SPACE COOPERATION

X-Ray Astronomy Satellite Project

Agreement Between the

UNITED STATES OF AMERICA

and JAPAN

Effected by Exchange of Notes at
Washington June 10, 2005

with

Memorandum of Understanding

and

Agreement extending the Agreement

Effected by Exchange of Notes at
Washington June 6, 2012

NOTE BY THE DEPARTMENT OF STATE

Pursuant to Public Law 89—497, approved July 8, 1966 (80 Stat. 271; 1 U.S.C. 113)—

". . .the Treaties and Other International Acts Series issued under the authority of the Secretary of State shall be competent evidence . . . of the treaties, international agreements other than treaties, and proclamations by the President of such treaties and international agreements other than treaties, as the case may be, therein contained, in all the courts of law and equity and of maritime jurisdiction, and in all the tribunals and public offices of the United States, and of the several States, without any further proof or authentication thereof."

JAPAN

Space Cooperation: X-Ray Astronomy Satellite Project

Agreement effected by exchange of notes at Washington June 10, 2005;
Entered into force June 10, 2005.
With memorandum of understanding.
And agreement extending the agreement.
Effected by exchange of notes at Washington June 6, 2012;
Entered into force June 6, 2012.

DEPARTMENT OF STATE
WASHINGTON

JUN 10 2005

Excellency:

I have the honor to refer to the recent discussions between representatives of the Government of the United States of America and representatives of the Government of Japan concerning the cooperation between the National Aeronautics and Space Administration of the United States of America (hereinafter referred to as "NASA") and the Japan Aerospace Exploration Agency (hereinafter referred to as "JAXA") on the X-ray Astronomy Satellite (ASTRO-EII) Project for the development, launch, and operation of the satellite carrying five medium energy X-ray telescopes and one hard X-ray instrument for X-ray astronomy, gathering data and related scientific activities (hereinafter referred to as "the Project"), of which JAXA's contribution will be undertaken as a part of the "Japanese Long-Term Program of Space Activities" of the Government of Japan.

In consideration of the continuing mutually beneficial relationship between the two Governments in the field of peaceful exploration and use of outer space; taking into account the Agreement between the Government of

His Excellency,
Ryozo Kato,
Ambassador of Japan.

DIPLOMATIC NOTE

the United States of America and the Government of Japan on Cooperation in Research and Development in Science and Technology, signed at Toronto, on June 20, 1988, as extended and amended; and reaffirming that the provisions of the Agreement between the Government of the United States of America and the Government of Japan Concerning Cross-Waiver of Liability for Cooperation in the Exploration and Use of Space for Peaceful Purposes, signed at Washington, on April 24, 1995 (hereinafter referred to as "the Cross-Waiver Agreement"), the Exchange of Notes of the same date between the two Governments concerning subrogated claims and Agreed Minutes concerning the Cross-Waiver Agreement done at Washington, on December 8, 2000, shall apply to the Project, I have the further honor to propose on behalf of the Government of the United States of America the following arrangements:

1. The Project will be conducted in accordance with the terms and conditions of a Memorandum of Understanding (MOU) to be agreed upon by NASA and JAXA.

2. The Project will be conducted in accordance with the laws and regulations in force in each country and subject to the availability of appropriated funds.

3. Unless otherwise agreed, the Government of Japan shall register the ASTRO-EII satellite as a space object in accordance with the Convention on Registration of Objects Launched into Outer Space, done at New York,

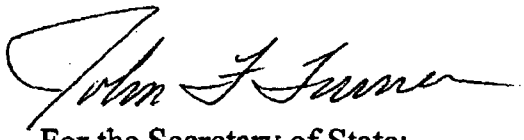
on January 14, 1975 (hereinafter referred to as "the Registration Convention"). Registration pursuant to the Registration Convention shall not affect the rights or obligations of NASA, JAXA, or both Governments under the Convention on International Liability for Damage Caused by Space Objects, done on March 29, 1972.

4. NASA and JAXA will consult with each other on any matter that may arise from or in connection with the Project with a view to finding a mutually acceptable solution. If the matter cannot be resolved through such consultations, consultations between the Government of the United States of America and the Government of Japan shall be held through diplomatic channels with a view to finding a mutually acceptable solution.

5. The present arrangements shall remain in force for 7 years, unless terminated by either Government upon six months' written notice through diplomatic channels of its intention to terminate them. The present arrangements may be extended or amended by mutual written agreement of the two Governments.

