we deliver the payload. There are 3 conflicting and incomplete answers in the published documents:</p> <p>1) The AO amendment says we deliver at Launch-minus-9 months but not where.</p> <p>2) The TIM Q&A says (questions TIM2-18 and TIM2-15) says we deliver to Tanegashima (JAXA) at Launch-minus-5 or Launch-minus 6 months. This document's address is: http://www.nasa.gov/pdf/207999main_SMEX_TIM%20Q%26A_01_10_08.pdf This response is dated 19 December 2007.</p> <p>3) The SMEX MO Q&A document on question 2g suggests that we deliver to KSC, but not when. This response is dated 11 December 2007. This documents address is: "http://www.nasa.gov/pdf/207946main_SME_X_MO_Q%26A_01_09_08.pdf"</p> <p>Which one should we follow?</p>	Please refer to answer 21.
22b	Mon, 14 Jan 2008	Mon, 14 Jan 2008	<p>We have the following questions:</p> <p>1. Amendment 2 of the SMEX AO states that:</p> <p>A. "Payloads would be required to complete PDR approximately 36 months before launch, CDR approximately months before</p>	Please refer to answer 21.

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			<p>launch, and be delivered for certification and integration approximately 9 months before launch." However, it does not say "Where."</p> <p>B. The leaders of the Dec. 19th TIM stated that payload delivery to the launch site is required between 3 and 5 months to JAXA before launch.</p> <p>C. The Q&A in Support of Small Explorer Missions of Opportunity AO Updated January 9, 2008; Question # "2g" states delivery to KSC, however, it does not say "When."</p> <p>Please officially clarify the official delivery sites and dates.</p>	
22c	Mon, 14 Jan 2008	Mon, 14 Jan 2008	<p>Also, please clarify:</p> <p>a) The number of months required for payload delivery prior to the launch site?</p> <p>b) Is there a required delivery to KSC for anything? I now see in the Q&A that there appears to be a requirement to ship to KSC for integration onto the ELC simulator. Have I interpreted this correctly?</p> <p>c) If shipment to KSC for integration onto the ELC is required, how many months prior to launch or shipping to the launch site is required?</p> <p>d) What level of support from the payload is required for this integration?</p>	<p>See answer 21 for shipment to JAXA.</p> <p><i>Response information in process for ELC simulator.</i></p>

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			e) Is there a required delivery to JSC for anything? If so, by how many months prior to launch?	
23a	Wed, 16 Jan 2008	Thu, 17 Jan 2008	Is the grapple fixture for the JAXA HTV system government-furnished equipment (GFE)?	Yes.
23b	Wed, 16 Jan 2008	Thu, 17 Jan 2008	Where is the best place to get information regarding the vibrational environment on the ISS?	<p>The information is available in "SSP 57003, ISS Attached Payload Interface Requirements Document, Rev C, paragraph 3.5.1.13."</p> <p>In addition, for vibration at JEM-EF, the JAXA JEM project team has done a conversion into different formats, which is presented in "NASDA-ESPC-2900, JEM Payload Accommodation Handbook (JPAH) Volume 3, Table 3.2.4-1, Maximum Allowable Load and Moment on the Interface between the Exposed Facility and the Experiment Payload."</p> <p>If access is not available to you, specific request can be emailed (with "SMEX AO" in Subject field) to: pd1.helpdesk@msfc.nasa.gov</p>
23c	Wed, 16 Jan 2008	Thu, 17 Jan 2008	Is there any cooling capability anywhere in the ELC system? Or do you have to radiate?	No, there is no cooling capability anywhere in the ELC system. You have to radiate to "deep" space (not to the adjacent payload).
24	Wed, 16 Jan 2008	Thu, 17 Jan 2008	<p>I am working on a proposal for a mission that would attach a payload to the JEM-EF on the ISS, and I am looking for some detailed information about the Station environment.</p> <p>Specifically, I am looking for archives of data about ISS attitude fluctuations about the nominal LVLH orientation, and also info on</p>	<p>For vibration information regarding JEM EF, please refer to "SSP 57003, ISS Attached Payload Interface Requirements Document, Rev C, pages 3-63, paragraph 3.5.1.13."</p> <p>In addition, for vibration at JEM-EF, the JAXA JEM project team has done a conversion into different formats, which is presented in "NASDA-ESPC-2900,</p>

