

SPACE

Lunar Pathfinder Mission

**Memorandum of Understanding
Between the
UNITED STATES OF AMERICA
and the EUROPEAN SPACE AGENCY**

Signed at Noordwijk, The Netherlands
June 15, 2022

Entered into force June 15, 2022



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.”

MEMORANDUM OF UNDERSTANDING

BETWEEN

THE NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

OF THE UNITED STATES OF AMERICA

AND

THE EUROPEAN SPACE AGENCY

CONCERNING THE

LUNAR PATHFINDER MISSION

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PREAMBLE

The National Aeronautics and Space Administration (NASA) of the United States of America,

and

The European Space Agency (ESA), an international intergovernmental organization established by the Convention for the Establishment of a European Space Agency, which was opened for signature in Paris, France, on 30 May 1975, and entered into force on 30 October 1980,

individually referred to as a "Party" and collectively referred to as the "Parties,"

CONSIDERING that NASA will secure a lunar payload delivery service through the Commercial Lunar Payload Services (CLPS) Program;

CONSIDERING that ESA, in the frame of its exploration commercialisation initiative, has entered into a commercial partnership with the United Kingdom (UK)-based company Surrey Satellite Technology Ltd. (SSTL) to enable commercial lunar communication services using the SSTL-developed Lunar Pathfinder (LPF) spacecraft;

CONSIDERING that NASA and ESA have expressed mutual interest in pursuing cooperation on the LPF mission for lunar communication relay services;

CONSIDERING that cooperation on LPF between the Parties would enhance the value of the mission and provide mutual benefits for the international science community; and

RECALLING the longstanding cooperation between NASA and ESA in the conduct of space science and exploration programs;

HAVE AGREED as follows:

ARTICLE 1 – PURPOSE AND OBJECTIVES

1. The purpose of this Memorandum of Understanding (MOU) is to define the terms and conditions by which the cooperation between the Parties will be conducted for the LPF mission.
2. This MOU sets forth the managerial, technical, and operational interfaces between the Parties that are necessary to ensure continuation of, and compatibility between, their respective activities; defines the roles and responsibilities of the Parties; and identifies the other commitments of the Parties, with respect to the development, integration, launch, and operation of LPF.

ARTICLE 2 – DEFINITIONS

For the purpose of this MOU,

1. 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 an 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.
2. The term “Contributing Entity” means:
 - a. A contractor, subcontractor, grantee, or other entity having a legal relationship with a Party that is assigned, tasked, or contracted to perform activities under this MOU.

ARTICLE 3 – DESCRIPTION OF LPF, CLPS, AND LRA

The LPF mission is expected to orbit the Moon and provide commercial lunar communication services. LPF is expected to operate in an Elliptical Lunar Frozen Orbit (ELFO), for an operational lifetime of at least eight years. LPF is designed to offer S-band and Ultra-High Frequency (UHF) channels for communications with lunar assets, and communications should be relayed back to Earth ground station(s) in X-band. The LPF mission, including the development and operation of the LPF spacecraft, is a commercial mission under the control and responsibility of the UK-based company SSTL. ESA and SSTL have entered into a partnership agreement in which ESA committed to provide a delivery of LPF to lunar orbit in cooperation with NASA and to procure LPF communications relay services for NASA and ESA lunar missions.

NASA is expected to procure a CLPS delivery of the LPF to lunar orbit. In exchange, ESA is expected to arrange with SSTL five years of free communications relay services to NASA.

NASA is working with several United States private companies to deliver science and technology payloads to the lunar surface and cislunar orbit through the CLPS Project. NASA manages the CLPS Project through an Indefinite Duration Indefinite Quantity (IDIQ) contract under which a company is selected to deliver payloads to the lunar surface or cislunar orbit as an end-to-end service, through competed task orders.

These CLPS task orders are Firm Fixed Price (FFP) awards. A CLPS task order typically lists the payloads that NASA wants delivered as well as other details such as desired landing location or other requirements the payloads need to obtain their data. CLPS deliveries are very sensitive to changes of scope or schedule due to their FFP nature.

