The United Nations Register of Objects Launched into Outer Space

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General Assembly resolution 1721 B (XVI)

- Two separate, yet complementary, registers on objects launched into outer space maintained by the United Nations Office for Outer Space Affairs (UNOOSA).
- First register established in 1961 in accordance with GA resolution 1721 B (XVI) of 20 December 1961.
- Still used to disseminate information received from Member States who are not party to the Registration Convention.
  - The most recent submission was from Luxembourg (A/AC.105/INF.420).
- As of 1 November 2009, UNOOSA has issued 420 documents under GA resolution 1721 B (XVI) containing registration data on nearly 6,000 space objects.
- Voluntary registration information has been provided by Algeria, Brazil, Egypt, Israel, Italy, Luxembourg, Malaysia, Nigeria, the Philippines, Saudi Arabia, Thailand, Turkey and Venezuela.

Registration Convention

- **Adopted by the UN General Assembly: 12 November 1974 (resolution 3235 (XXIX)),**
  - Opened for signature on 14 January 1975, entered into force on 15 September 1976.
  - Supersedes General Assembly resolution 1721 B (XVI) of 20 December 1961.

- **As of 1 November 2009, there were 54 ratifications and 4 signatures:**
  - Algeria, Antigua and Barbuda, Argentina, Australia, Austria, Belarus, Belgium, Brazil, Bulgaria, Burundi (Signature only), Canada, Chile, China, Cuba, Cyprus, Czech Republic, Democratic People's Republic of Korea, Denmark, France, Germany, Greece, Hungary, India, Indonesia, Islamic Republic of Iran (S), Italy, Japan, Kazakhstan, Lebanon, Liechtenstein, Mexico, Mongolia, Montenegro, Netherlands, Nicaragua (S), Niger, Nigeria, Norway, Pakistan, Peru, Poland, Republic of Korea, Russian Federation, Saint Vincent and the Grenadines, Serbia, Seychelles, Singapore (S), Slovakia, Spain, Sweden, Switzerland, Turkey, Ukraine, United Arab Emirates, United Kingdom, United States of America, Uruguay.
  - Most recent ratifications by the Democratic People's Republic of Korea in March 2009; and Nigeria in July 2009.

- **Two international organizations have declared their acceptance of rights and obligations:**
  - European Space Agency (ESA); and
  - European Organization for the Exploitation of Meteorological Satellites (EUMETSAT).

  - France registers satellites on behalf of European Telecommunications Satellite Organization (EUTELSAT) until EUTELSAT makes declaration under Article VII of the Convention.
    - In 2008, EUTELSAT informed UNOOSA that it has started internal procedures for such declaration.

Objective and function of the United Nations Register on Objects Launched into Outer Space

- **The main objective and function of the Register:**
  - "make provision for the national registration by launching States of objects launched into outer space";
  - serve as a "central register" of objects launched into outer space;
  - "provide for State parties additional means and procedures to assist in the identification of space objects";
  - To provide data needed by other treaties;
  - No distinction between civil and military space objects: Major space-faring nations register satellites for military and intelligence purposes

Few facts about the UN Register

- **Article III of the Registration Convention requires:**
  - The Secretary General shall maintain a Register in which information furnished in accordance with article IV shall be recorded";
  - “There should be full and open access to the information in this Register".
- **The Register established at the United Nations Office for Outer Space Affairs (UNOOSA) on behalf of the Secretary General.**
  - first document ST/SG/SER.E/1 issued on 14 April 1977.
- **As of 1 November 2009, UNOOSA has issued 581 documents (ST/SG/SER.E/ series) containing registration data on over 3,600 functional space objects**.
  - The most recent submission was from Germany in October 2009 (ST/SG/SER.E/581).
- **In addition, the Office continues to maintain, and transmit to COPUOS, registration information furnished by Member States on a voluntary basis in accordance with GA resolution 1721 (XVI) B of 20 December 1961**.
  - Such information appears in document series A/AC.105/INF.1-420. Most recent notification by Luxembourg (A/AC.105/INF.420) in July 2009.
- **All registration information is maintained by the Office in printed and electronic form and is updated on a regular basis.**
  - Total number of functional space objects in the electronic Registers at 1 November 2009 is approx 5,800. Figure includes duplicate registrations.
  - About 3,400 are still orbiting around the Earth.