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			<p>the vibration and quasistatic microgravity environment. I have found a website (PIMS at NASA/GRC) with vibration data, but I can't seem to find the history of when the Station was operating in microgravity mode, or if anyone has calculated or simulated expected vibration environments on the JEM-EF.</p> <p>If you could help me or direct me to some other source for this kind of information, I would greatly appreciate it.</p>	<p>JEM Payload Accommodation Handbook (JPAH) Volume 3, Table 3.2.4-1, Maximum Allowable Load and Moment on the Interface between the Exposed Facility and the Experiment Payload.”</p> <p>For quasistatic microgravity from payload to ISS information, please refer to “NASDA-ESPC-2900, JEM Payload Accommodation Handbook (JPAH) Volume 3, Section 3.4.2.5 Micro Gravity and Mechanical Disturbances.”</p> <p><i>Response information regarding “ISS attitude fluctuations about the nominal LVLH orientation” in process.</i></p>
25	Thu, 24 Jan 2008	Fri, 25 Jan 2008	<p>We have combed through the recommended documents and HTV CDR package (the latter was referred to in a previous E-mail, but not distributed) and have not been able to find specific thermal information; namely, the thermal environment to which a payload within the HTV will experience from launch through ISS docking. Although the reference documents describe the thermal analysis used for establishing HTV design responses, there is no specific data presented to show thermal environment from a payload perspective. Could you please either specifically state these parameters and values or point specifically to the reference, page, and paragraph or table that indicates this information?</p>	<p>The Cargo Interface Requirements Document (IRD), NASDA-ESPC-2857, captures the thermal environment. Please see Table 3.2.1.4.5-1 in Part 1, Volume 1, page 17 for the current requirement.</p> <p>Note that JAXA is currently analyzing the PLC thermal environment for both high and low temps. Based on the preliminary results, JAXA will update the low temp to 5 deg c at the next Cargo IRD revision. The high temp is still under assessment.</p>
26	Thu, 24 Jan 2008	Fri, 25 Jan 2008	<p>On Dec 18, Roger Weiss emailed us the presentation material for the December 19 TIM on the ISS SMEX AO.</p>	<p>We regret any inconsistencies that have arisen.</p> <p>Regarding the inconsistencies and differences</p>

Question Number	Date Received	Date Posted	Question	Answer
			<p>I noticed that on the latest Q&A [from January 17], it is stated that there is only 50v power available for heaters on the HTV. This is a change that was slipped in without any indication.</p> <p>However, in the TIM presentation, it was shown that there is also 120 volt power available (page 77 of the Document emailed by Roger Weiss).</p> <p>However, it appears that the TIM presentation package loaded on the webpage is different from what was shown to us (and emailed to us) in December.</p> <p>Can you clarify what is available for survival heaters during the HTV accent? Voltage and power available?</p> <p>Actually, it would also be useful to know what are the documents that we can take as truth to write our proposal.</p>	<p>between the information contained in the charts distributed for the December 19 TIM and those charts that subsequently appeared online, the online version does indeed contain many of the presentation charts from the December 19 SMEX AO TIM, however, it should be noted that not all the charts are included and they are not necessarily in the same order as the original presentation package disseminated to registered participants and used that day--both of these distinctions are due to mandatory export control scrubbing before posting and availing the information online to everyone with access.</p> <p>JAXA has placed 120VDC as non-standard service, i.e., somebody has to pay for it, whether it is NASA's ISS Program or the payload developer. 50VDC is standard service from HTV.</p> <p>In NASDA-ESPC-2857 Rev. B, Part 2 Volume 3, paragraph 3.0, page 77, it was stated as follows:</p> <p>“*120VDC power supply (dual string) 180w/ch (3ch) peak @ HTV or 90W/ch (6ch) peak @HTV 120VDC from ISS MBS POA is optional service.”</p> <p>There was a note for * to flag optional service for both statements. Somehow, during the editing revision, the * was deleted and "optional service" was added for one only. Bottom line, both services are optional at this moment.</p>
27a	Thu, 24 Jan 2008	Tue, 5 Feb 2008	<p>Thanks for responding to our query [#25 above], however, within the response we noted that reference to the "PLC" was made within the noted JAXA thermal analysis. We're assuming "PLC" means Payload</p>	<p>If it is within JAXA's thermal analysis, PLC stands "pressurized logistic carrier".</p> <p>Unsure of the connectivity of this question between PLC and ULC, however, the unpressurized payload</p>