NASA does not own, control, or have direct insight into the hardware and systems the CLPS providers use to provide the delivery service. CLPS deliveries are not NASA missions; CLPS deliveries are commercial missions under the control and responsibility of the CLPS provider. Delivered payloads (such as the LPF) are considered cargo to the CLPS provider and are not part of the CLPS system. Any of the companies on the CLPS catalog can respond to a Request for Task Plan (RFTP). The selected provider is then responsible for all aspects of payload delivery to the lunar surface, including payload integration and operations, launching from Earth, and delivery to the Moon, which may include delivery to the surface or delivery into lunar orbit.

The first contracted deliveries of NASA payloads to the Moon are targeted to begin in 2022. NASA expects to conclude approximately two CLPS deliveries per calendar year, subject to programmatic need and funding.

As part of the cooperative activities under this MOU, NASA is planning to provide to ESA a Laser Retro-Reflector Array (LRA) payload which ESA is expecting to have SSTL integrate and operate on board the LPF spacecraft. The LRA is an array of corner cube reflectors that acts as a reference target for laser tracking measurements performed by ground stations.

ARTICLE 4 – NASA PROGRAMMATIC RESPONSIBILITIES

To implement this cooperation, NASA shall use all reasonable efforts to:

1. Arrange, through a CLPS task order, with the CLPS provider the delivery of LPF to its target orbit, with the exact location to be determined subsequently in the Joint Implementation Plan (JIP);
2. Coordinate the technical interfaces, schedule, and deliverable needs between ESA and its Related Entities, including SSTL, and the CLPS provider to be selected by NASA;
3. Provide the LPF interface requirements in the CLPS provider call (in Appendix A of the RFTP);
4. Define, agree, and provide in a timely manner to ESA the spacecraft/payload interface specifications relevant to LPF, as identified by the selected CLPS provider, such as interface control documents, technical drawings, and environmental specifications, to enable ESA to fulfill its responsibilities below;
5. Provide to ESA a NASA-selected agent (NASA agent) to liaise with the CLPS provider. The NASA agent shall have the following responsibilities:

- a. Serve as a counterpart to the Payload Integration Manager for the CLPS provider;
- b. Speak on behalf of, and take all necessary action on behalf of ESA and its Related Entities, including the LPF spacecraft/payload developer and operator, in all scenarios pertaining to the LPF spacecraft/payload in which ESA and its Related Entities cannot participate;
- c. Speak on behalf of, and take all necessary and timely action on behalf of, ESA and its Related Entities, including, but not limited to:
 - o Participating in integration meetings,
 - o adjudicating test results, and
 - o responding to time-sensitive questions from the CLPS provider;

The scope and implementing modalities of this mandate, including consultation requirements, shall be further detailed in the JIP;

- 6. Insert the CLPS provider's verification requirements into the JIP;
- 7. Support spectrum sharing and frequency selection analysis to ensure LPF frequency plan compatibility for anticipated communications services;
- 8. Coordinate between ESA and its Related Entities and the CLPS provider to accommodate, integrate (analytically and physically), test, and calibrate the LPF spacecraft/payload;
- 9. Coordinate discussions of specific on-orbit delivery requirements of LPF between ESA and the CLPS provider;
- 10. Coordinate with ESA on the physical delivery of the LPF spacecraft/payload to the CLPS provider;
- 11. Be present for the delivery of LPF to the CLPS provider and for the integration on the CLPS lander;
- 12. Provide ESA's LPF operations center with LPF ground test and in-flight data about LPF until separation from the CLPS lander;
- 13. Participate in specific LPF meetings and reviews, as detailed in the JIP;
- 14. Following the principles and templates defined in the JIP, inform ESA after CLPS delivery manifests that utilize LPF communications services are selected, including specific NASA and NASA-sponsored payloads communications requirements such as, but not limited to, bandwidth required and location of the payload. The NASA and NASA-sponsored payloads requiring communication support would require compatibility with LPF capabilities;
- 15. Work with ESA to exchange information and coordinate the development of LPF user terminals, details to be documented in the JIP;

16. Work with ESA to coordinate secure delivery of data to NASA from the NASA and NASA-sponsored payloads utilizing LPF;
17. Reserve the option of utilizing LPF as a communications relay under this agreement for the first five years of LPF operations subsequent to LPF commissioning in support of NASA and NASA-sponsored payloads;
18. Provide ESA with the LRA flight hardware and associated documentation, compliant with ESA's provided LRA payload requirements, by a mutually agreed date;
19. Participate in and contribute to the ESA-coordinated concept of operations and support laser ranging to the LPF LRA from the NASA laser ground stations;
20. Perform, jointly with ESA, LRA data analysis, publications, and dissemination of results; and
21. Inform ESA promptly of any technical or programmatic issues which may affect the schedule or performance of NASA's responsibilities under this MOU.