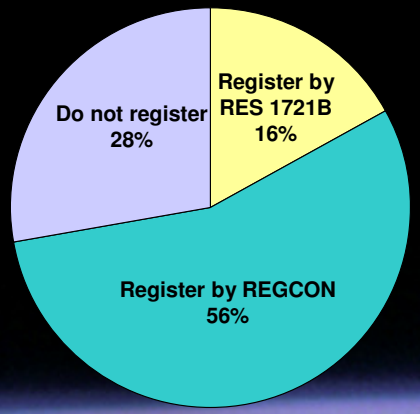
Box-score of functional objects registered in accordance with the Registration Convention and GA resolution 1721B (as of 1 January 2009)

State of Registry	Number of registered space objects	State of Registry	Number of registered space objects
Algeria (1721 B)	1	Korea, Republic of	10
Argentina	5	Luxembourg (1721 B)	17
Australia	11	Malaysia (1721 B)	4
Brazil (1721 B and REGCON)	8	Mexico	2
Canada	24	Nigeria (1721 B)	1
Chile	1	Pakistan	1
China	107	Philippines (1721 B)	1
Czech Republic (incl. Czechoslovakia)	6	Russian Federation (including USSR)	3,243
ESA	42	Saudi Arabia ,(1721 B)	12
EUMETSAT	4	Spain	8
Egypt (1721 B)	1	Sweden	11
France*	90	Thailand (1721 B)	1
Germany	44	Turkey (1721 B and REGCON)	5
Greece	1	Ukraine	3
India*	48	United Arab Emirates	3
Israel (1721 B)	2	United Kingdom	44
Italy (1721 B)	11	United States of America*	1,874
Japan	128	Venezuela	1
Kazakhstan	1		

* Parties who provide registration data on non-functional objects

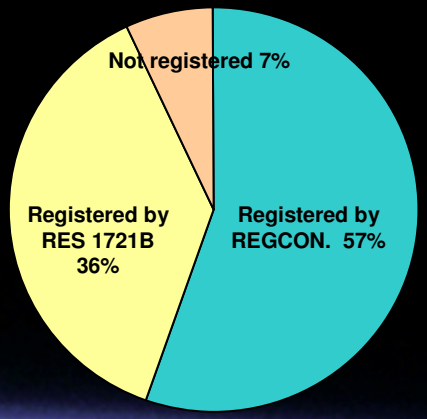
Complementary Nature of the two UN Registers

- **After the entry into force of the Registration Convention, States began providing information on space objects from that period.**
- **However, in some cases States can provide additional information (ie. decay date, non-functionality) of a space object registered under GA resolution 1721 B using the Convention.**
  - Malaysia notified the United Nations that TiungSat-1 (registered in A/AC.105/INF.406) is no longer functional (ST/SG/SER.E/478 of August 2005).
- **Some States have re-registered all their space objects under the Registration Convention. Most recent example: France (ST/SG/SER.E/445 of March 2004).**
  - In such cases, the space objects are removed from the resolution-established Register and placed in the Convention Register. A notation that the object was formerly registered in the Resolution Register is made.
- **Information provided by Member States under GA resolution 1721 B (XVI) since 1976 is similar to that provided by States in accordance with the Registration Convention.**



Space Nations & registration

- Of all "space nations", 72% have provided the UN with information on their space objects.
- In the recent years, as more nations launch/operate satellites, non-registration has increased.
- UNOOSA works with States of registry to ensure registration information provided is accurate and harmonized.
- **Between the two registers, 93% of all functional space objects have been registered.**



Functional space objects launched

Information required under the Registration Convention: Article IV

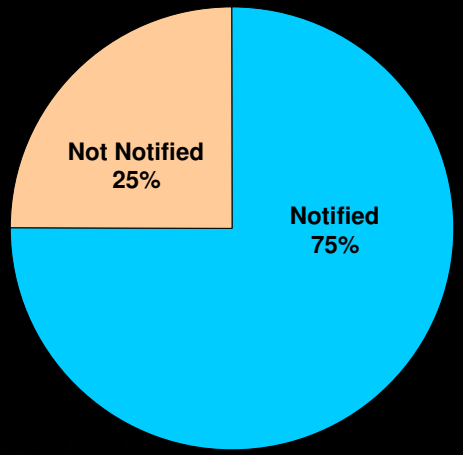
- **Information to be furnished to the United Nations by parties to the Registration Convention (Article IV para.2):**
  - (a) name of launching State or States;
  - (b) an appropriate designator of the space object or its registration number;
  - (c) date and territory or location of launch;
  - (d) basic orbital parameters, including:
    - (i) nodal period;
    - (ii) inclination;
    - (iii) apogee;
    - (iv) perigee;
  - (e) general function of the space object.

