MEMORANDUM OF UNDERSTANDING

BETWEEN THE

GOVERNMENT OF JAPAN

AND THE

NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

OF THE UNITED STATES OF AMERICA

CONCERNING COOPERATION ON THE

CIVIL LUNAR GATEWAY

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The Government of Japan (hereinafter "the GOJ") and
the National Aeronautics and Space Administration of the United States of America (hereinafter "NASA"),

Recalling the *Agreement among the Government of Canada, Governments of Member States of the European Space Agency, the Government of Japan, the Government of the Russian Federation, and the Government of the United States of America concerning Cooperation on the Civil International Space Station*, signed on January 29, 1998 (hereinafter the "IGA");

Recalling the *Memorandum of Understanding between the Government of Japan and the National Aeronautics and Space Administration of the United States of America Concerning Cooperation on the Civil International Space Station,* signed on February 24, 1998 (hereinafter the "GOJ-NASA ISS MOU");

Recalling the *Memorandum of Understanding between the National Aeronautics and Space Administration of the United States of America and the Canadian Space Agency Concerning Cooperation on the Civil International Space Station,* signed on January 29, 1998 (hereinafter the "NASA-CSA ISS MOU");

Recalling the *Memorandum of Understanding between the National Aeronautics and Space Administration of the United States of America and the European Space Agency Concerning Cooperation on the Civil International Space Station,* signed on January 29, 1998 (hereinafter the "NASA-ESA ISS MOU");

Recalling the *Memorandum of Understanding between the National Aeronautics and Space Administration of the United States of America and the Russian Space Agency Concerning Cooperation on the Civil International Space Station,* signed on January 29, 1998 (hereinafter the "NASA-RSA ISS MOU");

Considering the successful partnership of NASA, the GOJ, the Canadian Space Agency (hereinafter "CSA"), the European Space Agency (hereinafter "ESA"), and the Russian Space Agency (now the State Space Corporation ROSCOSMOS (hereinafter "ROSCOSMOS")) for over twenty years on the International Space Station and the desire to carry it forward by adding the next phase of human exploration to that existing partnership;

Considering that NASA, the GOJ, CSA, ESA, and ROSCOSMOS foresaw that the International Space Station and its evolutionary additions could provide for a variety of capabilities, including a staging base for possible future missions, such as a possible lunar base and a human mission to Mars;

Recognizing a mutual interest among NASA, the GOJ, CSA, ESA, and ROSCOSMOS in continuing this mutually beneficial partnership through cooperation on a human outpost in the lunar vicinity (hereinafter the "Gateway"), under the lead role of NASA, as the next step to enable sustainable exploration and use of the Moon and Mars, reflected in the preparation of Memoranda of Understanding between the GOJ and NASA, the Government of the United States of America and the Government of Canada, NASA and ESA, and NASA and ROSCOSMOS; and

Convinced that the planned collaboration on the Gateway will further promote cooperation in the exploration and the peaceful uses of outer space, enable scientific activities, stimulate the development of advanced technologies, expand the emerging space economy, continue to leverage the societal benefits of space exploration for citizens on Earth, and inspire the public,

Have agreed as follows:

Article 1. Purpose, Objectives, and Scope

1.1 The purpose of this Memorandum of Understanding (hereinafter "Gateway MOU" or "MOU") is to establish an agreement between the GOJ and NASA (hereinafter referred to collectively as the "Parties" or individually as a "Party") on the basis of genuine partnership for peaceful purposes and in accordance with Article 2 (Relationship to the IGA) and with international law, for the detailed design, development, operation, and utilization of the Gateway.

1.2 Pursuant to the laws and regulations of Japan, the GOJ shall be responsible for the Gateway cooperation provided for in this MOU and the implementing arrangements. The GOJ hereby designates the Ministry of Education, Culture, Sports, Science and Technology (hereinafter "MEXT") as its Cooperating Agency, as provided for in Article 4 (Cooperating Agencies) of the IGA, responsible for implementing cooperation. With the exception of Article 22 (MOU Amendments) and Article 24.4 (Final Provisions) of this MOU, MEXT shall implement all provisions of this MOU and the implementing arrangements. The Japan Aerospace Exploration Agency (hereinafter "JAXA") may, as appropriate, assist MEXT in its implementation of this MOU and the implementing arrangements.

1.3 The specific objectives of the Gateway MOU are:

(a) to provide the basis for cooperation between the Parties and the other Gateway partners in the detailed design, development, operation, and utilization of the Gateway;

(b) to detail the commitments and responsibilities of the Parties to one another and to the other Gateway partners;

(c) to establish the management structure and interfaces necessary to ensure effective planning and coordination for the detailed design, development, operation, and utilization of the Gateway;

(d) to ensure that the Gateway is operated in a manner that is safe, sustainable, efficient, and effective;

(e) to provide a general description of the Gateway and the elements comprising it; and

(f) to enable further cooperation in the exploration of space.

1.4 This MOU applies only to the detailed design, development, operation, and utilization of the Gateway, understanding that this includes:

(a) activities on the Earth and in space;

(b) activities in support of missions beyond the Gateway that are undertaken on the Gateway or using Gateway resources; and

(c) elements listed in Article 5 (Gateway Elements).

1.5 The Parties may sign future written arrangements between each other or with the other Gateway partners to further implement this MOU.

Article 2. Relationship to the IGA

2.1 This MOU is pursuant to the relevant provisions of the IGA. This MOU is enabled by Article 14.6 (Space Station Evolution) of the GOJ-NASA ISS MOU to implement the Gateway as an addition and sharing of evolutionary capability to the International Space Station.

2.2 In accordance with Article 14.2 (Evolution) of the IGA and consistent with Article 14.2 (Space Station Evolution) of the GOJ-NASA ISS MOU, Article 14 (Evolution) and Article 16 (Cross-Waiver of Liability) of the IGA and Article 14 (Space Station Evolution) of the GOJ-NASA ISS MOU apply to the addition and sharing of evolutionary capability referred to in Article 2.1 above.

2.3 Cooperation under this MOU shall be carried out in accordance with and subject to all other provisions of the IGA, with the exception of Article 9 (Utilization), Article 12 (Transportation), Article 13 (Communications), Article 15.1-4 (Funding), Article 17.3 (Liability Convention), Article 25 (Entry into Force), Article 26 (Operative Effect as Between Certain Parties), and Article 27 (Amendments).

2.4 For the purpose of this MOU, references to the term “Space Station” in the IGA shall be understood as applying also to the addition and sharing of evolutionary capability referred to in Article 2.1 above.

2.5 This MOU does not establish rights or obligations for any third party that is not a Gateway partner, notwithstanding any provision of the IGA and regardless of whether that third party might have a role in other aspects of the International Space Station program.

Article 3. Definitions

For the purposes of this MOU, the following definitions shall apply:

3.1 Gateway partners: The term "Gateway partners" comprises NASA and those International Space Station Partners or Cooperating Agencies, as defined in Articles 3 and 4 of the IGA, that sign an MOU with NASA or the Government of the United States of America to effectuate the Gateway.

3.2 Contributing Entity: The term "Contributing Entity" means a contractor or a subcontractor of a Party at any tier engaged in activities related to the performance of this MOU.

3.3 Related Entity: The term "Related Entity" means:

(a) A contractor, subcontractor, user, or customer of a Party at any tier;

(b) A contractor or subcontractor, including suppliers of any kind, of a user or customer of a Party at any tier;

(c) A grantee or any other cooperating entity or investigator of a Party at any tier;

(d) A contractor or subcontractor of a grantee or any other cooperating entity or investigator of a Party at any tier; or

(e) Another State, or agency or institution of another State, where such State, agency, or institution is an entity described above or is otherwise involved in the activities undertaken pursuant to this MOU.