I have the further honor to propose that, if the foregoing arrangements are acceptable to the Government of Japan, this Note and Your Excellency's Note in reply shall constitute an agreement between the two Governments, which will enter into force on the date of Your Excellency's reply.

Accept, Excellency, the renewed assurances of my highest consideration.



For the Secretary of State:

EMBASSY OF JAPAN
WASHINGTON, D.C.

June 10, 2005

Excellency:

I have the honor to acknowledge the receipt of Your Excellency's Note of today's date, which reads as follows:

"I have the honor to refer to the recent discussions between representatives of the Government of the United States of America and representatives of the Government of Japan concerning the cooperation between the National Aeronautics and Space Administration of the United States of America (hereinafter referred to as "NASA") and the Japan Aerospace Exploration Agency (hereinafter referred to as "JAXA") on the X-ray Astronomy Satellite (ASTRO-EII) Project for the development, launch, and operation of the satellite carrying five medium energy X-ray telescopes and one hard X-ray instrument for X-ray astronomy, gathering data and related scientific activities (hereinafter referred to as "the Project"), of which JAXA's contribution will be undertaken as a part of the "Japanese Long-Term Program of Space Activities" of the Government of Japan.

In consideration of the continuing mutually beneficial relationship between the two Governments in the field of peaceful exploration and use of outer space; taking into account the Agreement between the Government of the United States of America and the Government of Japan on Cooperation in Research and Development in Science and

Technology, signed at Toronto, on June 20, 1988, as extended and amended; and reaffirming that the provisions of the Agreement between the Government of the United States of America and the Government of Japan Concerning Cross-Waiver of Liability for Cooperation in the Exploration and Use of Space for Peaceful Purposes, signed at Washington, on April 24, 1995 (hereinafter referred to as "the Cross-Waiver Agreement"), the Exchange of Notes of the same date between the two Governments concerning subrogated claims and Agreed Minutes concerning the Cross-Waiver Agreement done at Washington, on December 8, 2000, shall apply to the Project, I have the further honor to propose on behalf of the Government of the United States of America the following arrangements:

1. The Project will be conducted in accordance with the terms and conditions of a Memorandum of Understanding (MOU) to be agreed upon by NASA and JAXA.

2. The Project will be conducted in accordance with the laws and regulations in force in each country and subject to the availability of appropriated funds.

3. Unless otherwise agreed, the Government of Japan shall register the ASTRO-EII satellite as a space object in accordance with the Convention on Registration of Objects Launched into Outer Space, done at New York, on January 14, 1975 (hereinafter referred to as "the Registration Convention"). Registration pursuant to the Registration Convention shall not affect the rights or obligations of

NASA, JAXA, or both Governments under the Convention on International Liability for Damage Caused by Space Objects, done on March 29, 1972.

4. NASA and JAXA will consult with each other on any matter that may arise from or in connection with the Project with a view to finding a mutually acceptable solution. If the matter cannot be resolved through such consultations, consultations between the Government of the United States of America and the Government of Japan shall be held through diplomatic channels with a view to finding a mutually acceptable solution.

5. The present arrangements shall remain in force for 7 years, unless terminated by either Government upon six months' written notice through diplomatic channels of its intention to terminate them. The present arrangements may be extended or amended by mutual written agreement of the two Governments.

I have the further honor to propose that, if the foregoing arrangements are acceptable to the Government of Japan, this Note and Your Excellency's Note in reply shall constitute an agreement between the two Governments, which will enter into force on the date of Your Excellency's reply."

I have the further honor to confirm on behalf of the Government of Japan that the foregoing arrangements are acceptable to the Government of Japan and to agree that Your

Excellency's Note and this Note in reply shall constitute an agreement between the two Governments, which will enter into force on the date of this reply.

Accept, Excellency, the renewed assurances of my highest consideration.

For the Ambassador Extraordinary
and Plenipotentiary of Japan

Her Excellency
Condoleezza Rice
The Secretary of State

MEMORANDUM OF UNDERSTANDING

BETWEEN THE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

OF THE

UNITED STATES OF AMERICA

AND THE

JAPAN AEROSPACE EXPLORATION AGENCY

FOR THE X-RAY ASTRONOMY SATELLITE (ASTRO-EII) PROJECT

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PREAMBLE

The National Aeronautics and Space Administration (NASA) of the United States of America, and the Japan Aerospace Exploration Agency (JAXA), hereinafter referred to as "the Parties";

Recalling with satisfaction the considerable amount of cooperation already conducted between the countries of the United States and Japan in the area of space science;