- Article IV, para.3 requires "[e]ach State of registry shall notify the Secretary-General of the United Nations, to the greatest extent feasible and as soon as practicable, of space objects concerning which it has previously transmitted information, and which have been but no longer are in earth orbit"

Application of the Registration Convention: National Registries

- Article II requires "[w]hen a space object is launched into earth orbit or beyond, the launching State shall register the space object by means of an entry in an appropriate registry which it shall maintain. Each launching State shall inform the Secretary-General of the United Nations of the establishment of such a registry.

- In practice, when a Party has established a National Registry they communicate the information to the UN in the form of a Note Verbale. The information is disseminated as a document in the ST/SG/SER.E/INF. series.
  - 53% of Parties who have space objects have notified the Secretary-General of the establishment of national registries.
  - Several Parties have informed UNOOSA that they are in the process of establishing national registries and informing the Secretary-General.
  - Most recent notification from the Netherlands (ST/SG/SER.E/INF.24 of August 2009)



- Article II also requires that "[w]here there are two or more launching States in respect of any such space object, they shall jointly determine which one of them shall register the object…"
  - Example: Greece and Cyprus jointly decided that Greece would register the Greek-Cypriot communications satellite HELLASSAT-2 (ST/SG/SER.E/446 of March 2004).

Application of the Registration Convention: Registration of Space Objects

- **Parties to the Convention usually provide the following:**
  - name of launching State or States
  - common name of the space object
  - COSPAR international designator:
    - an alpha-numeric designator (nominally assigned by the World Data Center for Satellite Information on behalf of COSPAR) based on the year, no. of launches that year and deployment sequence/priority
  - date and territory or location of launch
    - most parties use GMT/UTC
  - basic orbital parameters, including:
    - nodal period (time taken by object to complete one orbit – minutes)
    - inclination (angle made by the orbit relative to the equator – degrees)
    - apogee (highest point of the orbit relative to the surface – kilometers)
    - Perigee (lowest point of the orbit relative to the surface – kilometers)
  - general function of the space object
    - Brief explanation of the purpose of the objects. Can be a one word description (ie. Communications) or detailed (listing payload, radio frequencies, etc.)

Application of the Registration Convention: Registration of Space Objects

- **Some Parties to the Convention also provide the following:**
  - GSO location (where appropriate).
  - Date of decay/reentry of the space object.
  - Lifetime expectancy of space object.
  - Notification that the object is no longer functional or has been placed in a disposal orbit (usually applies to GSO satellites).

Mechanism for submitting registration information

- **The United Nations receives information from Permanent Missions accredited to the UN.**
  - Format: Note Verbale or Letter addressed to the Secretary-General.
    - To facilitate processing, some Parties provide electronic versions of their information (ie. MS Word file).
  - Information received is disseminated as a document in the ST/SG/SER.E/ series.

Online Index of Objects Launched into Outer Space

- Web-database containing information received from Member States and also complementary information collected from external sources on all functional objects launched into outer space since 1957.
- Space debris and non-functional objects are not included.
- Search could be performed using different parameters (name, international designator, launching State, date of launch, orbital status, etc.)
- Provides links between space objects and their relevant documents of registration. This way, every user can download and print any registration document.
- Also provides links to additional information transmitted to the UN (ie. Information provided under NPS Principles)
- Can be access through the UNOOSA website:

http://www.unoosa.org/oosa/osoindex.html

Online Index of Objects Launched into Outer Space

- Example: search criteria ‘Sweden”