Article 4. General Description of the Gateway

4.1 The Parties are committed to the creation of the Gateway, under the lead role of NASA for overall management and coordination, and recognize that the other Gateway partners are committed to this as well. This Gateway is:

(a) Accomplished through the efforts of the Gateway partners, and may be used by each Gateway partner to realize its independent and cooperative exploration objectives, in accordance with Article 8 (Management);

(b) A multi-use facility operated as a single vehicle with integrated operations and utilization and capable of being maneuvered to various orbits;

(c) Designed for regular periods of human habitation and operations, connected by longer intervals of autonomous and remote operations commanded from the Earth;

(d) A facilitator of enhanced cooperation between and among the Gateway partners in lunar orbit, on the lunar surface, at Mars, and beyond; and

(e) Used for a variety of functions and purposes, including, but not limited to:

1. A platform for scientific research, technology development and demonstration, and commercial activities in a unique deep space environment;
2. A platform for learning how to live and operate in deep space, including supporting analog activities simulating a human mission to Mars;
3. A communications facility;
4. A platform for enabling lunar surface activities and sustainable exploration;
5. A command module for human lunar surface missions;
6. A facility to build, assemble, or test deep space assets, technologies, or spacecraft;
7. A storage depot and logistics hub for consumables, payloads, and spares; and
8. A staging base for possible future missions, such as human missions to Mars, missions to survey asteroids, robotic planetary probes, and other space exploration missions.

Article 5. Gateway Elements

5.1 Gateway elements are flight or ground support elements and may include modules, systems, subsystems, capabilities, and components.

5.2 In accordance with Article II of the Convention on Registration of Objects Launched into Outer Space (hereinafter the "Registration Convention"), done on January 14, 1975, the Parties shall determine which Party shall register or, as applicable, request its Government to register the flight elements it provides. Registration pursuant to this Article shall not affect the rights or obligations of Japan or the United States of America under the Convention on International Liability for Damage Caused by Space Objects (hereinafter the "Liability Convention"), done on March 29, 1972. Furthermore, pursuant to Article VIII of the Treaty on Principles Governing the Activities of States in the Exploration and Use of Outer Space, including the Moon and other Celestial Bodies, done on January 27, 1967, and Article II of the Registration Convention, each Party (or its Government, as applicable) shall retain jurisdiction and control over the elements it registers, but the exercise of such jurisdiction and control shall be subject to any relevant provisions of this MOU, applicable IGA provisions, and implementing arrangements, including relevant procedural mechanisms established therein.

5.3 Each Party shall own the elements it provides, except as otherwise agreed.

5.4 The Parties shall each assure access to and use of their respective Gateway elements to each other and the other Gateway partners, regardless of ownership and registration, in accordance with Article 8 (Management).

5.5 The Gateway is comprised of the following elements, although the Parties recognize these are subject to change in the course of the detailed design, development, and operation of the Gateway. The Parties intend for an up-to-date listing of all of the Gateway elements to be maintained in accordance with Article 8 (Management).

(a) NASA:

1. Power and Propulsion
2. Habitation Capability
3. Avionics and Communications Infrastructure
4. Logistics Resupply
5. Crew Transportation
6. Extravehicular Activity (EVA) System

(b) CSA:

1. External Robotic Capability
2. External Robotics Interfaces
3. End-to-end External Robotic Operations

(c) ESA:

1. Habitation Capability
2. Enhanced Lunar Communications
3. Refueling and Viewing Capability
4. European Service Modules in support of Orion missions

(d) The GOJ:

1. Habitation Capability Infrastructure Functions
2. Logistics Resupply

(e) ROSCOSMOS:

1. Crew Airlock

Article 6. Major Program Milestones

6.1 Major target milestones are as follows:

(a) 2023 – Delivery of the first Gateway element, power and propulsion, to lunar orbit

(b) 2023 – Delivery of the initial habitation capability with enhanced lunar communications to the Gateway

(c) 2024 – Gateway ready for the first crewed mission

(d) 2025 – Delivery of additional habitation capability to the Gateway

(e) 2026 – Delivery of external robotic capability to the Gateway

(f) 2027 – Delivery of refueling and viewing element to the Gateway

(g) 2028 – Delivery of the crew airlock to the Gateway

6.2 A listing of milestones, along with other development, delivery, operations, and utilization schedules, shall be maintained and updated in accordance with Article 8 (Management).

Article 7. Responsibilities

7.1 NASA shall use reasonable efforts to carry out the following responsibilities:

(a) As Gateway lead:

1. Provide overall management and coordination of the Gateway;
2. Lead and participate in Gateway management processes and boards in accordance with Article 8 (Management), including by convening and chairing the boards enabled by this MOU, except where otherwise noted;
3. Perform Gateway operations responsibilities in accordance with Article 10 (Operations);
4. Perform Gateway integrated systems engineering and risk management;
5. Lead integration for Gateway utilization;
6. Establish, in consultation with the GOJ and the other Gateway partners, integrated verification, engineering, and safety and mission assurance requirements and plans for the overall Gateway;
7. Develop, with the GOJ and the other Gateway partners, necessary Gateway documentation;
8. Conduct reviews to certify that all Gateway flight elements are acceptable for launch, on-orbit assembly, and operations, following the certification of individual elements by the Gateway partner providing those elements;
9. Accommodate the GOJ and the other Gateway partners' participation at the above reviews as necessary for the GOJ and NASA to fulfill their respective responsibilities under this MOU;
10. Perform ground integration tests as necessary to assure on-orbit compatibility of the overall Gateway;
11. Establish, maintain, and operate the lead mission control center for the Gateway for real-time command and control of the Gateway during both crewed and uncrewed periods;
12. Establish, in consultation with the GOJ and the other Gateway partners, information format and communication standards for a technical and

management information system, and establish and maintain a computerized technical and management information system;

13. Develop and verify overall Gateway avionics and software infrastructure and products, and maintain the avionics and software integration, test, and verification capability;
14. Establish, maintain, and operate the Gateway training facility(ies), which is located in the United States and includes those facilities, simulation capabilities, and training hardware, provided by the GOJ, NASA and the other Gateway partners, necessary for training crew on all Gateway partner-provided elements and for training crew and ground controllers on the integrated Gateway systems and operations;
15. Provide training for NASA-provided elements and utilization, and other training related to integrated Gateway systems and operations, consistent with the agreed upon Gateway training flow and curriculum, for Gateway crew members, ground controllers, and support staff, as mutually agreed;
16. Develop and maintain, with the GOJ and the other Gateway partners, crew health and medical care policies and procedures, and support provision of the crew health, in accordance with Article 13 (Crew);
17. Develop, maintain, and implement, with the GOJ and the other Gateway partners, the program milestones, the detailed development schedule, and the operation and utilization schedule and plan for the Gateway, in accordance with Article 8 (Management);
18. Provide the primary space and ground communications network for command, control, and operations of the Gateway and other Gateway communications purposes, in accordance with Article 15 (Communications), and coordinate Gateway communications support provided by the other Gateway partners;
19. Manage logistics processes for the Gateway, including those related to resupply manifest lists, on-board maintenance, and inventory integration, and coordinate logistics provided by the GOJ and the other Gateway partners; and
20. Provide primary launch and disposal or return, as appropriate, of cargo for the sustainment and operation of the Gateway, including spares, in accordance with Article 14 (Transportation and Other Visiting Vehicles), and for utilization activities to implement the multilateral utilization plans, in accordance with Article 11 (Utilization).

