

FRENCH POLICY AND PRACTICES FOR THE REGISTRATION OF SPACE OBJECTS

Jean-Yves Trebaol

*Centre National d'Etudes Spatiales, Directotote of Strategy, Programmes and International Relations
Multilateral Affairs Advisor, 2 Place Maurice Quentin 75039 Paris-Cedex - France
E.mail: jean-yves.trebaol@cnes.fr – Tel: +33 1 44 76 77 54 – Fax: +33 1 44 76 78 49*

1. CURRENT POLICY AND PRACTICES

1.1. National registry

- ◆ France has signed and ratified the Convention on Registration of Objects launched in Outer Space.
- ◆ France has a national registry for space objects and has informed the Secretary-General of the United Nations of the establishment of such a registry according to Article II of this Convention.
- ◆ This registry is established and maintained by the Directorate of International Affairs from CNES.
- ◆ This registry is then transmitted to the Ministère des Affaires Etrangères (Foreign Affairs Ministry) which is the official holder of the national registry.
- ◆ The Foreign Affairs Ministry transmits, to the Secretary-General, via the Mission Permanente in Vienna, on a 6-months basis, the information furnished in accordance with Article IV of the Convention.
- ◆ **Currently all the information listed in the national registry is transmitted to Secretary-General.**

1.2. France: launching State and State of Registry

1.2.1. France may be considered as Launching State for one or several of these criteria:

- ◆ a State which launches or procures the launch:
National satellites
- ◆ a State whose territory a space object is launched:
French Guiana
- ◆ a State whose facility a space object is launched :
Guiana Space Center

1.2.2. What is a space object for France ?

For the definition of a space object, France has interpreted the terms of the Convention as follows:

- ◆ a space object is a spacecraft whatever is its status: active or inactive (derelict).
- ◆ a space object is a part of a launched spacecraft when this spacecraft is separated in several parts, deliberately (such as separation of an Apogee Kick Motor) or involuntarily (break up)

- ◆ a space object is a launcher stage which remains in orbit after the launching mission is complete.
- ◆ a space object is a part of the launcher which remains in orbit after the mission is complete, such as belt, spacecraft adapter, inter-satellites structure when it is a multiple launch.
- ◆ a space is object is a part of an in-orbit launcher stage when a fragmentation occurs (so called debris..).

1.2.3. When France considers itself as a State of Registry ?

- ◆ France is Launching State and State of Registry for all the national spacecraft wherever the launch occurs.

Note: France considers a spacecraft as “national” whenever it is belonging to a governmental or non governmental organization, or to a national private company in the sense of body incorporated under the French law.

- ◆ France is Launching State and State of Registry for the parts of a launched and previously registered spacecraft when a break up occurs and when identified.
- ◆ France was Launching State and State of Registry for the satellites belonging to Eutelsat, international organization whose headquarters is located in France, according to a special agreement between France and this organization (whose France is Party)., whatever was the launch territory.
- ◆ France is Launching State and State of Registry for a launcher when France is the launch territory except if other dispositions are jointly agreed, according to Article II, para 2 of the Convention. This applies particularly for the so-called “qualification launches” of the launcher programs developed under the project management of the European Space Agency, ESA, international organization which has also declared its acceptance of the rights and obligations provided for in this Convention.
- ◆ France is Launching State and State of Registry for the parts of a previously registered launcher upper stage or parts thereof when a break up occurs and when identified.

1.3. Procedure for registration.

1.3.1. Registration of national satellites

As soon as possible after the launch is complete, the spacecraft operator (governmental or non governmental organization) provides CNES with all the relevant information concerning the launched satellite and at least:

- Name of the satellite
- Date and territory of location of launch
- Launcher type
- Basic orbital parameters at injection into orbit and possibly for the mission phase
- General function of the space object

And whenever it's possible, supplementary information such as:

- Frequency plan
- In-orbit life duration
- And any other useful information

1.3.2. Registration of launcher elements

As soon as possible after the launch is complete, the launch operator provides CNES with all the information concerning the launcher elements placed into orbit, mainly upper stage and launcher elements such as adapters, belts, inter-satellites structures .. The minimum required information is:

- Launcher type
- Launch site
 - Date and time of the launch
 - Function of each element
 - Basic orbital parameters at injection into orbit of the different elements

The launch operator provides also , **for information only**, the name(s) of the state(s) or organization(s) which procure the launch or the presumed state membership of the private company (s) which procures the launch.

CNES updates the national registry in identifying each of these objects with the International Satellite Identification provided by COSPAR.