ARTICLE 5 – ESA PROGRAMMATIC RESPONSIBILITIES

To implement this cooperation, ESA shall use all reasonable efforts to:

1. Provide complete, stable, and unambiguous interface, operation, and integration mission requirements for the LPF spacecraft/payload, as identified by SSTL, to NASA in support of the development of the task order for CLPS provider selection;
2. Agree on the interface requirements included in Appendix A of the task order prior to release of the RFTP;
3. Ensure, through SSTL, that LPF is compatible with the requirements listed in Appendix A released in the RFTP;
4. Arrange, through SSTL, for the development, manufacturing, integration, testing, and verification of LPF as defined in the SSTL Product Assurance (PA) plan;
5. Be present for the delivery of LPF to the CLPS provider and for the integration on the CLPS lander;
6. Arrange, through SSTL, for the delivery of the LPF spacecraft/payload to NASA, at the CLPS provider's agreed to location, for integration and launch ground processing in accordance with the schedule agreed among ESA, SSTL, NASA, and CLPS provider. In the event that LPF is ready prior to the agreed delivery date, ESA shall arrange for storage of the spacecraft/payload until the agreed delivery date;

7. In the event that SSTL cannot deliver the LPF spacecraft/payload as agreed, ESA shall arrange through SSTL that the impact of non-delivery (which would impact other payloads on the CLPS delivery) is remediated by provision of a mass simulator as specified in the JIP;
8. Provide, through SSTL and at no cost, end-to-end communication services to NASA as defined in the JIP. Specifically, ESA shall provide a communication relay for NASA and NASA-sponsored payloads for the first five years of LPF operations subsequent to LPF commissioning and provide NASA priority use of LPF communication services as detailed in the JIP. ESA, in coordination with SSTL, shall work with NASA on any service agreements required for NASA's use of LPF;
9. Arrange with SSTL for support of assessments and provision of information, which are necessary for integration and accommodation of the LPF on a NASA-coordinated CLPS lander, as further specified in the JIP. This includes, but is not limited to, providing:
 - a. The LPF Payload Accommodation Requirements Document (PARC);
 - b. Necessary integration support as agreed with NASA and the CLPS provider for example: generating integration documentation and procedures, model exchanges, and working group meetings;
 - c. Necessary test and calibration support as agreed with the NASA and the CLPS provider;
 - d. Operations support, including planning and verification of secure infrastructure, and operations during launch and CLPS delivery phase; and
 - e. Delta-v LPF needs from the launch/CLPS provider to live within the propulsion assumptions LPF has made. (These requirements shall need to be provided in Appendix A of the RFTP);
10. Arrange with SSTL for support of assessments and provision of information, which are necessary for defining the user segment of NASA missions making use of LPF services, as further specified in the JIP. This includes the following pre-launch support services:
 - a. Provision of User to Space Segment Interface Control Document (ICD);
 - b. Responding to technical clarifications; and
 - c. Support to on-ground compatibility testing;
11. Provide, through SSTL, insight to NASA into the development status of the LPF, in accordance with the guidelines defined in the JIP;

12. Support presentations and provide answers as requested by the CLPS provider in forums identified by NASA, which could include payload workshops;
13. Support con-ops discussions coordinated by NASA;
14. Support spectrum management assessment of the proposed LPF frequency channel plan as described in the JIP;
15. Coordinate with NASA and the CLPS provider to schedule the fueling of LPF at the launch site processing facility;
16. Through SSTL, coordinate and fund a contractor and/or the CLPS provider for the fueling of LPF at the launch site processing facility;
17. Provide NASA with status updates during the LPF commissioning phase;
18. Arrange with SSTL for the integration of the NASA-provided LRA payload onto the LPF spacecraft for future in-orbit joint experimentation with NASA;
19. Manage LRA related mission operations, including coordination between NASA, SSTL, the International Laser Ranging Service (ILRS), and the laser ground stations;
20. Share all the LRA ranging data with NASA and jointly perform with NASA LRA data analysis, publications, and dissemination of results; and
21. Inform NASA promptly of any technical or programmatic issues which may affect the schedule or performance of ESA's responsibilities under this MOU.