(b) In support of the GOJ:

1. Assemble on-orbit and verify interfaces, with assistance from the GOJ, of the GOJ-provided flight elements, and assist in the on-orbit activation and performance verification of those elements, in accordance with agreed assembly, activation, and verification plans;
2. Support the GOJ, as appropriate, and provide information necessary for the GOJ to fulfill its responsibilities under this MOU;

3. Support training at the GOJ facilities, as mutually agreed, consistent with the agreed upon Gateway training flow and curriculum and in accordance with Article 13 (Crew);
4. Integrate the GOJ-provided training hardware, simulation capability, and documentation for the GOJ-provided elements into the NASA training facility(ies) to support training;
5. As mutually agreed, provide training materials, remote simulation capability, and associated documentation for the overall Gateway to the GOJ for crew training on the GOJ-provided elements at a GOJ location, for integrated flight controller training at a GOJ location, and for the GOJ's operational product development;
6. Enable and support the GOJ use of the lead mission control center to perform operations in support of the GOJ-provided elements, to the extent NASA is able to accommodate such use and as necessary for the GOJ to fulfill its responsibilities;
7. Enable commanding for the GOJ to perform remote operations for the GOJ-provided elements at a GOJ location, as mutually agreed;
8. Distribute data, which includes telemetry and housekeeping data, between the lead mission control center and a GOJ location, as mutually agreed;
9. Consult on the development of the GOJ-developed verification, engineering, and safety and mission assurance requirements and plans for the GOJ-provided elements, and confirm they are equivalent with the overall Gateway verification, engineering, and safety and mission assurance requirements and plans;
10. Provide program information, systems requirements, and technical interface requirements necessary for the integration of the GOJ-provided elements into the Gateway and for the coordinated operation and utilization of the GOJ-provided elements;
11. Perform ground integration tests, with the GOJ, as necessary to assure on-orbit compatibility of the GOJ-provided elements and accommodate the GOJ and the other Gateway partner representation at such tests as necessary for the GOJ and NASA to fulfill their respective responsibilities under this MOU;
12. Provide and support Gateway emulator(s) or simulation capability, and a data network connection between the GOJ facilities and NASA facilities in order for the GOJ to perform verification testing;
13. Provide training in support of any crew opportunities provided by NASA to ensure fulfillment of mission requirements, which shall include all necessary crew launch and transportation training;
14. Establish in Japan and accommodate in the United States liaison personnel as mutually agreed; and
15. Provide crew opportunities to the Gateway, as mutually agreed, under other arrangements, in accordance with Article 1.5 (Purpose, Objectives, and Scope); timing of such crew opportunities shall take into account major GOJ milestones, program constraints, and crew flight availability.

(c) For the NASA-provided Gateway elements:

1. Provide elements as described in Article 5 (Gateway Elements) and potentially additional elements under other arrangements, in accordance with Article 1.5 (Purpose, Objectives, and Scope);
2. Launch and transfer its elements to lunar orbit;
3. Provide sustaining engineering, spares, and operations support;
4. Perform systems engineering and integration;
5. Develop verification, engineering, and safety and mission assurance requirements and plans that are equivalent to the verification, engineering, and safety and mission assurance requirements and plans for the overall Gateway;
6. Develop and operate ground and flight support equipment, as necessary, and perform qualification and acceptance tests of this equipment according to agreed requirements and interfaces; and
7. Conduct design reviews and certification reviews for its elements and accommodate the GOJ's and the other Gateway partners' participation, as necessary, for the GOJ and NASA to fulfill their respective responsibilities under this MOU.

(d) In support of missions beyond the Gateway:

1. For the avoidance of doubt, support, with NASA-provided elements, Gateway operations, which includes activities in support of missions beyond the Gateway, that are undertaken on the Gateway or using Gateway resources, in accordance with Article 8 (Management);
2. Study and share information on missions beyond the Gateway that include activities undertaken on the Gateway or using Gateway resources, as mutually agreed; and
3. Collaborate with the GOJ on missions beyond the Gateway that include activities undertaken on the Gateway or using Gateway resources, as mutually agreed and documented under other arrangements.

7.2 The GOJ shall use reasonable efforts to carry out the following responsibilities:

(a) For the GOJ-provided Gateway elements:

1. Provide elements as described in Article 5 (Gateway Elements) and potentially additional elements or services under other arrangements, in accordance with Article 1.5 (Purpose, Objectives, and Scope);
2. Provide sustaining engineering and spares;
3. Support NASA's integration verification, including demonstrations, inspection, analysis, and ground integration tests as necessary, to ensure on-orbit compatibility of the GOJ-provided elements;
4. Provide simulation capability and engineering test units to support NASA ground integration and verification tests, as mutually agreed;

5. Perform systems engineering and integration consistent with NASA's overall systems engineering and integration responsibilities;
6. Develop, in consultation with NASA, verification, engineering, and safety and mission assurance requirements and plans that are equivalent to the verification, engineering, and safety and mission assurance requirements and plans established by NASA for the overall Gateway;
7. Develop and provide ground and flight support equipment for the GOJ-provided elements, as necessary, and perform qualification and acceptance tests of this equipment according to agreed requirements and interfaces;
8. Conduct design reviews and certification reviews for the GOJ-provided elements, and accommodate NASA and the other Gateway partners' participation, as necessary, for the GOJ and NASA to fulfill their respective responsibilities under this MOU;
9. Provide program information, systems requirements, and technical interface requirements necessary for the integration of the GOJ-provided elements into the Gateway and for the coordinated operation and utilization of the GOJ-provided elements;
10. Perform interface verification testing to assure on-orbit compatibility and accommodate NASA representation at such tests as required for the GOJ and NASA to fulfill their respective responsibilities under this MOU;
11. Establish, maintain, and provide to NASA on request, ground and on-orbit verification test procedures and results as necessary to confirm that the GOJ-provided elements comply with Gateway requirements;
12. Assist in the on-orbit assembly and interface verification of the GOJ-provided flight elements in accordance with agreed to assembly, activation, and verification plans;
13. Activate on-orbit and verify performance of the GOJ-provided flight elements, with assistance from NASA, in accordance with agreed to assembly, activation, and verification plans;
14. Establish, maintain, and deliver representations to NASA of the necessary avionics and software infrastructure and products, and support the NASA software integration, test, and verification capability for the overall Gateway;
15. Develop and maintain flight and ground software related to the elements it provides, in accordance with Gateway software standards;
16. Manage integrated logistics support for the GOJ-provided elements and support NASA's logistics management for the Gateway, including cargo packaging, manifest requirements, on-board maintenance, and inventory integration;
17. Provide necessary operational data, including telemetry, modeling, and status data, along with expertise to interpret the data, on the GOJ-provided elements sufficient for NASA to perform its lead integration function and perform lead mission control center responsibilities;
18. Provide support, including personnel as mutually agreed, for commanding and telemetry associated with the GOJ-provided elements and utilization at the lead mission control center;

19. As mutually agreed, provide support, including personnel and equipment, for commanding and telemetry associated with the GOJ-provided elements and utilization at remote control centers and at any necessary ground networks connecting to any of these control centers;
20. Provide training hardware, simulation capability, and associated documentation, or, as mutually agreed, the necessary data so that these items can be provided by another Gateway partner, for the GOJ-provided elements at the NASA training facility(ies), or other facility, as mutually agreed, for training of Gateway crew members, ground controllers, and support staff;
21. Provide training, training support, and training curriculum, or arrange for it to be provided by another Gateway partner, for the GOJ-provided elements and utilization at the NASA training facility(ies), or another facility, as mutually agreed, consistent with the agreed upon Gateway training flow and curriculum, for Gateway crew members, ground controllers, and support staff, as mutually agreed;
22. Provide necessary equipment and support to allow for remote training of the GOJ flight controllers at a GOJ training facility, as mutually agreed;
23. Support training activities at the other Gateway partners' facilities, as mutually agreed, consistent with the agreed upon Gateway training flow and curriculum;
24. Provide support for launch preparation and integration of the GOJ-provided elements;
25. Develop and provide operational products, or arrange for them to be provided by another Gateway partner, for the operation of the GOJ-provided elements; and
26. Conduct operations, or arrange for them to be conducted by another Gateway partner, for the GOJ-provided elements at the Gateway lead mission control center or in a remote location, as mutually agreed, consistent with Article 10 (Operations).

(b) As a Gateway partner:

1. Participate in Gateway management processes and boards in accordance with Article 8 (Management);
2. Support the development of necessary Gateway documentation;
3. Participate in NASA and the other Gateway partners' reviews, as appropriate;
4. Support NASA, as appropriate, and provide information necessary for NASA to fulfill its responsibilities under this MOU;
5. Work with NASA and the other Gateway partners to prepare and implement plans for the integration and operation of the GOJ's on-board activities;
6. Participate in the development and maintenance of the crew health and medical care policies and procedures, and support provision of the crew health, with NASA and the other Gateway partners, in accordance with Article 13 (Crew);

7. Participate in the development, maintenance, and implementation of the program milestones, the detailed development schedule, and the operation and utilization schedule and plan for the Gateway, in accordance with Article 8 (Management); and
8. Establish in the United States and accommodate in Japan liaison personnel as mutually agreed.