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			Logistics Carrier. If that is true, what has analysis revealed for payloads related to the <u>unpressurized carrier</u> ?	is within ULC and ULC thermal environment is listed in HTV cargo IRD.
27b	Tue, 29 Jan 2008	Tue, 5 Feb 2008	We do need clarification of this response. The query to differentiate between unpressurized and pressurized environments is very important. The answer provided to our original question, Table 3.2.1.4.5-1, Part 1, Volume 1, part 17, addresses only payloads associated with the Pressurized Logistics Carrier. We plan to utilize the Unpressurized Logistics Carrier. We have not been able to find specific information, like Table 3.2.1.4.5-1, for <i>unpressurized cargo</i> . Does it exist, and if so, could you please either provide the information directly or specify the page, paragraph, etc. Please note that the proposal due date is approaching rapidly. Your quick response is appreciated.	For the unpressurized cargo, thermal condition is provided for cargo with HTV thermal math model (not the interface temperature). Please refer to Cargo IRD section 3.4.3, Part 2, Volume 3.
27c	Fri, 1 Feb 2008	Tue, 5 Feb 2008	The section you are referencing (IRD 3.4.3, Part 2, Volume 3) specifies the maximum payload-generated-to-pallet interface temperature (i.e. that which the payload generates and transfers to the HTV pallet): "3.4.3.4. Allowable Temperature. Allowable temperature range at interface plane on EP side is as follows: -45 to 60 deg C" It DOES NOT specify the thermal environment of the HTV unpressurized volume to which the payload will be exposed during launch and flight to the ISS. We need this latter data.	Proposals will be selected based on science merits. Without additional, specific information from HTV program, we recommend stating interface thermal conditions, and then specify your instrument's thermal requirements in the proposal.

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			Please let me know if you need additional clarity with our question. Thank you for your help.	
28	Mon, 28 Jan 2008	Tue, 5 Feb 2008	<p>For a SMEX MO on the ISS using one of the ELC slots, will TMC check the price of our instrument using Price-H with manned or unmanned assumptions?</p> <p>Our proposed instrument requires no manned involvement. The difference is significant enough to lead people not to propose.</p>	<p>Since the ISS is a manned spacecraft, proposers should use manned assumptions for developing and costing their instrument.</p> <p>Furthermore, the Space Ops RPO does not provide cost estimates for any work conducted by payload sponsors/developers.</p>
29	Wed, 30 Jan 2008	Tue, 5 Feb 2008	<p>I am working on a proposal effort with personnel from [facility name omitted] for an experiment to be flown on the ISS as one of the JEM External Payloads. The experiment is a down looking, wide field optical device. We would require an unobstructed view from a mirror of approximately 0.8M by 1.5M dimensions located near and parallel to the grapple face of the module. The fittings located on the four corners of the lower surface, which apparently are used to attach the module to the transport pallet, present a problem, as would the surfaces of the module.</p> <p>I would like to know if it is possible to reconfigure the module to place the two attach fittings at the anti-connection end of the device on the grapple surface and thereby leave the sides, bottom, and non-connection end of the module with the pallet.</p>	<p>There is no plan to change HCAM/HCSM interface hardware for JEM EF experiment hardware on HTV EP because HTV launch loads and end to end EVR compatibility capability drives the need of this certified hardware. There is no known replacement hardware exists, there is no plan to develop one either.</p> <p>The question about modification of the attachment protocol is something that would only be pursued or investigated for a payload already in the development process. We can not commit NASA and JAXA to a specific answer. If there is field of view information provided for the JEM-EF sites, that is the best that can be done for an AO process.</p>