1.3.3. Registration of fragmented parts of spacecraft and launcher elements

On a two-month basis the CNES updates also this registry in integrating fragmented parts of previously launched spacecraft or launcher elements when a break up is identified and documented in the Satellite Situation Report published by NASA /GSFC.

1.3.4. Providing the UN Secretary-General with additional information (Article IV para 2 of the Convention)

On the six-monthly update basis France provides the UN Secretary-General with the following additional information concerning the national satellites:

- ◆ Update of the national satellites catalog in LEO or MEO orbits and still in activity.
- ◆ Update of the national satellites catalog in GEO orbit and in activity with their current orbital position.
- ◆ Update of the national satellites catalog no longer in activity.
- ◆ Maneuvers performed on spacecraft (de-orbiting and re-orbiting) to comply as much as possible with the IADC recommendations and European Code of Conduct guidelines.

1.3.5. Notification to the Secretary-General of the United Nations of national registered space objects which have been but no longer are in orbit (Art IV para 3)

On a regular basis CNES identifies the potential decays of national objects in consulting the Sixty Day Decay Forecast Report, as well as the Decay Prediction Report Response issued by NASA/GSFC, and confirms the reentry of such objects via the two-monthly Satellite Situation Report.

On the six-monthly update basis, France provides the UN Secretary-General with this information.

2. PENDING ISSUES

2.1. Registration of so-called debris

France has chosen to register on its national registry the fragments of spacecraft and launcher when a breakup occurs. The relevant information is issued from the Satellite Situation Report published by NASA/GSFC. This information recorded on the national registry is transmitted to the UN Secretary-General.

The registration of debris resulting from an in-orbit fragmentation of a launched and registered space object is controversial among COPUOS members.

Some recommend to register these objects only on the national registry without communication to the UN. Some others don't even recommend any registration as the data source is unique and as the number of fragments effectively in space is much greater than the ones identified in the SSR.

Pending a formal recommendation of the COPUOS or a directive of a national law (currently in an elaboration process), France will go on with the current practice.

2.2. Absence of registration of foreign spacecraft launched from the French territory

- ◆ It is tacitly agreed between the launch operator and the organization or company which procures the launch that the launch operator will take all appropriate actions to have the launcher elements registered by France. and that the customer will do what is required to comply with its national policy.

In the absence of a French space law and licensing procedure, neither the launch operator nor France has the ability to compel the customer to do so.

Consequently over 250 satellites launched by Ariane in the last two decades, 25% are not registered by their supposed State or International Organization of belonging:

- ❖ Except for Eutelsat, for which France had a special agreement to register the satellites, and for ESA, and Eumetsat which have declared their acceptance of the rights and obligations of the Convention, none of satellites belonging to International Organizations (former or current), and launched by Ariane from the Guiana Space Center, are registered (Intelsat, Inmarsat, Arabsat..)
- ❖ An important amount of telecommunications satellites belonging to private foreign national or international companies are not registered (Türksat, Nilesat, Brazilsat, NSS, Satmex, Palapa, Thaicom..)

In total 22% of these spacecraft should depend on States / Organization having ratified the Convention and 78% having not

- ◆ A marginal case concerns a spacecraft placed on a wrong orbit (after a partial launch failure) which was originally a launch contract from a manufacturer/country X for an in-orbit, keys-in-hand delivery for a customer/country Y. Neither the manufacturer/country X, nor the customer/country Y feel concerned by the registration of this object, although these two countries generally strictly apply the Convention.

2.3. Possible improvements

- ◆ Consciousness raising campaign by the UN Bureau of Space Affairs ?
- ◆ Awareness of the company procuring the launch by representatives of the Foreign Affairs Ministry before signature of the launch contract ?
- ◆ Possibly sending a diplomatic note when the launch is complete to the supposed State of belonging of the spacecraft owner ?

- ◆ But, of course, the best improvement would be to have a national space law accompanied of licensing mechanisms which will limit to the greatest possible extent these non-conformances.

3. SPECIFICITIES

3.1. Bi or multilateral Agreements for registering space objects

- ◆ The French Government was acting on behalf of European Space Research Organization, ESRO member States (Belgium, Denmark, Federal republic of Germany, France, Italy, Netherlands, Spain, Sweden, Switzerland and United Kingdom) to register the ESRO satellites before ESA is party to the Convention.
- ◆ The French Government was registering the satellites of the International Organization, Eutelsat before this organization is privatized.
- ◆ The French Government mutually agrees with the Government of the Russian Federation to register the Soyuz launcher upper stage(s) and associate elements when launched from the French territory and to keep them under its jurisdiction and control.