(c) In support of missions beyond the Gateway:

1. For the avoidance of doubt, support with the GOJ-provided elements Gateway operations, which includes activities in support of missions beyond the Gateway that are undertaken on the Gateway or using Gateway resources, in accordance with Article 8 (Management);
2. Study and share information on missions beyond the Gateway that include activities undertaken on the Gateway or using Gateway resources, as mutually agreed; and
3. Collaborate with NASA on missions beyond the Gateway that include activities undertaken on the Gateway or using Gateway resources, as mutually agreed and documented under other arrangements.

Article 8. Management

8.1 General

(a) The Parties are each responsible for the management of their respective Gateway detailed design and development activities and each have responsibilities in the management of the operation and utilization of the elements it provides, consistent with the provisions of this MOU.

(b) NASA shall have the responsibility for the overall management and coordination of Gateway design, development, operations, and utilization.

(c) The Parties shall participate in and implement the decision-making and other procedures for the boards and structures described in this MOU. The Parties agree that, in order to protect the interests of all Gateway partners in the program, the design, development, operation, and utilization of the Gateway will be most successful when consensus is reached and when the affected Gateway partner's or Gateway partners' interests are taken into account.

(d) Decisions made through the management processes described in this MOU may not modify the commitments and responsibilities of a Party specifically provided in this MOU or other arrangements, in accordance with Article 1.5 (Purpose, Objectives, and Scope), without the Party's consent.

(e) The Gateway shall be used for peaceful purposes. Each Party providing an element shall review whether a contemplated use of that element is for peaceful purposes. In the event that a Party has concerns that a particular Gateway activity may not be consistent with the peaceful purposes intent, the Parties agree to consult.

(f) Upon the request of either Party, the Parties shall meet for the purpose of reviewing and promoting Gateway cooperation. In the process of this review, the Parties may consider amendments to this MOU.

8.2 Gateway Multilateral Coordination Board (GMCB)

(a) The GMCB meets periodically or promptly at the request of any Gateway partner with the task of ensuring coordination of the actions of the Gateway partners related to the design, development, operation, and utilization of the Gateway. In addition, the GMCB shall:

1. Resolve Gateway partners' appeals of decisions made by the Gateway Multilateral Program Board (GMPB);
2. Review and provide a timely decision on a proposal from a Gateway partner that has been approved by the appropriate subordinate board for use of the Gateway by a non-Gateway partner or a private entity under the jurisdiction of a non-Gateway partner. Such decisions shall require prior notification and consensus among all the Gateway partners. For the purposes of this Article, an ESA Member State shall not be considered a "non-Gateway partner"; and
3. Establish the Gateway Multilateral Crew Operations Panel (GMCOP), in accordance with Article 13.4 (Crew).

(b) The GMCB is comprised of a representative of each of the Gateway partners. The NASA representative shall convene and chair the GMCB.

(c) The decision-making of the GMCB functions as follows:

1. GMCB decisions should be made by consensus.
2. Where consensus cannot be achieved, the Chair is authorized to take decisions, except as provided in Article 8.2(a)2 above.
3. Should a Party choose to appeal a decision, a Party has a right not to proceed with the implementation of a decision with respect to its elements until the resolution of the dispute in accordance with Article 21 (Consultations and Settlement of Disputes), except in cases of tactical and execution activities, safety, or if it causes serious adverse effects on the development and use of the Gateway by the other Gateway partners.
4. The above paragraph shall not impact NASA's authority to carry out tactical and execution activities for Gateway operations, with the support of the Gateway partners, in accordance with Article 10.7 (Operations).

8.3 Gateway Multilateral Program Board (GMPB)

(a) The GMPB meets periodically or promptly at the request of any Gateway partner to:

1. Resolve multilateral program policy;
2. Maintain an up-to-date listing of all of the Gateway's elements, as described in Article 5.5 (Gateway Elements);
3. Develop, maintain, and update, as necessary, the Gateway program milestones and the Gateway assembly sequence;
4. Address major changes impacting the Gateway partners; and
5. Resolve issues related to the appeal by a Gateway partner of a decision made by the Gateway Program Control Board (GPCB).

(b) The GMPB is comprised of a program manager or their equivalent from each of the Gateway partners. JAXA shall represent the GOJ on this board. The NASA representative shall chair the GMPB.

(c) The decision-making of the GMPB functions as follows:

1. GMPB decisions should be made by consensus.
2. Where consensus cannot be achieved, the Chair is authorized to take decisions.
3. Such decisions may be appealed to the GMCB.

8.4 Gateway Program Control Board (GPCB)

(a) The GPCB meets regularly to perform decision-making for the Gateway and multiple critical functions including:

1. Managing and controlling Gateway requirements, design, integrated traffic planning, implementation plans, and definition of element interfaces;
2. Managing and approving tactical and execution activities for Gateway operations by establishing a multilateral team to perform these activities, in accordance with Article 10.7 (Operations);
3. Developing, maintaining, and updating as necessary the schedule and plan for the operation of the Gateway;
4. Approving utilization plans, in accordance with Article 11.3 (Utilization);
5. Developing, maintaining, updating as necessary, and exchanging coordinated detailed development and implementation schedules. These schedules shall include the delivery dates for the Gateway elements;
6. Approving resource use based on mission requirements, operations, and utilization priorities;
7. Approving safety requirements and safety plans for the Gateway, in accordance with Article 12.2 (Safety);
8. Authorizing access to the Gateway, in accordance with Article 14 (Transportation and Other Visiting Vehicles);

9. Authorizing the addition of communications systems for complementary support of command, control, and operation of the Gateway, in accordance with Article 15 (Communications);
10. Coordinating with management of other missions beyond the Gateway on activities by those missions that directly or indirectly affect Gateway-related activities; and
11. Establishing, as needed, subordinate boards, panels, working groups, and the necessary reporting structures for such entities, including:
    i. A Gateway utilization forum, as detailed in Article 11 (Utilization); and
    ii. The Robotics forum, chaired by CSA and comprised of representatives from the Parties and the other Gateway partners, to efficiently manage and integrate Gateway external robotics, including: interface requirements; compatibility; planning; analysis; operations; implementation; and interfaces, and the certification thereof.

(b) As each Gateway partner has the right to access and use the Gateway for its own missions, the GPCB shall, as a part of its responsibilities listed above in Article 8.4(a), review and approve operations and support for these missions to the Gateway or activities in support of missions beyond the Gateway that are undertaken on the Gateway or using Gateway resources:

1. The Parties and the other Gateway partners may propose these missions or activities. These missions or activities may be for a Gateway partner or sponsored by a Gateway partner. If a Party sponsored mission is for a non-Gateway partner or a private entity under the jurisdiction of a non-Gateway partner, then following initial approval by the GPCB, the Party must seek GMCB approval per Article 8.2(a)2 above. The Parties understand that the other Gateway partners will also seek GMCB approval per Article 8.2(a)2 above if one of them sponsors a mission for a non-Gateway partner or a private entity under the jurisdiction of a non-Gateway partner.
2. If a Party has elements that will be used for these approved missions and activities, it shall take part in the tactical and execution activities necessary to realize these missions and activities.
3. Overall management of the missions to or beyond the Gateway may be handled through management processes outside those of this MOU as determined by the Gateway partner(s) sponsoring the activity to the Gateway. The Parties shall be required to work through the Gateway management processes described in this Article for the purposes of coordination of the mission only when it directly involves Gateway operations.
4. Use of Gateway elements for an approved mission shall not imply a separate partnership for such mission between the Party sponsoring the mission and the Gateway partner(s) whose elements are used.