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			<p>This would greatly simplify the device and avoid a lot of complicated, heavy and expensive articulation hardware. If you could put me in touch with someone who could discuss this concept with me it would be greatly appreciated. Thank you for any assistance you can provide.</p>	
30	Wed, 30 Jan 2008	Tue, 5 Feb 2008	<p>CONTEXT: The last paragraph on page B-7 in the AO (that seems to apply to continuing bullets on pages B8 through B-11) states that: "Although the maturity of the proposed design may require the results of later trades during the Phase A concept study, in addition to the information above, the specific data identified below must be provided (in tables) to the extent known at the time the proposal is due and as applicable to the proposed mission configuration proposed for all SMEX investigations and as applicable to MOs:</p> <ol style="list-style-type: none"> 1. General Information.... 2. Downlink Info... 3. Uplink Info... <p>Etc.</p> <p>QUESTION: For bullet #6 on page B-8, "Attitude and Control Requirements" the AO asks about the spacecraft requirements. In our case, the "spacecraft" would be the ISS. Do you want us to provide this information to you? Or can this be considered "not applicable" for an ISS MO? It is not clear to our team if you want this information from us in the proposal, which we could provide, or if we do not need to provide it.</p>	<p>It is not applicable to the ISS, since the Principal Investigator could not control that in any case. So the information is not necessary to be provided.</p>

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31	Wed, 30 Jan 2008	Tue, 5 Feb 2008	<p>CONTEXT: In Price-H, there are 2 models to apply for costing hardware development costs: "Unmanned" and "Manned". The "Manned-Mode" may/seems to apply to hardware where the astronauts have planned interaction since the difference between the development of the hardware is vastly different when you run the same numbers for the "manned" vs. "unmanned" for the exact same hardware. Even though we are flying to the ISS (a "manned" environment), we are an external attached payload robotically transferred to our position on an ELC external payload slot and do not require "manned" interaction, although we are fully aware we need to meet all manned safety requirements. We have also already boosted our costs showing a dedicated senior-level person to provide all the required ISS/ELC compliance documents and acting as the JSC interface.</p> <p>QUESTION: Should we cost ourselves as a "manned" payload or an "unmanned" payload, and more importantly, we want to be consistent with what the TMCO (cost) reviewers will cost us using the information we provide in our WBS. Please provide some guidance on whether or not external attached payloads on the ISS should be costed as "Manned" or "Unmanned".</p>	Please refer to response #28.

Payload Allowable Up-Mass & Volume Summary Table

Attach Payload Location	Allowable Payload Weight (including Flight Support Equipment)	Accommodation Weight (including adapter plate)	Total Weight	Payload Volume (W x H x L)
HTV Exposed Pallet (JEM EF Payload)	979 Lb (445 Kg)	121 Lb (55 Kg)	1100 Lb (500 Kg)	31.5" x 39.4" x 72.8" (800mm x 1000mm x 1850 mm)
HTV Exposed Pallet (ExPA, CEPA Payload)	See ExPA & CEPA payload specification for ELC & CEF	See ExPA & CEPA payload specification for ELC & CEF	*See ExPA & CEPA payload specification for ELC & CEF	*See ExPA & CEPA payload specification for ELC & CEF
ELC (ExPA)	490 Lb (222 Kg)	250 Lb (114 Kg)	740 Lb (336 Kg)	34" x 49" X 46" (863mm x 1244mm x 1168 mm)
Columbus (CEPA)	388 Lb (176Kg)	250 Lb (114 Kg)	638 Lb (290 Kg)	34" x 49" X 46" (863mm x 1244mm x 1168 mm)
JEM-EF	979 Lb (445 Kg)	121 Lb (55 Kg)	1100 Lb (500 Kg)	31.5" x 39.4" x 72.8" (800mm x 1000mm x 1850 mm)

* = Location constraint applies in HTV Exposed Pallet