ARTICLE 6 – POINTS OF CONTACT

The NASA Points of Contact for this MOU are:

LPF:

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Program Executive, Exploration Science Strategy and Integration Office

Science Mission Directorate

NASA Headquarters

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LPF LRA:

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The ESA Points of Contact for this MOU are:

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Lead of Commercialisation and Innovation Team and Lunar Pathfinder Project
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ESA Directorate for Human and Robotic Exploration
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LPF LRA:

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Head of ESA Navigation Science Office & ESA Lunar PNT Coordinator
Navigation Strategy and Program Department
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Email: javier.ventura@esa.int

Each Party shall communicate any change in its contact information in writing to the other Party.

ARTICLE 7 – MANAGEMENT, DOCUMENTATION, AND REVIEWS

1. Each Party shall designate one or more representatives responsible for implementing the responsibilities under this MOU.
2. The ESA- and NASA-designated representatives referred to in Article 7.1 shall cooperate in the implementation of the Parties' activities under this MOU. Each of the Parties shall manage, in accordance with its own rules and procedures, its activities under this MOU.
3. These designated representatives shall communicate on a regular basis to review the progress of the implementation of the Parties' respective activities under this MOU and to resolve any issues that emerge.

4. ESA and NASA shall invite each other to participate in each other's LPF meetings and reviews as appropriate.
5. ESA and NASA shall develop a JIP that contains the details regarding management and implementation of the LPF mission including the mission schedule. In general, the JIP shall contain such information deemed necessary to control the program including, but not limited to, decisions about the matters that are explicitly required by Articles 4 and 5 of this MOU. Meetings and reviews required to carry out the responsibilities set forth in this MOU shall also be included in the JIP. ESA and NASA shall establish joint teams to coordinate activities on the collaborative aspects of the mission; such teams and their activities shall be defined in the JIP. In case of conflict between the JIP and this MOU, the MOU shall prevail.
6. Technical details on the planned interactions between ESA and NASA for the LRA integration into LPF and the joint strategy for future LRA in-orbit testing shall be further detailed in the LRA-JIP produced by ESA and NASA LRA Points of Contacts.

ARTICLE 8 – TRANSFER OF GOODS AND TECHNICAL DATA

The Parties are obligated to transfer only those goods and technical data (including software) necessary to fulfil their respective responsibilities under this MOU, in accordance with the provisions of this Article, notwithstanding any other provision of this MOU:

1. Without prejudice to ESA's status as an international organization, all activities under this MOU, including those relating to the transfer of goods and technical data, shall be carried out in accordance with the laws and regulations applicable to each Party.
2. The transfer of goods and 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 required by paragraphs 1 and 3 of this Article.
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 of 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 shall abide by the terms of the notice and protect any such identified goods and data from unauthorized use and disclosure.
- 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 its Related Entity exclusively for the purposes of this MOU. Upon completion of the activities under this MOU, the receiving Party or its Related Entity 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.
- 5. The Parties to this MOU shall cause their Related Entities to be bound by the provisions of this Article through contractual mechanisms or equivalent measures.

ARTICLE 9 – INTELLECTUAL PROPERTY RIGHTS

- 1. Nothing in this MOU shall 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.
- 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 Contributing Entities. 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.
- 3. It is not anticipated that there will be any joint inventions made in the performance of this MOU. Nevertheless, in the event that an invention is jointly made by the Parties in the performance of this MOU, the Parties shall, in good faith, consult and use reasonable efforts to agree within 30 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.