(c) The GPCB is comprised of representatives from the Gateway partners and additional NASA Gateway program officials, relevant NASA support functions or representatives of other NASA programs related to the Gateway. JAXA shall represent the GOJ on this board. The NASA representative shall chair the GPCB.

(d) The decision-making of the GPCB functions as follows:

1. GPCB decisions should be made by consensus.
2. Where consensus cannot be achieved, the Chair is authorized to take decisions.
3. Decisions taken by the GPCB chair that impact a Gateway partner element may be appealed to the GMPB.

Article 9. Resources

9.1 Consistent with Article 8 (Management), NASA shall manage the use of Gateway resources as a consolidated whole to effectuate Gateway program planning requirements, operations, and utilization.

9.2 Gateway resources shall include, but not be limited to, crew time (during discrete crewed periods), power, thermal, consumables, data and communications management, volume and accommodations, airlock use, attachment points, robotic services, and transportation.

Article 10. Operations

10.1 As described in Article 4.1(b) (General Description of Gateway), Gateway shall be operated as a single vehicle with integrated operations. Gateway operations shall include both ground and in-space activities in support of the Gateway, including command and control, logistics, training, integration, safety, and activities in support of missions beyond the Gateway, that are undertaken on the Gateway or using Gateway resources.

10.2 NASA shall manage and perform integrated Gateway operations, including command and control of Gateway systems and execution of operations, assembly activities, logistics, operational plans and requirements, training, priorities, and crew timelines.

10.3 The GOJ shall be responsible for operating the Gateway element(s) it provides, or be responsible for arranging for the operations to be conducted by another Gateway partner. The GOJ shall provide engineering support to perform detailed engineering assessments and real-time operations support required for the operational control of the Gateway elements it provides, or shall arrange for them to be provided by another Gateway partner. The Parties understand that the other Gateway partners will also have operational responsibilities for the Gateway elements they provide.

10.4 Mission Control Center

(a) NASA shall provide and operate the lead mission control center for the Gateway. NASA intends for Mission Control Center in Houston, Texas, to be the lead mission control center for the Gateway, and NASA shall coordinate any updates to this approach that affect the GOJ or the other Gateway partners as necessary.

(b) The GOJ may perform operations at the lead mission control center or at a remote location, as mutually agreed, in support of its own elements.

(c) NASA shall accommodate the GOJ-provided personnel to support the lead mission control center, as mutually agreed.

(d) NASA shall enable telemetry and commanding in order for the GOJ to perform remote operations for the GOJ-provided elements at a GOJ location, implemented as mutually agreed.

10.5 External Robotics Operations

The Parties understand that:

(a) CSA intends to provide end-to-end external robotics services to implement Gateway operations and utilization activities. In support, CSA intends to provide control center functions for external robotics operations in Canada. The CSA-provided control center is intended to interface with the lead mission control center to support commanding and receipt of telemetry.

(b) Gateway partners may provide personnel to support CSA robotics operations, as mutually agreed by CSA and the Gateway partner(s).

10.6 The Parties understand that Gateway partners may conduct utilization activities at the lead mission control center or at a remote location, as mutually agreed between the Gateway partner(s) and NASA.

10.7 NASA shall have authority to carry out tactical and execution activities for Gateway operation, which includes maintaining Gateway crew and vehicle safety, ensuring Gateway systems remain operational, and ensuring mission success and utilization, as they relate to real-time operations. Tactical and execution activities shall be managed as follows:

(a) GPCB shall establish a multilateral team to perform these activities for Gateway operation, pursuant to Article 8.4(a)2 (Management).

(b) NASA shall chair this team. The GOJ shall be a member of this team. JAXA shall represent the GOJ on this team. If a consensus decision cannot be reached, NASA shall take the decisions necessary to carry out tactical and execution activities for Gateway operation.

10.8 The Parties or the Parties' Related Entities shall be responsible for operating their visiting vehicles during all phases of flight, unless otherwise agreed. During joint integrated operations as defined by Gateway documentation, NASA shall have mission authority for the overall safety, timing, and joint mission success for visiting vehicles. The Parties understand the other Gateway partners and their Related Entities will be responsible for operating their visiting vehicles during all phases of flight, unless otherwise agreed by NASA and the other Gateway partner, and will recognize NASA's mission authority for overall safety, timing, and joint mission success for visiting vehicles.

Article 11. Utilization

11.1 The GPCB shall establish a Gateway utilization forum to manage the science, technology, and commercial utilization activities of the Gateway. Each Party shall have the right to participate in the Gateway utilization forum. The forum shall be chaired by NASA and comprised of representatives from the Gateway partners. JAXA shall represent the GOJ at this forum. The forum decisions should be made by consensus. Where consensus cannot be achieved, the Chair is authorized to take decisions. Such decisions may be appealed to the GPCB.

11.2 The forum shall develop multilateral utilization plans to coordinate and integrate each Gateway partner's high-priority utilization objectives, consistent with resource availability. The utilization plans may include but are not limited to: internal and external science and research activities, technology demonstrations, smallsats activities, and commercial activities during crewed and uncrewed periods on the Gateway. The forum may also address utilization activities involving logistics vehicles, crew transportation, or other vehicles. Utilization shall be integrated with other Gateway program objectives, activities, and priorities as part of routine program implementation planning.

11.3 The forum shall seek to minimize or eliminate redundancy in experiments and hardware among the Gateway partners, identify opportunities for efficiency and collaboration, and maximize available resources. The forum shall establish processes for developing the utilization plans. The utilization plans developed by the forum shall be approved by the GPCB.

11.4 The Parties shall be responsible for the activities and costs of the payloads and experiments that they each provide, including experiment Design, Development, Test, and Evaluation (DDT&E), payload ground processing, crew training, operations, ground distribution and archiving of data, and provision of payload/experiment spares, consumables, and associated equipment for payloads/experiments. The Parties understand that the other Gateway partners will be similarly responsible for such activities and costs. Payload responsibilities and costs may be shared among more than one Gateway partner. A Party providing an element with payload interfaces shall be responsible for accommodating the portions of the utilization plans that affect the element including payloads' testing, verification, and operational support of the interfaces. The Parties understand that other Gateway partners that provide an element with payload interfaces will also be responsible for

accommodating the portions of the utilization plans that affect the element including the payloads' testing, verification, and operational support of the interface.

11.5 The implementation details of specific joint utilization activities approved through the forum, including respective responsibilities, milestones, studies, and data sharing plan, shall be documented in other arrangements, in accordance with Article 1.5 (Purpose, Objectives, and Scope).

11.6 The Parties and the other Gateway partners may propose to the forum utilization by a non-Gateway partner or a private entity under the jurisdiction of a non-Gateway partner. Following possible inclusion of the proposal in the multilateral utilization plans that are then approved by the GPCB, the Party proposing the use of the Gateway by a non-Gateway partner or a private entity under the jurisdiction of a non-Gateway partner shall seek approval in accordance with Article 8.2(a)2 (Management).

Article 12. Safety

12.1 NASA shall have the overall responsibility and authority to ensure the safety of the crew and the Gateway.

12.2 In order to fulfill this responsibility, NASA shall work with the GOJ and the other Gateway partners to establish safety requirements and plans for the Gateway, in accordance with Article 8 (Management).

12.3 The Parties shall develop detailed safety requirements and plans for the hardware and software they each provide for the Gateway. Such requirements and plans must meet or exceed the safety requirements and plans established by the Parties and the other Gateway partners for the Gateway. The Parties understand that the other Gateway partners will also develop plans that meet these requirements.

12.4 The Parties shall implement all applicable Gateway safety requirements and plans throughout the lifetime of the program, and GOJ will certify to NASA that such requirements and plans have been met for the Gateway elements and payloads it provides. The Parties understand that the other Gateway partners will also implement all applicable Gateway safety requirements and plans throughout the lifetime of the program and certify to NASA that such requirements and plans have been met for the Gateway elements and payloads they each provide.

12.5 NASA shall certify that the overall Gateway meets Gateway safety requirements.

12.6 NASA shall conduct integrated safety reviews for Gateway elements, launch packages, payloads, and utilization hardware/activities with the participation of the GOJ and the other Gateway partners.