Convinced that further collaboration will continue to produce benefits for both countries;

Desiring to continue the collaboration established under the NASA/JAXA Implementing Arrangement (Memorandum of Understanding) for the ASTRO-E Program, concluded on January 28, 2000;

Recalling the Agreement Between the Government of the United States of America and the Government of Japan Concerning the Cross-Waiver of Liability for Cooperation in the Exploration and Use of Space for Peaceful Purposes of April 24, 1995 (the "Cross-Waiver Agreement"), the Exchange of Notes of the same date between the Government of the United States of America and the Government of Japan concerning subrogated claims and the Agreed Minutes of December 8, 2000 concerning the Cross-Waiver Agreement;

Affirming that their mutual interest in joint collaboration on the X-ray Astronomy Satellite Project (hereinafter referred to as "the ASTRO-EII Project") for scientific investigation of cosmic x-ray sources using high-resolution spectroscopy, for the exploration and use of outer space for peaceful purposes, will enhance the scientific values of the mission;

Pursuant to the agreement effected by the Exchange of Notes between the Government of the United States of America and the Government of Japan dated June 10, 2005, concerning cooperative activities related to ASTRO-EII, hereinafter referred to as the "Exchange of Notes," agree to the provisions of this Memorandum of Understanding, hereinafter referred to as the "MOU," as follows:

ARTICLE 1 - PURPOSE

This MOU establishes the terms and conditions under which the Parties shall cooperate on the ASTRO-EII Project. It applies to mission development, launch, in-flight and mission operations, data return, and data analysis. The Parties shall cooperate according to the Exchange of Notes and this MOU. This MOU shall supersede, in its entirety, the NASA/Institute of Space and Astronautical Science of Japan Astro-EII Interim Agreement established on March 22, 2002.

ARTICLE 2 – MISSION DESCRIPTION

ASTRO-EII is a reflight of the ASTRO-E mission. The ASTRO-E mission was lost due to a launch vehicle failure in February 2000. ASTRO-EII is the fifth Japanese X-ray astronomy satellite and is directed at high-throughput, high-resolution spectroscopy of celestial X-ray sources such as stars, compact binary systems, X-ray novae, supernova remnants, clusters of galaxies, and active galactic nuclei. The primary goal of ASTRO-EII is to provide new insight into the nature and detailed physics of some of the most energetic objects in the universe.

ASTRO-EII will carry a complement of five medium-energy X-ray telescopes (the "XRT"), and will carry one hard X-ray instrument. Four of the medium-energy X-ray telescopes will focus X-rays onto four separate X-ray Imaging Spectrometer (XIS) detectors. The XIS detectors are X-ray Charge-Coupled Device cameras. The fifth medium-energy X-ray telescope will focus X-rays onto an X-ray Spectrometer (XRS) detector. The XRS is an X-ray microcalorimeter array that covers an energy range similar to the XIS and also provides a moderate imaging capability. The Hard X-ray Detector (HXD) is a combination of solid state detectors designed to extend the satellite's response to higher energies.

The JAXA ASTRO-EII satellite is currently scheduled to be launched on a Japanese M-V launch vehicle in 2005. The satellite will be placed in a low-Earth orbit with a maximum altitude of 500-600 km.

ARTICLE 3 – NASA AND JAXA RESPONSIBILITIES

A) Pursuant to this MOU, NASA will use reasonable efforts to:

1. Provide to JAXA for the duration of the ASTRO-EII mission:

   (a) On a temporary basis, engineering model electronics, one engineering model aperture cylinder assembly (if required), three engineering model blocking filters (if required), one drill template, and necessary ground support equipment (GSE) of the XRS;

(b) One flight model XRS detector system instrument and flight spare components with supporting GSE. This includes Helium (He) insert system consisting of a He cryostat, adiabatic demagnetization refrigerator, microcalorimeter detector assembly, aperture cylinder assembly, one filter mount for the neon shield, one filter mount for the inner vapor-cooled shield, instrument electronics, electrical cables, connectors, one ^{41}Ca source having a maximum strength of 20 microcuries, one ^{55}Fe source having a maximum strength of 10 microcuries, GSE, and cryogens (as required);

(c) Five flight unit mirror assemblies and one mirror quadrant as a flight spare;

(d) Mutually agreed documentation in accordance with the ASTRO-EII Project schedule and the environmental specifications provided by JAXA; and,

(e) For the flight neon Dewar which will be provided by JAXA, open-cell aluminum foam to be installed in the Dewar, two cryogenic valve assemblies, the required number of hermetic mainshell electrical connectors, internal harnesses, connectors and thermometers, as required, and liquid neon and silver Teflon tape for the Dewar mainshell.