4. For any work jointly authored by the Parties, should the Parties decide to register the copyright in such 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).
5. Subject to the provisions of Article 8 (Transfer of Goods and Technical Data) and Article 10 (Release of Results and Public Information), 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 10 – RELEASE OF RESULTS AND PUBLIC INFORMATION

1. The Parties retain the right to release public information regarding their own activities under this MOU. The Parties shall coordinate with each other in advance concerning releasing to the public information that relates to the other Party's responsibilities or performance under this MOU.
2. In all media activities, the Parties shall acknowledge the contributions of the other Party to the LPF mission.
3. NASA shall abide by standard NASA data sharing policies and make all scientific data acquired by NASA and NASA-sponsored payloads and relayed to Earth using LPF publicly available within six months of acquisition.
4. The Parties acknowledge that the following data or information does not constitute public information and that such data or information shall not be included in any publication or presentation by a Party under this Article without the other Party's prior written permission:
 - a. Data furnished by the other Party in accordance with Article 8 (Transfer of Goods and Technical Data) which is identified as export-controlled or proprietary; or
 - b. Information about an invention of the other Party before an application for a patent (or similar form of protection in any country) corresponding to such invention has been filed covering the same or before that Party has communicated a decision not to file such an application has been made.

ARTICLE 11 – FINANCIAL ARRANGEMENTS

1. Each Party shall bear the costs of discharging its respective obligations under this MOU, including travel and subsistence of personnel and transportation of all goods for which it is responsible.
2. The ability of the Parties to carry out their obligations under this MOU is subject to the availability of appropriated funds and each Party's respective funding

procedures. Should either Party encounter budgetary problems that may affect the activities to be carried out under this MOU, the Party encountering the problems shall notify and consult with the other Party as soon as possible.

ARTICLE 12 – CUSTOMS CLEARANCE AND MOVEMENT OF GOODS

1. In accordance with applicable laws and regulations, each Party shall facilitate free customs clearance and waiver of all applicable customs duties and taxes for goods necessary for the implementation of this MOU. In the event that any customs duties or taxes of any kind are nonetheless levied on such goods, such customs duties or taxes shall, subject to Article 11, be borne by the Party of the country levying such customs duties or taxes.
2. In accordance with applicable laws and regulations, NASA and ESA, respectively, shall also facilitate the movement of goods into and out of the United States and the relevant ESA Member States as necessary to comply with this MOU.

ARTICLE 13 – EXCHANGE OF PERSONNEL AND ACCESS TO FACILITIES

1. To facilitate implementation of the activities conducted under this MOU, the Parties may support the exchange of a limited number of personnel including contractors and subcontractors from each Party, at an appropriate time and under conditions mutually decided upon by the Parties. Each Party shall facilitate the provision of the appropriate entry and residence documentation to employees of the other Party or employees of the other Party's Related Entities.
2. Access by the Parties to each other's facilities or property, or to each other's Information Technology (IT) systems or applications, is contingent upon compliance with each other's respective security and safety policies and guidelines including, but not limited to: standards on badging, credentials, and facility and IT system application/access.

ARTICLE 14 – OWNERSHIP OF ELEMENTS AND EQUIPMENT

1. For the purposes of this cooperation, each Party shall retain ownership of all elements and equipment it furnishes to the other Party under the terms of this MOU, without prejudice to any rights of ownership of the Parties' respective Related Entities.
2. Unless otherwise agreed, any equipment not launched into space shall be returned to the furnishing Party at such time as mutually agreed. ESA will transport their respective LPF equipment to the delivery points, as determined by ESA, NASA, and the CLPS provider, and, where appropriate, from such delivery points, when the equipment is to be returned to ESA.