12.7 The Parties shall conduct safety reviews of the elements, payloads, and utilization hardware/activities they provide. The Parties understand that the other Gateway partners will

also conduct safety reviews of the elements, payloads, and utilization hardware/activities they provide. NASA shall participate in and support the GOJ and the other Gateway partners' reviews, as appropriate. The Parties intend to define the scope of the safety reviews to minimize any overlap between NASA-conducted reviews and the GOJ or the other Gateway partner-conducted reviews.

12.8 The Parties shall allow each other and the other Gateway partners to participate in their safety reviews, as appropriate and subject to the relevant provisions of Article 19 (Exchange of Data and Goods) of the IGA and Article 19 (Transfer of Goods and Technical Data) of this MOU, where such reviews relate to the elements and payloads that the other Party or the other Gateway partners provide or where such reviews concern the safety of their crew. The Parties also agree to provide safety-related supporting documentation as necessary to support such reviews and understand that the other Gateway partners will also provide safety-related supporting documentation as necessary to support such reviews.

12.9 The Parties shall establish, in cooperation with the other Gateway partners, contingency procedures and flight rules for on-orbit emergencies and contingencies to protect the safety of the Gateway and its crew. For operations that are required outside of the procedures and flight rules, the Parties shall, in cooperation with the other Gateway partners, consult the multilateral team performing tactical and execution activities for Gateway operation, in accordance with Article 10.7 (Operations), if time is available. If a consensus decision cannot be reached within the time required, NASA shall take the decisions necessary to protect the safety of the Gateway and its crew.

Article 13. Crew

13.1 The Parties shall provide qualified crew to serve on the Gateway and understand that the other Gateway partners will also provide qualified crew to serve on the Gateway.

13.2 For avoidance of doubt, the Parties note that under Article 5 (Registration, Jurisdiction and Control) of the IGA, the GOJ and the Government of the United States retain jurisdiction and control over personnel in or on the Gateway who are its nationals. Each Party shall address to the GMCB questions of criminal jurisdiction for any personnel they provide that will be in or on the Gateway, who are nationals of a country other than Japan or the United States, prior to flight. The exercise of such jurisdiction and control (including criminal jurisdiction for purposes of Article 22 (Criminal Jurisdiction) of the IGA) shall be subject to any relevant provisions of this MOU, applicable IGA provisions, and implementing arrangements, including any relevant procedural mechanisms established therein.

13.3 Crew accessing the Gateway may also be conducting missions beyond the Gateway. For the time the crew is at the Gateway, they shall be considered Gateway crew.

13.4 Gateway Multilateral Crew Operations Panel (GMCOP)

(a) The GMCOP shall be the primary forum for top-level coordination and resolution of Gateway crew matters that affect the Gateway partners, including the processes, standards, and criteria for selection, certification, assignment, training, and determining flight readiness of the Gateway crew. The GMCOP shall define Gateway-related crew training. The Parties shall propose to the GMCOP their candidates for the Gateway crew based on mission requirements and crew opportunities. If the GMCOP determines the candidates meet the Gateway crew standards and criteria, the candidates shall be assigned to specific crew complements, subject to approval in accordance with the relevant Parties' internal procedures. Following crew assignment, the entire crew is expected to begin mission-specific training in order to acquire skills necessary to conduct Gateway operations and utilization. The GMCOP shall determine the readiness of each member of the crew for flight based on the results of a review of the crew member's medical condition and the crew member's performance during training. If a Party provides crew from a non-Gateway partner, then following initial approval by the GMCOP, the Party must seek GMCB approval per Article 8.2(a)2 (Management).

(b) GMCOP is comprised of representatives from the Gateway partners. JAXA shall represent the GOJ on this panel. The NASA representative shall chair the GMCOP. GMCOP decisions should be made by consensus. Where consensus cannot be achieved, the Chair is authorized to take decisions. Decisions made by the GMCOP chair that impact a Gateway partner may be appealed in accordance with procedures to be agreed to in the GMCOP charter.

13.5 Gateway Multilateral Medical Policy Board (GMMPB), Gateway Multilateral Space Medicine Board (GMSMB), and Gateway Multilateral Medical Operations Panel (GMMOP)

(a) The GMMPB shall develop and establish space medicine policies related to crew health. The GMMPB shall review and concur with decisions and findings of the GMSMB and oversee space medicine activities associated with the GMMOP.

1. The GMSMB shall have authority and responsibility for annual medical certification and periodic recertification of Gateway crew members. These crew members shall be medically certified and recommended by the medical organization of the sponsoring Party prior to being brought forward to the GMSMB. The Parties understand that the other Gateway partners will provide similar certification and recommendations for their crew members. The GMSMB shall have the authority and responsibility to approve and implement Gateway medical selection and certification standards, and to certify flight surgeons supporting Gateway activities.
2. The GMMOP shall coordinate and oversee the Gateway medical operations and implementation of medical policy. As such, the GMMOP shall address matters of health that affect the entire crew or future crews, including implementation of preventative medicine strategies (such as operational countermeasures), surveillance strategies, and environmental monitoring.

(b) The GMMPB, GMSMB, and GMMOP are each comprised of representatives from the Gateway partners. Other relevant representatives may join these boards, as agreed by the members of the relevant board. JAXA shall represent the GOJ on these boards. The NASA representative shall chair these boards. Decisions by these boards should be made by consensus. Where consensus cannot be achieved, the Chair is authorized to take decisions. The medical board decisions shall provide information for medical functional requirements decisions made by the appropriate NASA authorities that shall also be approved by the GPCB. Decisions made by the GMMPB or through the resulting requirements process that impact a Gateway partner may be appealed to the GPCB.

13.6 The Gateway Human Research Multilateral Review Board (GHRMRB)

(a) The GHRMRB shall ensure research involving human subjects on the Gateway will not endanger the health, safety, or well-being of human research subjects, and further, all experiment operations are conducted in an ethical manner. The GHRMRB shall review and approve human research protocols proposed by the Gateway partners, prior to their implementation on the Gateway.

(b) The GHRMRB is comprised of representatives from the Gateway partners. JAXA shall represent the GOJ on this board. The NASA representative shall chair this board. Decisions by this board should be made by consensus. Where consensus cannot be achieved, the proposed research plan shall be returned to the submitting Gateway partner with a request for modifications to meet the objectives of safe and ethical human research.

13.7 The Parties shall ensure their crew operate under the following parameters:

(a) For human-tended operations and associated training, they shall operate, together with the other Gateway crew, as one integrated team with one Commander.

(b) Consistent with the principle of an integrated crew, they shall operate, together with the other Gateway crew, under a single timeline for performance of all operations and utilization activities.

(c) The Commander shall be responsible for mission implementation and crew safety on board the Gateway and, as appropriate, from launch through landing. The GMCOP shall establish the details of the integrated crew concept.

13.8 Each Party shall be financially responsible for all compensation, medical expenses, subsistence costs on Earth, and training for the Gateway crew that it provides. The GOJ and NASA shall waive fees for Gateway-related training for each other and the other Gateway partners' Gateway crew members. Gateway crew training shall be defined by the GMCOP.

13.9 The Parties shall abide by the applicable Code of Conduct and require that any crew members they provide abide by the applicable Code of Conduct, unless otherwise determined by the Gateway partners.

Article 14. Transportation and Other Visiting Vehicles

14.1 The Parties shall have the right of access to the Gateway using government and private sector space transportation systems, and shall recognize the right of the other Gateway partners to access the Gateway using government and private sector space transportation systems, if those systems are compatible with the Gateway and in accordance with Article 8 (Management).

14.2 NASA, working with the GOJ and the other Gateway partners, in accordance with Article 8 (Management), shall plan and coordinate launch and return transportation services for the Gateway in accordance with the integrated traffic planning process.

14.3 Each Party shall respect the proprietary rights in and the confidentiality of any appropriately marked data and goods to be transported on its space transportation system(s). The Parties understand that the other Gateway partners will also respect the proprietary rights in and the confidentiality of any appropriately marked data and goods to be transported on its space transportation system(s).

