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PROJECT 2001: STATUS REPORT ON THE INTERIM RESULTS OF THE WORKING GROUP LAUNCH AND ASSOCIATED SERVICES

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Abstract

The Working Group on Launch and Associated Services now consists of eighteen expert members in the field of space launching from all over the world. It is supported and organised by two Working Group Coordinators who are presenting this paper. The paper introduces into the subject and defines the scope of the Group's work within the framework of the entire project. It also summarises the initial views of the expert group members on the subjects they have proposed for discussion and further investigation and then explains how the thematic issues have been structured into three main divisions. An outlook on the Workshop on Launch and Associated Services taking place on 19 January 2000 at the DaimlerChrysler Aerospace (DASA) in Bremen/ Germany concludes the paper.

I. The Project 2001

The Working Group on Launch and Associated Services is one of five working groups within a joint research project called *"Project 2001 - Legal Framework for the Commercial Use of Outer Space"*[*] initiated by the Institute of Air and Space Law of the University of Cologne and the German Aerospace Center (DLR) at the beginning of 1998. The Project aims at exploring further into the law related to outer space activities and to make proposals for the development of space and business law in order to improve legal conditions for commercial and private space activities[†]. In this respect the aim of the Working Group on "Launch and Associated Services" is to examine the existing legal frameworks with regard to its compatibility for commercial / private launching and to identify the regulatory needs.

II. The Draft Outline

To identify the subjects the emphasis should be laid on, we asked the experts to answer a questionnaire drafted by the Project 2001 Coordinator. The received answers mainly concerned questions of licensing launch activities of private enterprises and the required preconditions for such licensing. In this context the lack of national space legislation in most countries was deplored. It was suggested to harmonise the existing legal framework regarding licensing procedures and liability issues. Other preconditions will have to regard the launcher's responsibility for space debris and the definition of safety standards. Further, with the increase of launch activities the joint use of air space by aircraft and launch vehicles could become a safety problem especially with the increasing use of reusable launch vehicles and of air launched vehicles such as the Pegasus. In this respect the relation to air law and aviation control has to be

[*] See *Susanne Reif*, Project 2001: shaping a legal framework for the commercial use of outer space, Space Policy (15,2) 1999, p. 109 et seq.

[†] *Susanne Reif*, Project 2001: A Legal Framework for the Commercial Use of Outer Space, ECSL News (18-19) 1999, p. 10 et seq.

considered. Attention should also be paid to the – possible – involvement of such organisations as WTO (GATS) and ICAO because of the global scope and importance of the launch transportation services industry. Finally, the US laws and regulations on export controls and trade policy and its effects on the launch market were mentioned.

From the summary of answers received from members of our group we developed a draft outline as basis for further discussions and for the workshop. In the following the draft outline will be explained: First the thematic field "Launch and Associated Services" had to be defined. We suggested that it should especially contain the following activities:

- Launching a space object into outer space
- Payload integration and deployment
- Landing of reusable space vehicles and capsules
- Space objects retrieval in flight
- Infrastructure (ground control, launch sites)
- Insurance

As a starting point and clarification for the scope of work we put up the definitions of the following terms for discussion: "Launch", "Launch Services", "Launch Vehicle", "Launching State" and "Payload". We proposed the definitions as defined in the Outer Space Treaty, Liability Convention, US Commercial Space Launch Act and the Australian Space Activities Bill and asked if these definitions still reflect the current situation.

The draft outline is structured into three main divisions. First part is the identification of the present regulatory status within the scope of international and national law, as well as European law. This subject will be the focal point of the group's work and focuses on the comparison of different national and European legal systems with regard to launch activities. Each legal system of the respective nations will cover a status report on present regulation, an analysis of whether this regulation efficiently deals with current developments and an outlook to the future in how far it needs to be revised. The second part - regulatory requirements - gives an overview on the different regulatory fields that are thematically relevant with respect to national legal frameworks and outlines possible needs and deficits. It will describe the legal situation in the launch services business and will define their legal demands on the background of an increasing market. The third part, "Perspectives for the future", will represent the conclusions of our Working Group. The regulatory proposals will be comprised on the basis of the achieved results in order to create a framework, where private initiative is encouraged by legal security and protection of the public is guaranteed without being over-regulative.

III. The Workshop

The Workshop on Launch and Associated Services will take place on 19 January 2000 at the DaimlerChrysler Aerospace (DASA) in Bremen/ Germany. It will be divided into two parts. The first part will deal with the applicability of international legal framework and its regulations on commercial launch services whereas the second part will compare the different national and European frameworks, based on a review of regulations and practices with respect to particular national/ European legal systems. Please note that the Workshop program is still a draft. In Part 1 suggested issues to be discussed are:

- Launch Contracts between Commercial User and Launch Provider: Responsibility, Liability and Insurance Issues in Practice

A senior expert in marketing launch services for a launch provider or buying launch services for satellite owner is asked to summarise his practical experience in contracting launch services under the legal aspects of defining and sharing responsibility, liability and insurance coverage. Emphasis should be placed on the legal requirements for launch services agreements.

- Shortcomings of the UN Registration and the UN Liability Conventions in View of Increasing "Traffic Density" to and from Space

The number of launches into space (and returning from space) and the number of space objects including space stations orbiting in low earth orbits has been steadily increasing, and so has the danger of collisions. The criticality of the developing situation and the adequacy of the existing UN Conventions should be reviewed.

