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**Committee on the Peaceful  
Uses of Outer Space****Information furnished in conformity with the Convention  
on Registration of Objects Launched into Outer Space****Letter dated 20 December 2018 from the Legal Services  
Department of the European Space Agency addressed to the  
Secretary-General**

In accordance with the Convention on Registration of Objects Launched into Outer Space (General Assembly resolution 3235 (XXIX), annex), the rights and obligations of which the European Space Agency (ESA) has declared its acceptance of, the Agency has the honour to transmit information regarding four space objects launched into Earth orbit or beyond and duly registered in the Agency's space object registry upon their respective launches (see annex I), and the successful transfer into a graveyard orbit and subsequent passivation of one space object previously registered by the Agency (see annex II).

In addition to the space objects notified herewith, on 7 November 2018, the Metop-C satellite developed by the Agency, owned and operated by the European Organization for the Exploitation of Meteorological Satellites (EUMETSAT), was launched. The space object will be registered by EUMETSAT pursuant to respective bilateral agreements.

*(Signed)*

**Marco Ferrazzani**  
ESA Legal Counsel and  
Head of the Legal Services Department



## Annex I

### Registration data on space objects launched by the European Space Agency\*

#### Atmospheric Dynamics Mission Aeolus (ADM-Aeolus)

##### Information provided in conformity with the Convention on Registration of Objects Launched into Outer Space

|  |  |
|--|--|
| Committee on Space Research international designator | 2018-066A  |
| Name of space object                                 | Atmospheric Dynamics Mission Aeolus (ADM-Aeolus)   |
| State of registry                                    | European Space Agency (ESA)  |
| Date and territory or location of launch             | 22 August 2018 at 2120 hours, 09 seconds UTC; Europe's Spaceport, Kourou, French Guiana  |
| Basic orbital parameters                             |  |
| Nodal period   | 90.72 minutes  |
| Inclination  | 96.7 degrees   |
| Apogee   | 314 kilometres   |
| Perigee  | 309 kilometres   |
| General function of space object                     | Aeolus is the first satellite mission to acquire profiles of the Earth's wind on a global scale. These near real-time observations will improve the accuracy of numerical weather and climate prediction and advance our understanding of tropical dynamics and processes relevant to climate variability. Aeolus is the fifth in the family of ESA Earth Explorer missions that address key scientific challenges identified by the scientific community and demonstrate breakthrough technology in observation techniques. The satellite carries a Doppler wind lidar called Aladin that will probe the lowermost 30 km of the atmosphere to measure the winds sweeping around our planet, providing data to improve the quality of weather forecasts and to contribute to long-term climate research. |

##### Additional voluntary information for use in the Register of Objects Launched into Outer Space

|                                |            |
|--------------------------------|------------|
| Space object owner or operator | ESA        |
| Launch vehicle                 | Vega VV-12 |

\* The information was submitted using the form prepared pursuant to General Assembly resolution [62/101](#) and has been reformatted by the Secretariat.

## BepiColombo

### Information provided in conformity with the Convention on Registration of Objects Launched into Outer Space

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|--|--|
| Committee on Space Research international designator | 2018-080A  |
| Name of space object                                 | BepiColombo  |
| State of registry                                    | ESA  |
| Date and territory or location of launch             | 20 October 2018 at 0145 hours, 28 seconds UTC; Europe's Spaceport, Kourou, French Guiana   |
| Basic orbital parameters                             | Not applicable. Interplanetary trajectory to Mercury   |
| General function of space object                     | BepiColombo is a joint mission of ESA and the Japan Aerospace Exploration Agency to the planet Mercury, executed under ESA leadership. The mission comprises two spacecraft: the Mercury Planetary Orbiter (MPO) and the Mercury Magnetospheric Orbiter (MMO). For the launch and the journey to Mercury, MPO and MMO will be carried as part of the Mercury Composite Spacecraft (MCS). MCS comprises, in addition to the two orbiters, the Mercury Transfer Module. The mission will perform a comprehensive study of Mercury, including characterization of its magnetic field and magnetosphere, and both its interior and surface structure. Its arrival is planned for December 2025, after a flyby of Earth, two flybys of Venus and six flybys of Mercury. |

### Additional voluntary information for use in the Register of Objects Launched into Outer Space

|   |  |
|---|--|
| Space object owner or operator          | ESA  |
| Launch vehicle                          | Ariane 5   |
| Celestial body space object is orbiting | Mercury (after a series of planetary swing-by manoeuvres, insertion into Mercury's orbit is expected in December 2025) |