ARTICLE 15 – LIABILITY AND RISK OF LOSS

1. The objective of this Article is to establish a cross-waiver of liability in the interest of encouraging participation in the exploration, exploitation, and use of outer space. This cross-waiver of liability shall be broadly construed to achieve this objective.
2. For purposes of this Article:
 - a. The term “Damage” means:
 - (i) Bodily injury to, or other impairment of health of, or death of, any person;
 - (ii) Damage to, loss of, or loss of use of any property;
 - (iii) Loss of revenue or profits; or
 - (iv) Other direct, indirect, or consequential damage.
 - b. The term “Launch Vehicle” means an object, or any part thereof, intended for launch, launched from Earth, or returning to Earth which carries Payloads, persons, or both.
 - c. The term “Payload” means all property to be flown or used on or in a Launch Vehicle.
 - d. The term “Protected Space Operations” means all activities, including Launch Vehicle or Transfer Vehicle activities, and Payload activities on Earth, in outer space, or in transit between Earth and outer space, in implementation of this MOU. Protected Space Operations begins at the signature of this MOU and ends when all activities done in implementation of this MOU are completed. It includes, but is not limited to:
 - (i) Research, design, development, test, manufacture, assembly, integration, operation, or use of Launch Vehicles or Transfer Vehicles, Payloads, or instruments, as well as related support equipment and facilities and services; and
 - (ii) All activities related to ground support, test, training, simulation, or guidance and control goods and related facilities or services.

“Protected Space Operations” excludes activities on Earth that are conducted on return from space to develop further a Payload’s product or process for use other than for the activities within the scope of this MOU.
 - e. The term “Transfer Vehicle” means any vehicle that operates in space and transfers Payloads, persons, or both between two different space objects, between two different locations on the same space object, or between a space object and the surface of a celestial body. A Transfer Vehicle also includes a vehicle that departs from and returns to the same location on a space object.

3. Cross-waiver of liability:

- a. Each Party agrees to a cross-waiver of liability pursuant to which each Party waives all claims against any of the entities or persons listed in paragraphs 3(a)(i) through 3(a)(iv) of this Article based on Damage arising out of Protected Space Operations. This cross-waiver shall apply only if the person, entity, or property causing the Damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations. The cross-waiver shall apply to any claims for Damage, whatever the legal basis for such claims, against:
 - (i) The other Party;
 - (ii) A Party to another NASA agreement that includes flight on the same Launch Vehicle;
 - (iii) A Related Entity of any entity identified in paragraphs 3(a)(i) or 3(a)(ii) of this Article; or
 - (iv) The employees of any of the entities identified in paragraphs 3(a)(i) through 3(a)(iii) of this Article.
- b. In addition, each Party shall extend the cross-waiver of liability, as set forth in paragraph 3(a) of this Article, to its own Related Entities by requiring them, by contract or otherwise, to:
 - (i) Waive all claims against the entities or persons identified in paragraphs 3(a)(i) through 3(a)(iv) of this Article; and
 - (ii) Require that their Related Entities waive all claims against the entities or persons identified in paragraphs 3(a)(i) through 3(a)(iv) of this Article.
- c. For avoidance of doubt, this cross-waiver of liability includes a cross-waiver of claims arising from the *Convention on International Liability for Damage Caused by Space Objects*, which entered into force on September 1, 1972 (Liability Convention), where the person, entity, or property causing the Damage is involved in Protected Space Operations and the person, entity, or property damaged is damaged by virtue of its involvement in Protected Space Operations.
- d. Notwithstanding the other provisions of this Article, this cross-waiver of liability shall not apply to:
 - (i) Claims between a Party and its own Related Entity or between its own Related Entities;
 - (ii) Claims made by a natural person, their estate, survivors, or subrogees (except when a subrogee is a Party to this MOU or is otherwise bound by the terms of this cross-waiver) for bodily injury to, or other impairment of health of, or death of, such person;
 - (iii) Claims for Damage caused by willful misconduct;

- (iv) Intellectual property claims;
 - (v) Claims for Damage resulting from a failure of a Party to extend the cross-waiver of liability to its Related Entities, pursuant to paragraph 3(b) of this Article; or
 - (vi) Claims by a Party arising out of or relating to the other Party's failure to perform its obligations under this MOU.
- e. Nothing in this Article shall be construed to create the basis for a claim or suit where none would otherwise exist.
- f. In the event of third-party claims which may arise out of, *inter alia*, the Liability Convention, the Parties shall consult promptly on any potential liability, on any apportionment of such liability, and on the defense of such claim.

ARTICLE 16 – REGISTRATION, JURISDICTION, AND CONTROL

ESA shall coordinate with the UK government to ensure that the LPF spacecraft is registered as a space object in accordance with the Convention on the Registration of Objects Launched into Outer Space, done on 12 November 1974, and jurisdiction and control over the space object are retained.