- Legal Aspects of Effects of Launch Activities on the Safety of the General Public, on Air and Sea Traffic and on the Environment

The United States are already planning a Space and Air Traffic Management System (SATMS) for their national airspace. The necessity of a fully integrated control of space and aviation operations on an international basis is to be examined. The present situation and the legal basis for future development (or the lack of it) in this field should be summarised.

In Part 2 we propose the following subjects for discussion:

- ESA Legal Framework and its Interaction with Arianespace and CNES

The Member States of the European Space Agency (ESA) participating the Ariane program have jointly established a legal framework for the commercial activities of the Arianespace company and the use of certain infrastructure owned and operated by the French Space Agency (CNES) on behalf of France. Past and present experience should be reviewed and used as basis for recommendations for future development from a legal point of view.

- Suitability of National Space Laws of ESA-Member States for Meeting State Responsibility for Commercial Launches Outside their Territories

Some but not all ESA Member States have established a national space law, some (not necessarily the same) are contracting launches (jointly) with other states. In both cases the experience seems to be limited. An expert in private and public international law should present a critical review of the situation and point out shortcomings, if any.

- Compatibility of National Commercial Regulations of Other States with Relevant European Regional and National Policies on Commercial Launches

Certain national, bilateral and multilateral agreements, regulations and policies of states with firms active in the launch business are incriminated of being detrimental to the free trade of launch services. An unbiased review of the situation is needed in order to identify possible areas of conflict and realistic proposals for improvement.

The results achieved by the Project and its working groups will be presented and discussed at an international conference at Cologne, Germany, in May 2001, where recommendations will also be adopted.

Generalized Survey on Launch Vehicles and Launch Sites

(based mainly on "Monthly Launch Reports" published in Space News for 1997, 1998 and first half of 1999)

Country	Nat'l Law	Orbital Launch Vehicles	Launch Sites (Country, State, Province)	Orbit / Trajectory	Remarks
Australia	yes	none	Woomera (South Australia) Gladstone (Queensland) Christmas Island (Indian Ocean)		to be reactivated to be developed to be developed
Brazil	yes	VLS	Alcantara (Maranhao)	LEO	in qualification
China	no	Long March CZ-2 Long March CZ-3 Long March CZ-4	Taiyuan (Shanxi Province) Xichang (Sichuan Province) " ?	LEO GTO GTO	active active active
E S A (Europe)	n.a.	Ariane 4 Ariane 5	Kourou (French Guiana in South America)	LEO; GTO LEO; GTO	active active
India	no	PSLV GSLV	Sriharikota Island (Madras) Sriharikota Island (Madras)	LEO (polar) GTO	active to fly 1999
Israel	no	Shavit	Palmahim	LEO	active
Japan	yes	M-3S2 M-5 H-2	(no mention in 1997/98) Kagoshima (Kyushu Island) Tanegashima (Kyushu Island)	LEO; escape LEO; escape LEO; GTO	active active active
Kasakhstan	no	(no own)	Baikonur (site only)		active
Norway	no	none	Esrange Andøya (Troms)	vertical	active
Russia	yes	Soyuz-TM manned Proton K Soyuz-U Progress-M Djnepr; Zenit 2 Soyuz-U Molniya M Cosmos 3M " Rockot; Start-1 RSM-54	Baikonur (Kasakhstan) " " " " Plesetsk (Karelia in Russia) " " Kapustin Yar (Astrachan/Russ.) Svobodny (south-east Siberia) from submarine (Barents Sea)	LEO LEO; GTO LEO LEO LEO LEO high elliptic LEO LEO LEO LEO	active " " " " " " " " active active
Russia/ Ukraine/ Kasakhstan	n.a.	made in Ukraine: Tsiklon-2 Tsiklon-3 Zenit 2	non-Ukrainian sites only: Baikonur (Kasakhstan) Plesetsk (Karelia in Russia) Baikonur (Kasakhstan)	 LEO LEO LEO	lauch by Russia: active "
South Africa	yes	none	?		
Sweden	yes	none	Esrange Kiruna (Norrbotten)	vertical	active
UK	yes	none			
USA	yes	Space Shuttle manned Sp. Shuttle+Tr.-stage Delta 2 Delta 2 Delta 3 Atlas 1; 2A; 2AS Titan 2 Titan 4 Titan 4 Athena 1; 2 Athena 2 Taurus Pegasus XL Pegasus XL Pegasus XL Kistler Aerosp. K1	Cape Canaveral (Florida) " " Vandenberg (California) Cape Canaveral (Florida) " Vandenberg, C. Canaveral Vandenberg (California) C. Canaveral (Florida) Vandenberg, C. Canaveral C. Canaveral (Florida) Vandenberg, C. Canaveral Air Launches i.a. from: Vandenberg, C. Canaveral, Wallops Island, Canary Islands Woomera (Australia)	LEO GTO GTO; escape LEO GTO; escape GTO; escape LEO LEO GTO; escape LEO escape LEO LEO LEO	active " " " " " " " " " " " " " " to be tested ´99
various	n.a.	Zenit 3 SL (Russia +Ukraine)	Sea launch platform on High Sea near equator owned by Norweg., Russian, Ukrainian and US firms	GTO; escape	active