## European Student Earth Orbiter (ESEO)

### Information provided in conformity with the Convention on Registration of Objects Launched into Outer Space

|  |   |
|--|---|
| Committee on Space Research international designator | 2018-099AL  |
| Name of space object                                 | European Student Earth Orbiter (ESEO)   |
| State of registry                                    | ESA   |
| Date and territory or location of launch             | 3 December 2018 at 1834 hours, 0 seconds UTC; Vandenberg Air Force Base, California, United States of America |
| Basic orbital parameters                             |   |
| Nodal period   | 96.30 minutes   |

|                                  |   |
|----------------------------------|---|
| Inclination                      | 97.77 degrees   |
| Apogee                           | 590 kilometres  |
| Perigee                          | 572 kilometres  |
| General function of space object | ESEO is an educational CubeSat launched into a sun-synchronous orbit with an orbital period of approximately 94 minutes. During the operational phase of its mission, ESEO will carry out several scientific experiments and test various technology demonstrators designed and built by students, constantly monitoring its own performance. The nominal duration of the mission is six months, with the possibility of a one-year extension. At the end of its mission, ESEO will deploy a sail that will accelerate its re-entry and burn-up in the atmosphere by means of increased atmospheric drag. ESEO is compliant with the respective space debris mitigation guidelines. |

**Additional voluntary information for use in the Register of Objects Launched into Outer Space**

|                                |  |
|--------------------------------|--|
| Space object owner or operator | ESA ownership after on-orbit commissioning |
| Launch vehicle                 | Falcon 9                                   |

**Sentinel-3B**

**Information provided in conformity with the Convention on Registration of Objects Launched into Outer Space**

|  |   |
|--|---|
| Committee on Space Research international designator | 2018-039A   |
| Name of space object                                 | Sentinel-3B   |
| State of registry                                    | ESA   |
| Date and territory or location of launch             | 25 April 2018 at 1757 hours, 38 seconds UTC; Plesetsk Cosmodrome, Russian Federation  |
| Basic orbital parameters                             |   |
| Nodal period   | 100.9 minutes   |
| Inclination  | 98.68 degrees   |
| Apogee   | 803 kilometres  |
| Perigee  | 802 kilometres  |
| General function of space object                     | The Sentinel-3B satellite mission forms part of the European Copernicus programme. It is primarily an ocean-related mission, but is also able to provide atmospheric and land applications, and as such, data continuity for the ERS, Envisat and SPOT satellites. Sentinel-3B makes use of multiple sensing instruments, including a sea and land surface temperature radiometer, the ocean and land colour instrument, a synthetic aperture radar (SAR) altimeter, and a microwave radiometer. Sentinel-3B operates in tandem with its identical predecessor, Sentinel-3A.<br><br>Pursuant to the Agreement between the European Union, represented by the European Commission, |

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and the European Space Agency on the Implementation of the Copernicus Programme, including the Transfer of Ownership of the Sentinels (Copernicus Agreement), which entered into force on 28 October 2014, ownership of Sentinel-3B was transferred to the European Union at the moment of lift-off of the satellite's launch vehicle.

**Additional voluntary information for use in the Register of Objects  
Launched into Outer Space**

|                                |  |
|--------------------------------|--|
| Space object owner or operator | Owner: European Union<br>Operator: ESA |
| Launch vehicle                 | Rokot-KM                               |

## Annex II

### Additional information on a space object previously registered by the European Space Agency\*

#### Advanced Relay and Technology Mission (Artemis) satellite

##### Information provided in conformity with the Convention on Registration of

##### Objects Launched into Outer Space

|  |  |
|--|--|
| Committee on Space Research international designator | 2001-029A  |
| Name of space object                                 | Advanced Relay and Technology Mission (Artemis) satellite                  |
| Registration documents                               | <a href="#">ST/SG/SER.E/432</a> ;<br><a href="#">ST/SG/SER.E/432/Add.1</a> |

##### Additional voluntary information for use in the Register of Objects Launched into Outer Space

##### Change of status in operations

|   |  |
|---|--|
| Date when space object was no longer functional                     | 15 November 2017   |
| Date when space object was no longer operational                    | 30 October 2017  |
| Physical conditions when space object was moved to a disposal orbit | Having reached the end of its mission life while being operated at a location of 123.0 degrees East, Telespazio SpA, under the authority of Avanti Communications Group PLC, and with specialist subsystem support provided by the manufacturer, commenced Artemis deorbit operations on 30 October 2017 with a sequence of 32 easterly manoeuvres over 16 days, with the aim of achieving a minimum target altitude of 272 km above the geostationary orbit, in line with the recommended guidelines on geostationary spacecraft end-of-life disposal of the Inter-Agency Space Debris Coordination Committee. The first deorbit manoeuvre was executed on 30 October 2017 near perigee and the last on 14 November 2017 near apogee. Subsequently, passivation activities commenced on 15 November 2017, one day after the last orbit-raising manoeuvre. Following completion of all possible passivation activities, the final disposal orbit was reported to have the following characteristics: |
| Mean semi-major axis  | 42,444.4073 km   |
| Mean eccentricity   | 0.000702   |
| Mean orbital altitude   | Approximately 280 km above geostationary orbit   |

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Minimum altitude above geostationary orbit (perigee altitude)      Approximately 250 km

Geostationary orbit position      Drifting

The UK Space Agency has independently confirmed the final orbit and is satisfied that Avanti personnel have completed all practicable disposal measures consistent with current best practice, given the design and operational constraints presented by the spacecraft. As such, the licence issued by the UK Space Agency under the Outer Space Act of the United Kingdom of Great Britain and Northern Ireland ceased with immediate effect at the end of the passivation activities, as the satellite was no longer considered to be operational.

Change of function of space object      Decommissioned

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