2. Install the open-cell aluminum foam in the JAXA-provided flight neon Dewar, and return the Dewar to JAXA after installation is complete.

3. Establish cooperatively with JAXA the XRT mirror interface requirements, test and handling specifications, and acceptance criteria.

4. Establish cooperatively with JAXA the XRS instrument interface requirements, test and handling specifications, and acceptance criteria.

5. Provide consultation, including, if necessary, interface drawings for the U.S.-provided components of the XRS and XRT.

6. Provide instrument documentation, as mutually agreed, including software and any other data or information required for the integration, testing, and operation of the U.S.-provided components of the XRS and XRT in the ASTRO-EII satellite.

7. Provide personnel, as mutually agreed, to support the handling and testing of the U.S. assemblies for the XRS and XRT in Japan prior to integration with the satellite and to support activities relating to integration and testing in the ASTRO-EII satellite.

8. Assist ASTRO-EII Project planning activities by sending one NASA contractor to work at JAXA for the duration of ASTRO-EII operations and providing the related mission-planning software. NASA will provide for the contractor's salary and living expenses and will ensure that the contractor obtains the necessary visa for his/her stay in Japan.

9. Disseminate ASTRO-EII data to NASA-selected, U.S. scientific investigators through NASA's Goddard Space Flight Center (GSFC) data dissemination facility.

B) Pursuant to this MOU, JAXA will use reasonable efforts to:

1. Provide for the ASTRO-EII mission:

   (a) one XIS flight unit set;

   (b) one flight-unit solid neon Dewar for the XRS detector. A part of this Dewar (Ne-tank) will be sent to NASA for the installation of open-cell aluminum foam and will be returned to JAXA after foam installation, as specified in NASA Responsibility A) 2 above;

   (c) five precollimators for the XRT mirrors;

   (d) filter wheel for the XRS;

   (e) one HXD flight unit;

   (f) one mechanical cooler; and,

   (g) the satellite bus.

2. Send the Ne-tank portion of the solid neon Dewar to NASA for installation of open-cell aluminum foam, as specified in NASA Responsibility A) 2 above.

3. Establish cooperatively with NASA the XRT mirror interface requirements, test and handling specifications, and acceptance criteria and provide NASA with all technical and programmatic information required to ensure compatibility of the XRT mirror development with the ASTRO-EII Project.

4. Establish cooperatively with NASA the XRS instrument interface requirements, test and handling specifications, and acceptance criteria and provide NASA with all technical and programmatic information required to ensure compatibility of the XRS instrument development with the ASTRO-EII Project.

5. Provide detailed mechanical, electrical, and other interface information to NASA as required during XRT mirror and XRS instrument development, prior to NASA shipment of these components to Japan.

6. Handle the NASA-provided components of the XRT mirror assemblies and the XRS instrument after delivery to JAXA in compliance with the agreed upon procedures and ground environment.

7. Integrate the NASA-provided components of the XRT mirror assemblies and XRS instrument and test these on the ASTRO-EII satellite to mutually agreed specifications and provide the prelaunch instrument data to NASA, as appropriate.

8. Provide office space, computer, and access to the Internet and e-mail for the NASA contractor as specified in NASA Responsibility A) 8 above.

9. Provide for the launch and launch services of ASTRO-EII on a Japanese M-V launch vehicle.

10. Provide tracking for the ASTRO-EII Project.

11. Allocate the observing time as defined in the Implementation Plan described in Article 3, and transmit the data to NASA as agreed.

12. Perform all initial processing (Level 1 processing) of ASTRO-EII science and engineering data.

13. Provide updated trend analyses and calibration data which are essential to removing instrumental signatures from first pass-processed data.

14. Ensure that first pass-processed data is readied so as to be available in the United States shortly after production at JAXA, subject to the terms of the data sharing arrangements described in the Implementation Plan referred to in Article 3.

15. Return NASA-provided engineering model electronics, one engineering model aperture cylinder assembly (if required), three engineering model blocking filters (if required), one drill template, and necessary GSE per Article 6 of this MOU.

16. Provide to NASA, on a temporary basis, a Prototype Model of the XRS Power Supply Unit and its GSE (if required).

17. Repackage the ^{41}Ca source which is provided by NASA, as specified in NASA Responsibility A) 1 (b), to install in the XRS filter wheel.