14.4 The Parties recognize that the responsibility for developing space transportation systems and making them technically and operationally compatible with the Gateway is the obligation of the Party providing such transportation services. The Parties shall provide to each other or the other Gateway partners information necessary for ensuring such compatibility. The Parties understand that the other Gateway partners also recognize that the responsibility for developing space transportation systems and making them technically and operationally compatible with the Gateway is the obligation of the other Gateway partner providing such transportation services and that the other Gateway partners will provide to the Parties or to each other information necessary for ensuring such compatibility. Technical, operational, and safety requirements for access to the Gateway shall be controlled in appropriate program documentation.

14.5 Regarding any provision of launch and return services, the Parties may conclude separate agreements regarding the apportionment of any potential liability arising out of the Liability Convention.

14.6 Crew Transportation

(a) NASA shall provide transportation for crew to and from the Gateway via the Space Launch System and Orion spacecraft or other launch vehicles or spacecraft, and inform the GOJ of NASA's assessment of vehicle readiness and safety for flight for the launch of the GOJ crew. Informing the GOJ may involve the provision of information and data, as requested by the GOJ and agreed to by NASA, and in accordance with Article 19 (Exchange of Data and Goods) of the IGA and Article 19 (Transfer of Goods and Technical Data) of this MOU.

(b) The Parties understand that ESA plans to provide the European Service Module (ESM) for the Orion spacecraft.

(c) The GOJ may also provide crew access vehicle(s) in accordance with Article 8 (Management). The Parties understand that other Gateway partners may also provide crew access vehicles in accordance with Article 8 (Management).

14.7 Cargo Transportation

(a) NASA shall provide cargo transportation services, including launch and transit, for the Gateway for operations, utilization, and sustaining engineering functions.

(b) The GOJ may also provide cargo transportation services (logistics resupply) which is listed in Article 5.5(d)2 (Gateway Elements), including launch and transit, for the Gateway, in accordance with Article 8 (Management), and consistent with Article 7.1(a)19 (Responsibilities). The GOJ and NASA shall study concepts for potential future Japanese contribution of logistics resupply to the Gateway, including Japanese launch and transit to the Gateway that is commensurate with and meets Gateway logistics services requirements. Mutually agreed logistics resupply contributions shall be documented in a future implementing arrangement and in accordance with Article 8 (Management) and consistent with Article 7.1(a)19 (Responsibilities).

(c) The Parties understand that the other Gateway partners may also provide cargo transportation services, including launch and transit, for the Gateway, in accordance with Article 8 (Management) and consistent with Article 7.1(a)19 (Responsibilities).

14.8 Any additional vehicles to be docked or berthed to the Gateway provided by or sponsored by a Party(ies) shall be integrated into Gateway operations managed by the GPCB in accordance with Article 8 (Management).

Article 15. Communications

15.1 Gateway communications shall involve data transmission for all communications in support of the Gateway and associated operations.

15.2 NASA shall plan and coordinate space and ground communications services for the Gateway in accordance with relevant program documentation and provide the primary space and ground communications network for command, control, and operations of the Gateway and for other Gateway communications purposes.

15.3 The Parties understand that ESA plans to provide the EDSN for complementary communications support for command, control, and operations of the Gateway and for other Gateway communications purposes.

15.4 Gateway partners may provide communications systems for complementary support of command, control, operation, and utilization of the Gateway, upon authorization by the GPCB.

15.5 NASA shall provide information necessary to support the compatibility of any authorized communications systems. Technical, operational, regulatory, and security requirements related to Gateway communications shall be controlled in appropriate program management mechanisms and documentation that shall be developed by the Parties in conjunction with the other Gateway partners.

15.6 The Parties shall implement measures to ensure the confidentiality of their utilization and housekeeping data that passes through the communications systems used in connection with the Gateway.

(a) Notwithstanding the foregoing, data that are necessary to assure safe operations shall be made available to each Party and the other Gateway partners according to procedures in program documentation that shall be developed by the Parties with the other Gateway partners, and their use shall be restricted to safety purposes only.

(b) The Parties shall respect the proprietary rights in, and the confidentiality of, the utilization and housekeeping data passing through their communications systems, including their ground network and the communications systems of their Related Entities, when providing communications services to each other or the other Gateway partners. The Parties shall respect the confidentiality of personnel and medical data passing through their communications systems, including the ground networks and the communications systems of their Related Entities, when providing communications services to each other or the other Gateway partners.

(c) The Parties understand that the other Gateway partners will act in accordance with the provisions of Article 15.6 above.

15.7 The Parties shall assure that their Gateway Information Technology (IT) resources, including but not limited to computer networks, computer systems, and data transmission systems, are at a level of IT security risk management sufficient to mitigate threats, vulnerabilities, and exposures consistent with the confidentiality, integrity, and availability of such resources. The Parties understand that the other Gateway partners will also do the above. The Gateway IT security risk management process shall be defined and controlled in Gateway program documentation that shall be developed by the Parties in cooperation with the other Gateway partners.

Article 16. Intellectual Property

16.1 This MOU shall not be construed as granting, either expressly or by implication, to the other Party any rights to, or interest in, any inventions or works of a Party or its Contributing Entities made prior to the entry into force of, or outside the scope of, this MOU, including any patents (or similar forms of protection in any country) corresponding to such inventions or any copyrights corresponding to such works.

16.2 Any rights to, or interest in, any invention or work made in the performance of this MOU solely by one Party or any of its Contributing Entities, including any patents (or similar forms of protection in any country) corresponding to such invention or any copyright corresponding to such work, shall be owned by such Party or such Contributing Entity. Allocation of rights to, or interest in, such invention or work between such Party and its Contributing Entities shall be determined by applicable laws, rules, regulations, and contractual obligations.

16.3 It is not anticipated that the Parties will create any joint inventions in the course of activities pursuant to this MOU. Nevertheless, in the event that an invention is jointly made during such activities, the Parties shall, in good faith, consult and agree within 60 calendar days as to:

(a) The allocation of rights to, or interest in, such joint invention, including any patents (or similar forms of protection in any country) corresponding to such joint invention;

(b) The responsibilities, costs, and actions to be taken to establish and maintain patents (or similar forms of protection in any country) for each such joint invention; and

(c) The terms and conditions of any license or other rights to be exchanged between the Parties or granted by one Party to the other Party.

16.4 If the Parties decide to register the copyright in any jointly authored work, they shall, in good faith, consult and agree as to the responsibilities, costs, and actions to be taken to register copyrights and maintain copyright protection in any country.

16.5 The Parties understand that other Gateway partners will also follow the consultation procedures described in Article 16.3 and Article 16.4 above with respect to a joint invention made during activities that are pursuant to MOUs with NASA or the Government of the United States to effectuate the Gateway and with respect to work authored jointly by two or more Gateway partners.

16.6 Subject to the provisions of Article 19 (Exchange of Data and Goods) of the IGA and Article 18 (Public Information) and Article 19 (Transfer of Goods and Technical Data) of this MOU, each Party shall have an irrevocable royalty-free right to reproduce, prepare derivative works, distribute, and present publicly, and authorize others to do so on its behalf, any copyrighted work resulting from activities undertaken in the performance of this MOU for its own purposes, regardless of whether the work was created solely by, or on behalf of, the other Party or jointly with the other Party.

Article 17. Financial Arrangements

17.1 Each Party shall bear the costs of fulfilling its responsibilities, including but not limited to costs of compensation, travel, and subsistence of its own personnel and transportation of all equipment and other items for which it is responsible under this MOU.

17.2 The ability of each Party to carry out its obligations under this MOU is subject to its funding procedures and the availability of appropriated funds. Recognizing the importance of Gateway cooperation, each Party undertakes to make reasonable efforts to obtain approval for funds to meet those obligations, consistent with its respective funding procedures.

17.3 In the event that funding problems arise that may affect a Party's ability to fulfill its responsibilities under this MOU, that Party shall promptly notify and consult with the other Party and the other Gateway partners, as necessary.