0-11 of 11

International Designator	Name of Space Object	State/ Organization	Date of Launch	GSO Location	Nuclear Power Source	UN Registered	Document of Registration	Status	Date of Decay or Change	Document of Decay or Change	Function of Space Object	Remarks	External Web Site
1986-019B	VIKING	Sweden	22/02/1986	------	------	Yes	ST/SG/SER.E/145	in orbit		ST/SG/SER.E/167 ST/SG/SER.E/352	Scientific satellite for investigation of space plasma physics in the part of the magnetosphere close to the Earth, particularly in connection with the auroral phenomena. (see reg. document for full text)	------	LINK
[1989-027A]	TELE-X	Sweden	02/04/1989	+5 degrees East	------	Yes	ST/SG/SER.E/203	in GSO		ST/SG/SER.E/335 ST/SG/SER.E/352	High power telecommunications satellite with a dual mission: direct TV-broadcasting and data communication. (see reg. document for full text)	Satellite deactivated and transferred to graveyard orbit +300km GSO (ST/SG/SER.E/335)	
1989-067A	BSB-1 (SIRIUS 1 (MARCOPOLO 1))	Sweden (from UK)	27/08/1989	-31, +5.2, -13 degrees East	------	Yes	ST/SG/SER.E/352	in GSO		ST/SG/SER.E/219 ST/SG/SER.E/518	Direct Broadcasting Satellite	Bought in orbit by Sweden from UK in 1996. Reported as being reorbited to approx. 300 km above the geostationary orbit in ST/SG/SER.E/518.	
1992-064A	FREJA	Sweden	06/10/1992	------	------	Yes	ST/SG/SER.E/257	in orbit		ST/SG/SER.E/318 ST/SG/SER.E/352	Swedish/German satellite designed for research into the aurora. (see reg. document for full text)	Ceased to function as of 14/10/1996 (ST/SG/SER.E/318)	LINK
1995-002B	ASTRID	Sweden	24/01/1995	------	------	Yes	ST/SG/SER.E/280	in orbit	[27/09/1995]	ST/SG/SER.E/284 ST/SG/SER.E/311 ST/SG/SER.E/352	ASTRID carried scientific instruments designed to investigate near-space plasma with emphasis on neutral particle phenomena. (see reg. document for full text)	------	LINK
1997-071A	SIRIUS 2	Sweden	12/11/1997	+4.8 degrees East	------	Yes	ST/SG/SER.E/336	in GSO		ST/SG/SER.E/352	High power television broadcasting and data communication. 32 active transponders with redundancy; power output 57-85W per transponder. Three coverage areas within Europe. Mission period estimated to be 15 years.	------	

Registration practice: Concerns

- The United Nations Register of Objects Launched into Outer Space is the sole source of information provided by governments and international organisation on all types of space objects.
- All States involved in the launching or operation of space objects should be party to the Registration Convention.
- Where a space object's launch and operation involves several States, parties should determine who is the State of Registry.
- Change of ownership in orbit.
- Use of common format of information assists the function of the Register:
  - Use COSPAR International Designator.
  - Use GMT/UTC.
  - Use kilometers, minutes and degrees as standard units.
  - Final operational orbit of a space object.
- Additional information that would be useful to facilitate the maintenance of the Register:
  - GSO location.
  - Date of decay/re-entry based on GMT/UTC.
  - Web-link to official information on space object.
  - Notification when a space object is no longer "functional"/moved to graveyard orbit.

Registration practice: Legal Subcommittee working group on registration practice 2005-2007

- 2004: Presentation by Member States and international organizations of reports on their practices in registering space objects and submitting the required information to the Office for Outer Space Affairs for inclusion on the Register.
- 2005: Examination by a working group of the reports submitted by Member States and international organizations in 2004.
- 2006: Identification of the working group of common practices and drafting of recommendations for enhancing adherence to the Registration Convention.
- 2007: Report to the Committee on the Peaceful Uses of Outer Space.

- Harmonization of practices (administrative and practical).
- Non-registration of space objects.
- Practice with regard to transfer of ownership of space objects in orbit.
- Practice with regard to registration/non-registration of ”foreign” space objects.

- UNGA resolution 62/101 of 17 December 2007 on ”Recommendations on enhancing the practice of States and international intergovernmental organizations in registering space objects”:
  - Preamble: Benefits of becoming Party to Convention; obligations of Parties; positive effects of universal acceptance.
  - Four sets of recommendations: 1) Adherence; 2) Harmonization of practice; 3) Achieving the most complete registration; 4) Change in supervision of a space object in orbit.
  - Request to UNOOSA for model registration form, make public links; recommendation to States and intergovernmental organizations to report on new developments.

UNITED NATIONS REGISTER OF OBJECTS LAUNCHED INTO OUTER SPACE

Registration Information Submission Form (as at 1 January 2009)

Note: This form is available from http://www.unoosa.org/oosa/SORegister/resources.html. Please see annex for instructions and definitions. Completed forms should be sent by hardcopy through Permanent Missions to UNOOSA **and** electronically to soregister@unoosa.org.