ARTICLE 4 - IMPLEMENTATION

1. Mission implementation will involve extensive collaboration between Japanese and U.S. scientists. A number of joint working groups will be established to coordinate activities on the collaborative aspects of the mission.

   (a) An XRT team will be comprised of Japanese and U.S. scientists who will participate equally in the integration, calibration, and qualification of the XRT. Two scientists within the XRT group, one from JAXA and one from

NASA, will be designated as contact points. They will be responsible for establishing a line of communication during the hardware phase.

(b) Similarly, an XRS instrument team will be comprised of approximately equal numbers of U.S. and Japanese scientists, with one JAXA scientist and one NASA scientist designated as key contact points.

(c) A software coordination group consisting of members from each hardware team, JAXA, and the GSFC ASTRO-EII Guest Observer Facility (GOF) will meet regularly.

(d) In addition, the GOF will have one person assigned to each of the above-mentioned joint working groups with the responsibility of coordinating software development for instrument data analysis.

The activities of the groups described above will be detailed in an Implementation Plan to be drafted between NASA and JAXA ASTRO-EII project managers.

2. In the area of science collaboration, Japanese and U.S. scientists will participate cooperatively in the observation program and the analysis of data from the XRS, the XIS and the HXD. The observing program will be constructed from proposed and competitively selected scientific investigations that make optimal use of the ASTRO-EII satellite.

3. Observing time allocation and data sharing arrangements will be established by the Parties on the basis of the financial, technical, and scientific contributions of the U.S. groups to the ASTRO-EII Project and will be detailed in the Implementation Plan.

4. The principal points of contact for each Party in the performance of this MOU are designated below:

For NASA:

Dr. Alan P. Smale
Astro-EII Program Executive
Science Mission Directorate
NASA Headquarters
300 E Street, SW
Suite 3W39
Washington, DC 20546
USA
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Fax: (202) 358-3096
E-mail: alan.smale@nasa.gov

For JAXA: Prof. Kazuhisa Mitsuda
ASTRO-EII Deputy Project Manager
Institute of Space and Astronautical Science, JAXA
3-1-1, Yoshinodai, Sagamihara
Kanagawa, 229-8510
Phone: 81 42 759 8132
Fax: 81 42 759 8455
E-mail: Mitsuda.Kazuhisa@jaxa.jp

ARTICLE 5 - RIGHTS IN RESULTING DATA

1. The operational mission of the ASTRO-EII Project will consist of five phases commencing after a 1-month post-launch initial check-out and calibration phase. Phase 1 consists of months 2-7 after launch during the period in which the XRS becomes operational. Phase 2 occurs during XRS months of operation 8-19. Phase 3 occurs during months 20-31. Phase 4 continues until depletion of the XRS cryogens. Phase 5 begins when the XRS is no longer operational and continues through the completion of the ASTRO-EII Project.

2. During Phase 1, the scientific data will be provided to, and analyzed by, ASTRO-EII Science Working Group (SWG) members assigned to each observation by the scientific planning teams. Some scientific results are also expected during this period. No guest observations are planned for this phase. It is agreed that analysis and publication of the data obtained during this period will be part of a team effort involving the ASTRO-EII SWG, which is comprised from the NASA- and JAXA-sponsored ASTRO-EII team scientists, as well as other scientists designated by NASA and JAXA. NASA will determine the number of U.S. scientists and JAXA will determine the number of Japanese scientists that will comprise the ASTRO-EII SWG.

3. The NASA-allocated portion of the remaining time from launch plus 7 months through the end of the mission (Phases 2-5) will be predominantly allocated to Guest Observers (GOs), selected through competitive NASA research announcements. JAXA will determine the process by which the JAXA portion of the observing time is allocated to Japanese scientists. Observing time will be distributed between the Parties for both the SWG and the GOs as mutually agreed and documented in the Implementation Plan.

4. Individual proposals utilizing the post-Phase 1 ASTRO-EII observing time will be selected on the basis of scientific merit within each of the following three categories--Category A (the highest priority), Category B (the second highest priority), and Category C (the lowest priority). Proposals will be approved within the NASA and JAXA allocations. The Category A and B proposals will be undertaken if at all possible. The Category C proposals are a reserve of observations to be used where additional targets are required for the most efficient

observations. Some investigations selected by NASA and JAXA may be for the same targets. These will be merged into single observations with the data available to both U.S. and Japanese scientists. The processes for merging observations and for selecting research proposals for Categories A, B, and C will be detailed in the Implementation Plan.