Article 18. Public Information

18.1 The Parties, in consultation with the other Gateway partners, shall develop and agree on a Public Affairs Plan that specifies guidelines for their cooperative public affairs activities during the detailed design, development, operation, and utilization of the Gateway.

18.2 Under the Public Affairs Plan guidelines, the Parties shall retain the right to release public information on their respective roles in the Gateway program. The Parties shall undertake to coordinate with each other, and, as appropriate, with the other Gateway partners, in advance concerning public information activities that relate to each other's responsibilities or performance in the Gateway program.

Article 19. Transfer of Goods and Technical Data

19.1 The Parties are obligated to transfer only those goods and technical data (including software) necessary to fulfill their respective responsibilities under this MOU, in accordance with the provisions in this Article, notwithstanding any other provisions of this MOU. All activities under this MOU shall be carried out in accordance with national laws and regulations governing the transfer of goods and technical data, including those laws and regulations pertaining to export control. Nothing in this MOU shall require a Party to carry out any activities in violation of its national laws or regulations.

19.2 The transfer of technical data for the purposes of discharging the Parties' responsibilities with regard to interface, integration, and safety shall normally be made without restriction, except as required by Article 19.1 above.

19.3 All transfers of goods and proprietary or export-controlled technical data are subject to the following provisions.

(a) In the event a Party or its Related Entity finds it necessary to transfer such goods or data, for which protection is to be maintained, such goods shall be specifically identified and such data shall be marked.

(b) The identification for such goods and the marking on such data shall indicate that the goods and data shall be used by the receiving Party and its Related Entities only for

the purposes of fulfilling the receiving Party's or Related Entities' responsibilities under this MOU, and that such goods and data shall not be disclosed or retransferred to any other entity without the prior written permission of the furnishing Party.

(c) The receiving Party and its Related Entities, and any other persons or entities to which the goods or technical data are subsequently transferred, shall abide by the terms of the notice and protect any such goods and data from unauthorized use and disclosure.

(d) The Parties to this MOU shall cause their Related Entities, and any other persons or entities to which the goods or technical data are subsequently transferred, to be bound by the provisions of this Article through contractual mechanisms or equivalent measures.

19.4 All goods and marked proprietary or export-controlled technical data exchanged in the performance of this MOU shall be used by the receiving Party or Related Entity, and any other persons or entities to which the technical data or goods are subsequently transferred, exclusively for the purposes of the MOU. Upon completion of the activities under this MOU, the receiving Party or Related Entity or persons or entities to which the technical data or goods are subsequently transferred exclusively for the purposes of the MOU, shall return or otherwise dispose of all goods and marked proprietary or export-controlled technical data provided under this MOU, as directed by the furnishing Party or its Related Entity.

19.5 The Parties shall make reasonable efforts to handle expeditiously requests for authorization of transfers of technical data and goods by persons or entities other than the Parties (for example, company-to-company exchanges which are likely to develop), and they shall encourage and facilitate such transfers in connection with the Gateway cooperation under this MOU. Otherwise, such transfers are not covered by the terms and conditions of this Article. National laws and regulations shall apply to such transfers.

Article 20. Biological Planetary Protection

The Parties shall apply biological planetary protection measures based on their respective applicable policies and requirements, consistent with the guidelines contained in the Committee on Space Research (COSPAR) Planetary Protection Policy and Implementation Guidelines in place as of the signature of this MOU. The Parties may decide to apply future amended versions of the COSPAR guidelines to cooperation under this MOU.

Article 21. Consultation and Settlement of Disputes

21.1 The Parties agree to consult with each other and, as necessary, with other Gateway partners, when a question of interpretation or implementation of the terms of this MOU arises. Nothing in this MOU shall affect the rights of a Party to use the consultation and settlement of disputes provisions provided in this Article.

21.2 In regard to a question of interpretation or implementation of the terms of this MOU, a Party shall first refer such question to the Parties' respective GPCB members for settlement, or if necessary, the GMPB members. If the question cannot be resolved at this level, either Party may refer the question to the Parties' respective GMCB members. The Parties agree that in the case of a question that requires consideration by another (other) Gateway partner(s), the consultations shall be broadened so as to include the representatives of the other concerned Gateway partner(s).

21.3 For any question of interpretation or implementation of the terms of this MOU that has not been settled in accordance with Article 21.2 above, either Party may refer the question for settlement to the Minister of Education, Culture, Sports, Science and Technology of Japan and the NASA Administrator, or their designees. The Parties recognize that in case of a question that requires consideration by another (other) Gateway partner(s), the matter shall also be referred to the appropriate leadership of the other Gateway partners as detailed in the MOUs to effectuate the Gateway between NASA or the Government of the United States and the other Gateway partners, or their designees, as appropriate.

21.4 Any issues arising out of this MOU not satisfactorily settled through consultation pursuant to this Article may be pursued in accordance with the relevant provisions of the IGA.

Article 22. MOU Amendments

This MOU may be amended at any time by written agreement of the Parties. Any amendment must be consistent with the relevant provisions of the IGA and in accordance with Article 2 (Relationship to the IGA).

Article 23. Language

The working language for all activities under this MOU shall be the English language and all data and information generated and provided under this MOU shall be in the English language. The foregoing principle does not preclude the use of another language when such use is accepted, in specific instances, as decided by the Parties.

Article 24. Final Provisions

24.1 This MOU shall enter into force on the date of the last signature by the Parties.

24.2 If the GOJ or the Government of the United States gives notice of withdrawal from the IGA in accordance with Article 28 (Withdrawal) of that Agreement, the corresponding Party shall be deemed to have terminated this MOU effective from the date of such withdrawal.

24.3 If a Party modifies its participation in the Gateway, significantly impacting the other Party's ability to fulfill its responsibilities, the Parties agree to consult pursuant to Article 21 (Consultation and Settlement of Disputes) above. Such consultations would seek to minimize the negative impact of the modification, which shall include appropriate recognition by the Party making the modification of work already performed by the impacted Party.

24.4 Either Party may terminate this MOU at any time by giving the other Party at least one year's written notice of its intent to terminate. In the event of termination, the terminating Party shall endeavor to minimize any negative impact of such termination on the other Party.

(a) Upon the GOJ's notice of termination for any reason, the GOJ shall transfer to NASA those elements required for the continuation of the overall program in the condition that they are at the time. The GOJ shall expeditiously provide hardware, drawings, documentation, software, spares, tooling, special test equipment, and/or any other necessary items requested by NASA. The GOJ and NASA shall enter into consultations pursuant to Article 21 (Consultation and Settlement of Disputes), which shall include appropriate recognition of the transfer of the necessary items.

(b) Upon NASA's notice of termination for any reason, the GOJ and NASA shall enter into consultations pursuant to Article 21 (Consultation and Settlement of Disputes). NASA shall endeavor to minimize any negative impact of such termination on the GOJ, which may include defining alternative opportunities for mutually beneficial cooperation involving use of the GOJ contributions which would be defined in a separate arrangement outside the scope of this MOU.

24.5 Notwithstanding termination of this MOU, the rights and obligations under Article 16 (Cross-Waiver of Liability), Article 17.1 and 17.2 (Liability Convention), and Article 19 (Exchange of Data and Goods) of the IGA and Article 14.5 (Transportation and Other Visiting Vehicles), Article 16 (Intellectual Property), and Article 19 (Transfer of Goods and Technical Data) of this MOU shall continue to apply.

IN WITNESS WHEREOF, the undersigned duly authorized representatives of the Parties have signed this Memorandum of Understanding.

Done in two originals in the Japanese language and English language, each text being equally authentic, and signed on the Twenty-eighth Day of December in the Year of Two Thousand and Twenty at Washington, the District of Columbia for the Government of Japan, and on the Thirty-first Day of December in the Year of Two Thousand and Twenty at Tulsa, Oklahoma for the National Aeronautics and Space Administration of the United States of America.

For the Government of Japan	**For the National Aeronautics and Space Administration of the United States of America**
Sugiyama Shinsuke	Jim Bridenstine