Part A: Information provided in conformity with the Registration Convention or General Assembly resolution 1721 B (XVI)

New registration of space object	**Yes** ☐	Check box
Additional information for previously registered space object (see below for reference sources)	**Submitted under the Convention: ST/SG/SER.E/** _____ **Submitted under resolution 1721B: A/AC.105/INF.** _____	UN document number in which previous registration data was distributed to Member States
Launching State/ States / international intergovernmental organization		
State of registry or international intergovernmental organization		Under the Registration Convention, only one State of registry can exist for a space object. Please see annex.
Other launching States (where applicable. Please see attached notes.)		
Designator		
Name		
COSPAR international designator (see below for reference sources)		
National designator/ registration number as used by State of registry		
Date and territory or location of launch		
Date of launch (hours, minutes, seconds optional)	dd/mm/yyyy hrs min sec	Coordinated Universal Time (UTC)
Territory or location of launch (see below for reference sources)		
Basic orbital parameters		
Nodal period		minutes
Inclination		degrees
Apogee		kilometres
Perigee		kilometres
General function		
General function of space object (if more space is required, please include text in a separate MSWord document)		
Change of status		
Date of decay/ reentry/ deorbit (hours, minutes, seconds optional)	dd/mm/yyyy hrs min sec	Coordinated Universal Time (UTC)

Sources of information

UN registration documents	http://www.unoosa.org/oosa/SORegister/docsstatidx.html
COSPAR international designators	http://nssdc.gsfc.nasa.gov/spacewarn/
Text of the Registration Convention and resolution 1721 B (XVI)	http://www.unoosa.org/oosa/SORegister/resources.html
Global launch locations	http://www.unoosa.org/oosa/SORegister/resources.html
Online Index of Objects Launched into Outer Space	http://www.unoosa.org/oosa/osoindex.html

UNITED NATIONS REGISTER OF OBJECTS LAUNCHED INTO OUTER SPACE

Part B: Additional information for use in the United Nations Register of Objects Launched into Outer Space, as recommended in General Assembly resolution 62/101

Change of status in operations		
Date when space object is no longer functional (hours, minutes, seconds optional)	dd/mm/yyyy hrs min sec	Coordinated Universal Time (UTC)
Date when space object is moved to a disposal orbit (hours, minutes, seconds optional)	dd/mm/yyyy hrs min sec	Coordinated Universal Time (UTC)
Physical conditions when space object is moved to a disposal orbit (see COPUOS Space Debris Mitigation Guidelines)		
Basic orbital parameters		
Geostationary position (where applicable, planned/actual)		degrees East
Additional Information		
Web-site:		

Part C: Information relating to the change of supervision of a space object, as recommended in General Assembly resolution 62/101

Change of supervision of the space object		
Date of change in supervision (hours, minutes, seconds optional)	dd/mm/yyyy hrs min sec	Coordinated Universal Time (UTC)
Identity of the new owner or operator		
Change of orbital position		
Previous orbital position		degrees East
New orbital position		degrees East
Change of function of the space object		

Part D: Additional voluntary information for use in the United Nations Register of Objects Launched into Outer Space

Basic information	
Space object owner or operator	
Launch vehicle	
Celestial body space object is orbiting (if not Earth, please specify)	
Other information (information that the State of registry may wish to furnish to the United Nations)	

Sources of information

General Assembly resolution 62/101	http://www.unoosa.org/oosa/SORegister/resources.html
COPUOS Space Debris Mitigation Guidelines	http://www.unoosa.org/oosa/SORegister/resources.html
Texts of the Registration Convention and relevant resolutions	http://www.unoosa.org/oosa/SORegister/resources.html

Annex

Section A. Instructions for completing the form

1. Download the electronic version of the form from http://www.unoosa.org/oosa/SORegister/resources.html.
2. Reference sources and other resources for completion of the form are available from the above web-link.
3. Review definitions in Section B below and complete the form. If there are any queries, please email soregister@unoosa.org.
4. The **completed hardcopy form** should be sent through official government channels to the relevant Permanent Mission to the United Nations (Vienna) to be formally transmitted to the United Nations.
5. The **completed electronic form** should be sent by the appropriate government entity to the United Nations Office for Outer Space Affairs using email soregister@unoosa.org.