NASA shall require the CLPS provider to request the United States government register the CLPS lander spacecraft as a space object in accordance with the Convention on the Registration of Objects Launched into Outer Space, done on 12 November 1974, and to retain jurisdiction and control over the space object.

ARTICLE 17 – MISHAP INVESTIGATION

In the case of a close call, mishap, or mission failure, the Parties agree to provide assistance to each other in the conduct of any investigation, bearing in mind, in particular, the provisions of Article 8 (Transfer of Goods and Technical Data). In the case of activities under this MOU that might result in the death of, or serious injury to, persons, or substantial loss of, or damage to property, the Parties agree to establish a process for investigating each close call, mishap, or mission failure.

ARTICLE 18 – ORBITAL DEBRIS AND SPACECRAFT DISPOSAL

1. The Parties shall ensure application of space debris mitigation measures based on their respective applicable space debris mitigation policies and requirements, consistent with the Space Debris Mitigation Guidelines of the United Nations Committee On the Peaceful Uses of Outer Space, endorsed by the United Nations General Assembly in its Resolution 62/217 of December 22, 2007.

2. In furtherance of the previous paragraph, the Parties agree that with respect to the LPF spacecraft, ESA shall plan for the mitigation of orbital debris, including the passivation and disposal of the LPF at the end of its mission, as well as conjunction assessments as part of the mission planning process. As both Parties share the objectives of preserving lunar sites of historic and scientific value, and of avoiding harmful interference with lunar surface activities carried out by others, each Party shall ensure that its respective spacecraft, the CLPS lander (for NASA) and LPF (for ESA), conduct its lunar surface (including end of mission) activities with due regard to such sites and activities. To this end, NASA shall endeavor to provide guidance to ESA, as appropriate and consistent with NASA technical recommendations applicable to lunar historic sites, published in 2011.

ARTICLE 19 – PLANETARY PROTECTION

For cooperative activities pursued under this MOU, the Parties shall apply 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, put in place on June 3, 2021.

ARTICLE 20 – CONSULTATION AND SETTLEMENT OF DISPUTES

The Parties shall consult with each other promptly when events occur or matters arise that may call into question the interpretation or implementation of the terms of this MOU. Any issue in the interpretation or implementation of this MOU that cannot be resolved by the designated representatives shall be referred for settlement to the ESA Director in charge of Human and Robotic Exploration and the NASA Associate Administrator for the Science Mission Directorate, or their designees. If they are unable to come to resolve the matter, then the issue shall be referred to the Director General of ESA and the Administrator of NASA, or their designees. If an issue not resolved through consultation still needs to be resolved, the Parties may agree to submit the dispute to an agreed-upon form of dispute resolution.

ARTICLE 21 – ENTRY INTO FORCE, DURATION, AND TERMINATION


1. This MOU shall enter into force upon signature by both Parties. This MOU shall remain in force until six years from the date of launch of the LPF spacecraft, unless extended by written agreement of the Parties, or terminated in accordance with Article 21.2 below.
2. Either Party may terminate this MOU at any time by giving the other Party at least 12 months written notice of its intent to terminate. In the event of termination, the terminating Party shall endeavour to minimize any negative impact of such termination on the other Party.
3. This MOU may be amended at any time by mutual written agreement of the Parties.

4. Notwithstanding termination or expiration of this MOU, the rights and obligations of the Parties set forth in Article 8 (Transfer of Goods and Technical Data), Article 9 (Intellectual Property Rights), Article 10 (Release of Results and Public Information), Article 11 (Financial Arrangements), Article 12 (Customs Clearance and Movement of Goods), Article 15 (Liability and Risk of Loss), Article 16 (Registration, Jurisdiction, and Control), Article 17 (Mishap Investigation), Article 18 (Orbital Debris and Spacecraft Disposal) and Article 19 (Planetary Protection) shall continue to apply, unless otherwise agreed upon by the Parties.

IN WITNESS WHEREOF, the undersigned duly authorized representatives of the Parties have signed this MOU, in two originals, in the English language.


Done at Noordwijk, The Netherlands on June 15, 2022.

For the National Aeronautics and Space
Administration



Bill Nelson
Administrator

For the European Space Agency



Josef Aschbacher
Director General