5. All of the first-pass processed data will be deposited in archives in the United States and Japan in order to provide suitable data sets for general release to the international community. For each observation, investigators will receive data from all of the co-aligned ASTRO-EII telescopes. The NASA- and JAXA-sponsored ASTRO-EII SWG members will retain scientific data rights for a period of 12 months after the end of Phase 1 of the observing program. ASTRO-EII SWG members and scientists selected via peer reviewed proposals will retain scientific data rights for a period of 1 year after receipt of data from any observing program conducted after Phase 1. Upon expiration of the said scientific data rights period, all mission science data shall be placed into data archives in the United States and Japan.

6. Results of the scientific investigations will be made available to the scientific community, as soon as practicable, in general through publication in appropriate journals or other established channels. In the event such reports or publications on the results of the joint scientific investigations are copyrighted, NASA and JAXA shall have a royalty-free right under the copyright to reproduce, distribute, and use such copyrighted work for their own purposes.

ARTICLE 6 - RETURN OF EQUIPMENT

All ground support and test equipment and instrument pre-flight models, and flight spares supplied by NASA to JAXA under this MOU will be returned immediately to NASA at the conclusion of the appropriate phase of the ASTRO-EII Project in which it is used, or upon specific request by NASA. Possible reasons for a specific request include, but are not limited to, a significant delay in the launch date, mission cancellation, or a launch failure terminating joint activities within the framework of this MOU.

ARTICLE 7 - DESIGNATION OF REPRESENTATIVES

JAXA will designate a Project Manager to be responsible for its part of the effort under this MOU and for the overall ASTRO-EII Project. NASA will designate a Project Manager and a Program Executive for its part of the effort for the ASTRO-EII Project.

ARTICLE 8 - FINANCIAL ARRANGEMENTS

The Parties shall be responsible for funding their respective responsibilities under this MOU, including travel and subsistence of their own personnel and transportation of all equipment for which it is responsible. Obligations under this MOU shall be subject to its funding procedures and the availability of appropriated funds. Should either Party encounter budgetary problems that may affect the activities to be carried out under this MOU, the Party encountering the problems will notify and consult with the other Party as soon as possible.

ARTICLE 9 - CUSTOMS CLEARANCE AND TAXES

Subject to the laws and regulations of the Parties' respective countries, each Party will seek to arrange free customs clearance and waiver of applicable duties and taxes for equipment and related goods necessary for the implementation of this MOU. In the event that any customs duty, fees, and/or taxes of any kind are levied on the equipment and related goods for the implementation of this MOU, after seeking the necessary free customs clearance and waiver of applicable duties and taxes, such customs duty, fees, and/or taxes will be borne by the Party of the country levying the duty, fee, and/or taxes. Such arrangements will be reciprocal and will be implemented in accordance with the respective laws and regulations in each country.

ARTICLE 10 - ALLOCATION OF RISKS

1. The Agreement Between the Government of the United States of America and the Government of Japan Concerning Cross-Waiver of Liability for Cooperation in the Exploration and Use of Space for Peaceful Purposes of April 24, 1995 (hereinafter referred to as "Cross-Waiver Agreement"), the Exchange of Notes of the same date between the Governments of Japan and the United States of America concerning subrogated claims and the Agreed Minutes of December 8, 2000 concerning the Cross-Waiver Agreement shall apply to activities under this MOU.

2. JAXA shall purchase insurance coverage to hold harmless the Government of the United States of America, NASA, and its related entities against liability arising from subrogated claims of the Government of Japan against the Government of the United States of America, NASA, and its related entities based on damage arising from activities undertaken pursuant to this MOU. In any event, JAXA shall ensure that the Government of the United States of America, NASA, and its related entities are reimbursed for any costs incurred by them relating to any such claims. NASA waives all claims, including subrogated claims, of the Government of the United States of America against the Government of Japan, JAXA, and its related entities based on damage arising from activities undertaken pursuant to this MOU.

ARTICLE 11 - PERSONNEL EXCHANGES

Each Party shall, as appropriate, assist with the provision of entry and residence documentation for the other Party's personnel who enter, exit, or temporarily reside within its country's territory for the purpose of carrying out the activities covered by this MOU.

ARTICLE 12 - INVENTION AND PATENT RIGHTS

1. Nothing in this MOU shall be construed as granting or implying any rights to, or interest in, patents or inventions of the Parties, or their contractors, or subcontractors for activities conducted under this MOU.