Section B. Definition of terms

Part A: Information provided in conformity with the Registration Convention or General Assembly resolution 1721B (XVI)

Launching State/ States / international intergovernmental organization

State of registry/ international intergovernmental organization:	The State of registry is the launching State which carries the space object on its national registry of objects launched into outer space. The international intergovernmental organization is an organization which has declared its acceptance of the rights and obligations provided for in accordance with Article VII of the Registration Convention. **Note:** In accordance with Article II of the Registration Convention, **only one State of registry can exist for a space object**. When more than one launching State exists, they should jointly determine which State should register the space object.
Other Launching States:	As defined in the Registration Convention, "launching State" means: (i) A State which launches or procures the launching of a space object; (ii) A State from whose territory or facility a space object is launched;

Designator

Name:	The common name/names used to identify the space object.
COSPAR international designator:	Alphanumeric designator assigned by the Committee on Space Research (COSPAR) to space objects that successfully reach Earth orbit or beyond. The SPACEWARN Bulletin (available at http://nssdc.gsfc.nasa.gov/spacewarn) confirms the designators assigned by the World Warning Agency for Satellites on behalf of COSPAR. The designator can also be obtained from the Online Index of Objects Launched into Outer Space at http://www.unoosa.org/oosa/osoindex.html
National designator/ registration number:	Designator or registration number assigned to a space object by the State of registry.

Date and territory or location of launch

Date of launch:	The date of launch of the space object using Coordinated Universal Time (UTC) (also referred to as Greenwich Mean Time (GMT)).
Territory or location of launch:	The territory or location of the launch of the space object. For a table of global launch locations, see http://www.unoosa.org/oosa/SORegister/resources.html.

Basic orbital parameters: Basic data on the space object's orbit around the Earth or a celestial body such as the Sun, Moon, etc. If object is orbiting a body other than Earth, please specify. The parameters are:

Nodal period:	Time taken by the space object to complete one revolution around the body it is orbiting.
Inclination:	The angle relative to the equator of the Earth or celestial body the space object is orbiting. Measured counter-clockwise from the equator.
Apogee:	The furthest distance in the space object's orbit from the surface of the body it is orbiting.
Perigee:	The closest distance in the space object's orbit from the surface of the body it is orbiting.

General function:	General information on the space object. Can include mission objectives, frequency plans, etc. If required, please attach text in a separate page.
Change of Status:	The date of the space object's decay, reentry, recovery, deorbit or landing.

Part B: Additional information for use in the United Nations Register of Objects Launched into Outer Space, as specified in General Assembly resolution 62/101

Change of status in operations

Date when space object is no longer functional:	The date using Coordinated Universal Time (UTC) (also referred to as Greenwich Mean Time (GMT)) when the space object ceases to perform operational functions for the State of registry.
Date when space object is moved to a disposal orbit:	The date using Coordinated Universal Time (UTC) when the space object is moved into a disposal orbit. See COPUOS Space Debris Mitigation Guidelines for recommendations on disposal orbits, http://www.unoosa.org/oosa/SORegister/resources.html.
Physical conditions when space object is moved to a disposal orbit:	The physical conditions when the space object is moved into a disposal orbit. Conditions can include the change in orbit (eg. +300 km above GSO), passivation of the space object and other measures as recommended in the COPUOS Space Debris Mitigation Guidelines.

Basic orbital parameters

Geostationary position:	Applicable only to space objects in the geostationary orbit. Planned and/or actual location of space object in ± degrees East along the equator from the Greenwich meridian (eg. for 10.5 degrees West, use -10.5 degrees East).

Additional Information

Web-site:	Address on the World Wide Web for information on the space object/mission/operator.

Part C: Information relating to the change of supervision of a space object, as recommended in General Assembly resolution 62/101

Change of supervision of the space object

Date of change in supervision:	The date using Coordinated Universal Time (UTC) (also referred to as Greenwich Mean Time (GMT)) when the new owner or operator takes supervision of the space object.
Identity of the new owner or operator:	The identity of the new owner or operator of the space object.

Change of orbital position in the geostationary orbit

Previous orbital position:	The previous operational location of the space object in ± degrees East along the equator from the Greenwich meridian.
New orbital position:	The new operational location of the space object in ± degrees East along the equator from the Greenwich meridian.
Change of function of the space object:	The function of the space object following change in supervision.

Part D: Additional voluntary information for use in the United Nations Register of Objects Launched into Outer Space

Basic information

Space object owner or operator:	The entity that owns or operates the space object.
Launch vehicle:	The launch vehicle used to launch the space object into Earth orbit or beyond.
Celestial body space object is orbiting:	The body that the space object is in orbit around, if not Earth (i.e. the Moon, the Sun, Mars, Jupiter, etc.) .
Other information:	Information relating to the space object that the State of registry may wish to furnish to the United Nations.

THANK YOU

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