3.2. National and International forums

- ◆ Cnes participates in the working group put in place by the French “Conseil d’Etat” in view of preparing the future national space law.
- ◆ France and Cnes participate actively to the registration issues debate and working groups held in international forums such as International relations Committee of the ESA, Legal Sub-Committee of the Committee Of Peaceful Uses of Outer Space, COPUOS from the UN, Project 2001 Plus workshop

3.3. Prel-launch notifications

3.3.1.1. Prelaunch notification to NASA /USSPACECOM

For all the launches occurring in French Guiana, the Guiana Space Center informs NASA and USSPACECOM, one or two weeks prior the launch, of the upcoming launch characteristics, via a standard message, called Vehicle Information Message, VIM. The VIM contains, inter alia

- ❖ Launch site, launch date / time
- ❖ Total number of all the objects achieving orbit with available information on size, mass , stabilization system, spin rate etc..
- ❖ Orbital parameters information for all objects achieving orbit, and on all intermediate orbits up to and including the final mission orbit.

- ❖ Inertial launch azimuth at lift-off and after
- ❖ Epoch time and orbital parameters
- ❖ Main events of the trajectory and injection in orbit

This information is provided to facilitate the Norad task in identifying the different space objects placed into orbit after the launch.

In counterpart NASA / USSPACECOM may provide, on request,

- ❖ Tracking data which will enable early or timely determination of actual orbital parameters
- ❖ Orbital data that will facilitate the acquisition of lost objects associated with such space launches
- ❖ Orbital decay data that will predict the estimated location and time of re-entry of significant objects associated with such space launches

3.3.1.2. *Prelaunch notification to ICC, Vienna*

France has subscribed to the Hague Code of Conduct, HCOC, against the Proliferation of Ballistic Missiles. In this framework France notifies to the ICC point of contact in Vienna, for distribution to Focal Points of HCOC subscribing States, a Pre-Launch Notification, PLN, for the launch of a Space Launch Vehicle, SLV.

This SLV pre-launch notification is notified no later than 2 days prior the opening of the launch window. The information provided in the PLN are :

❖ **Main information**

Generic information on the launcher
Planned launch Notification Window
Launch area
Planned direction

❖ **Voluntary additional information**

Generic purpose
Area(s) affected
Any other additional information

3.4. **Evolution of the national space law in France**

- ◆ Currently no space law in France; so the space activities are governed by the application of the UN Treaties and Conventions ratified by France and with their margin of interpretation..
- ◆ **The Technology Directorate in the Ministry for Research and New Technologies in charge of Space jointly with Cnes is elaborating a framework of a national legal structure for Space activities** to face the numerous transformations as well as major challenges in terms of competitiveness, sovereignty and independence. In addition one must consider that the privatization of big operators and industries

renders necessary a better assessment of their rights and obligations, more particularly as so far as their relations with the State are concerned.

◆ ***This legal framework should take into account, inter alia, the following recommendations:***

- ❖ to make authorization obligatory for all launches either from French territory or from a third country by or for a French citizen.
- ❖ to take into consideration all "national space activities" including potential purchases in orbit by a French citizen.
- ❖ to list all space objects and debris likely to lead to Government liability or that of national citizens.
- ❖ to ensure that France has the legal back up necessary to obtain reimbursement of funds credited to victims in case of consideration as liable under international legislation as country of launch.
- ❖ to possess the technical means and an independent and operational administration allowing the government to comply with international responsibilities and monitor the correct application of national legislation under all circumstances.

Concerning the national legislation under the UN Convention on the registration of space objects several suggestions are under considerations:

- ❖ to produce an informative text describing the registration procedure.
- ❖ to define the complementary information to be provided in the national register (beyond those provide under Article IV of the Convention), particularly in view of giving instructions for request for authorization and licenses for operations and services ensured by the satellite due for launch.
- ❖ to identify the interest of mentioning satellite and satellite component property status.
- ❖ to inform the intellectual property system concerning the satellite, its components and its mission.
- ❖ to indicate the possible conditions for the modification of registration throughout the life of the satellite.
- ❖ to provide details on procedure for objects launched from abroad by companies operating under French legislation or French customers.
- ❖ to determine the conditions for public access to the register.
- ❖ to mention, if appropriate, duties and taxes due for registration, penalties and increases for late or absence of registration.