2. In the event that an invention is jointly made by employees of the Parties, their contractors, or subcontractors during the implementation of this MOU, the Parties shall consult and agree as to the responsibilities and costs of actions to be taken to establish and maintain patent protection (in any country) for such invention and on the terms and conditions of any license or other rights to be exchanged or granted by or between the Parties.

ARTICLE 13 – RELEASE OF GENERAL INFORMATION TO THE PUBLIC

Releases of general information to the public regarding this Project may be made by the appropriate Party for its own portion of the Project as desired. Insofar as participation of the other Party is involved, the Parties will seek to consult with each other prior to any releases, consistent with relevant laws and policies.

ARTICLE 14 - EXCHANGE OF TECHNICAL DATA AND GOODS

The Parties are obligated to transfer only those technical data (including software) and goods necessary to fulfill their respective responsibilities under this MOU, in accordance with the following provisions:

1. All activities of the Parties will be carried out in accordance with their national laws and regulations, including their export control laws and regulations and those pertaining to the control of classified information.

2. The transfer of technical data for the purpose of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as provided in paragraph 1 above.

3. All transfers of goods and proprietary or export-controlled technical data are subject to the following provisions. In the event a Party or its related entity (e.g., contractor, subcontractor, grantee, cooperating entity) finds it necessary to transfer goods or to transfer proprietary or export-controlled technical data, for which protection is to be maintained, such goods shall be specifically identified and such proprietary or export-controlled technical data shall be marked. The identification for goods and the marking on proprietary or export-controlled technical data will indicate that the goods and proprietary or export-controlled technical data shall be used by the receiving Party or its related entities only for the purposes of fulfilling the receiving Party's or its related entity's responsibilities under this MOU and that the identified goods and marked proprietary technical data or marked export-controlled technical data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Party or its related entity. The receiving Party or its related entity shall abide by the terms of the notice and protect any such identified goods and marked proprietary technical data or marked export-controlled technical data from unauthorized use and disclosure. The Parties to this MOU will cause their related entities to be bound by the provisions of this Article related to use, disclosure, and retransfer of goods and marked technical data through contractual mechanisms or equivalent measures.

4. All goods exchanged in the performance of this MOU shall be used by the receiving Party or its related entity exclusively for the purposes of the MOU. Upon completion of the activities under the MOU, the receiving Party or its related entity shall return or, at the request of the furnishing Party or its related entity, otherwise dispose of all goods and marked proprietary technical data or marked export-controlled technical data provided under this MOU, as directed by the furnishing Party or its related entity.

ARTICLE 15 - OWNERSHIP OF EQUIPMENT

Any equipment provided by NASA pursuant to this MOU shall remain the property of NASA. Any equipment provided by JAXA pursuant to this MOU shall remain the property of JAXA.

ARTICLE 16 - MISHAP INVESTIGATION

In the case of a mishap or mission failure, the Parties shall provide assistance to each other in the conduct of any investigation in accordance with their national laws and regulations bearing in mind, in particular, the provisions of Article 14.1. In the case of activities which might result in the death of, or serious injury to, persons or substantial loss of, or damage to, property as a result of activities under this MOU, the Parties shall agree to establish a process for investigating each such mishap.

ARTICLE 17 - REGISTRATION OF SPACE OBJECTS

JAXA shall request the Government of Japan to register the ASTRO-EII satellite as a space object in accordance with the Convention on the Registration of Objects Launched into Outer Space of January 14, 1975 (the Registration Convention). Registration pursuant to this Article shall not affect the rights or obligations of either Party or its Government under the 1972 Convention on International Liability for Damage Caused by Space Objects.

ARTICLE 18 - SETTLEMENT OF DISPUTES

Pursuant to paragraph 4 of Exchange of Notes, the Parties will consult promptly with each other on all issues involving the interpretation or implementation of this MOU.

Any matter that has not been settled in accordance with the above paragraph shall be referred to the appropriate JAXA Project Manager and the NASA Program Executive. They will attempt to resolve all issues arising from the implementation of this MOU. If they are unable to come to an agreement on any issue, then the dispute will be referred to the NASA Administrator and the JAXA President, or their designated representatives, for joint resolution.

ARTICLE 19 - AMENDMENTS

This MOU may be amended by written agreement of the Parties.

ARTICLE 20 - ENTRY INTO FORCE, DURATION, AND TERMINATION

1. This MOU shall enter into force upon signature by the Parties and shall remain in force for a period of 7 years, unless extended by mutual written agreement, and provided that the Exchange of Notes remains in force.

2. Either Party may terminate this MOU at any time upon giving at least 12 months prior written notice to the other Party of its intent to terminate. In that event, the Parties will endeavor to reach agreement on terms and conditions to minimize negative impacts on the other Party. Termination of this MOU shall not affect a Party's continuing obligations under the following Articles of this MOU: Resulting Data, Exchange of Technical Data and Goods, Inventions and Patent Rights, Allocation of Risks, and Customs Clearance and Taxes, unless otherwise agreed.

FOR THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION OF THE UNITED STATES OF AMERICA:

Michael D. Griffin
Administrator

Date: June 21, 2005

Place: Washington, DC

FOR THE JAPAN AEROSPACE EXPLORATION AGENCY:

Keiji Tachikawa
President

Date: June 23, 2005

Place: Tokyo, Japan

EMBASSY OF JAPAN
WASHINGTON, D. C.

Washington, June 6, 2012

Excellency,

I have the honor to refer to the agreement between the Government of Japan and the Government of the United States of America concerning the cooperation between the Japan Aerospace Exploration Agency and the National Aeronautics and Space Administration of the United States of America on the X-ray Astronomy Satellite (ASTRO-EII) Project (hereinafter referred to as "the Project"), which was effected by the Exchange of Notes dated June 10, 2005 (hereinafter referred to as the "Agreement").

In consideration of the continuing mutually beneficial relationship between the two Governments in the field of peaceful exploration and use of outer space; taking into account the Agreement between the Government of Japan and the Government of the United States of America on Cooperation in Research and Development in Science and Technology, signed at Toronto on June 20, 1988, as extended and amended; and reaffirming that the provisions of the Agreement between the Government of Japan and the Government of the United States of America Concerning Cross-Waiver of Liability for Cooperation in the Exploration and Use of Space for Peaceful Purposes, signed at Washington on April 24, 1995, and the Exchange of Notes of the same date between the two Governments concerning subrogated claims shall apply to

the Project, I have further the honor to propose, on behalf of the Government of Japan, that the Agreement shall be extended for a period of five years from June 10, 2012.

I have further the honor to propose that, if the foregoing is acceptable to the Government of the United States of America, this Note and Your Excellency's Note in reply shall constitute an agreement between the two Governments, which shall enter into force on the date of Your Excellency's reply.

Accept, Excellency, the renewed assurances of my highest consideration.

For the Ambassador Extraordinary
and Plenipotentiary of Japan

Her Excellency
Hillary Rodham Clinton
The Secretary of State

June 6, 2012

Excellency,

I have the honor to acknowledge the receipt of your note of today's date, which reads as follows:

"Excellency,

I have the honor to refer to the agreement between the Government of Japan and the Government of the United States of America concerning the cooperation between the Japan Aerospace Exploration Agency and the National Aeronautics and Space Administration of the United States of America on the X-ray Astronomy Satellite (ASTRO-EII) Project (hereinafter referred to as "the Project"), which was effected by the Exchange of Notes dated June 10, 2005 (hereinafter referred to as the "Agreement").

In consideration of the continuing mutually beneficial relationship between the two Governments in the field of peaceful exploration and use of outer space; taking into account the Agreement between the Government of Japan and the Government of the United States of America on Cooperation in Research and Development in Science and Technology, signed at Toronto on June 20, 1988, as extended and amended; and reaffirming that the provisions of the Agreement between the Government of Japan and the Government of the United States of America Concerning Cross-Waiver of Liability for Cooperation in the Exploration and Use of Space for Peaceful Purposes, signed at Washington on April 24, 1995, and the Exchange of Notes of the same date between the two Governments concerning subrogated claims shall apply to the Project, I have further the honor to propose, on behalf of the Government of Japan, that the Agreement shall be extended for a period of five years from June 10, 2012.

His Excellency
Ichiro Fujisaki,
Ambassador of Japan.

I have further the honor to propose that, if the foregoing is acceptable to the Government of the United States of America, this Note and Your Excellency's Note in reply shall constitute an agreement between the two Governments, which shall enter into force on the date of Your Excellency's reply.

Accept, Excellency, the renewed assurances of my highest consideration."

I have further the honor to confirm on behalf of the Government of the United States of America that the foregoing is acceptable to the Government of the United States of America and to agree that your note and this note in reply shall constitute an agreement between the two Governments, which shall enter into force on the date of this reply.

Accept, Excellency, the renewed assurances of my highest consideration.

For the Secretary of State