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The World Space Risk Forum, meeting in Dubai from 28 February to 1 March 2012, will feature discussion of the Space Environment and Liabilities.

Throughout fifty years of space activities the world has become increasingly dependent on space-based capabilities and applications, the benefits of which have been realised in almost all fields of human activity. In recent years there has been a growing awareness of the risk of collisions in space and of vulnerability of space systems to threats posed by space debris in particular and to a lesser extent by space weather. However, a further threat is the risk of interference in its various forms. This risk, by comparison, has received relatively little attention so far.

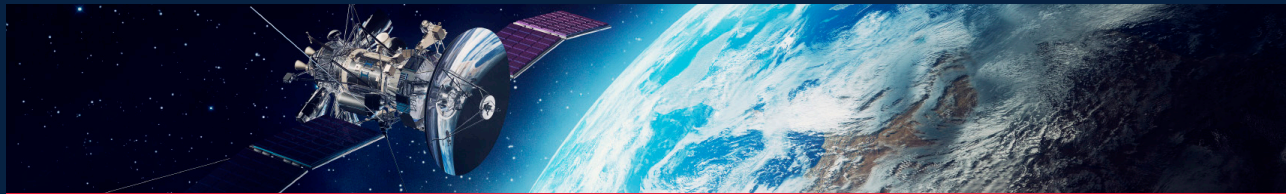
This article seeks to highlight this threat and consider some measures which are being taken to address it.

The usual point of reference for compensation in relation to damage caused by launches

and satellites are the provisions of the Liability Convention of 1972 but in some, if not most, instances of interference with satellites, the provisions of that Convention may not be engaged if the “damage” is not caused by another space object. The satellite operator and its customers are the victims. In such circumstances the rules providing for legal liability are obscure and likely to be largely ineffective.

There are a number of situations where interference can occur, intentionally or otherwise. Unintentional interference can occur mainly as a result of defective equipment or operator error. Intentional interference can further be segregated into what we will refer to as defensive or offensive interference.

The most common form of defensive interference is ‘jamming’. This can relate to TV and radio transmissions, typically as a means of political censorship of information. Another form would be the jamming of GPS signals for whatever purpose.



The jamming of TV broadcasts has been prevalent over the years, with reference in particular to Cuba, Libya, Indonesia, Syria, Bahrain and Iran. Satellite operators have tended to be reticent about publicising cases of intentional interference, presumably to avoid encouraging other actions. However, more recently, Eutelsat has suffered extensive jamming of satellite broadcasts via the Hot Bird 6 satellite to Iran. It has managed to pinpoint the location of jamming stations and has issued public statements drawing attention to the problem.

Offensive interference includes hacking by persons or by groups such as “Anonymous”, acts of terrorism, acts of commercial sabotage and acts of war. Mostly, this would be aimed at destruction or disruption of services but might extend to taking control of such systems. There is an example of this type of interference with the US reporting that in 2007 and 2008 an unknown power was able access Landsat-7 and Terra EOS AM-1 satellite systems, presumably to test its ability to take control and even destroy such systems. Though not proven, the US authorities voiced suspicions that a foreign power was involved.

With regard to international regulation, a number of international telecommunications conventions have provisions designed in the allocation of frequencies to avoid causing harmful interference to others but they do not provide effective sanctions for such interference. Certainly, intentional acts of jamming broadcasts to particular States will be contrary to Article 15 of the Radio Regulations, an international treaty governing the use of radio-frequency spectrum and satellite orbits under the supervision of

the International Telecommunications Union (ITU), which is an Agency of the United Nations. Furthermore, activities which are conducted to restrict the free flow of information may contravene Article 19 of the Universal Declaration of Human Rights. However, obtaining a remedy is another matter.

As interference is clearly a risk for satellite operators, going beyond business interruption, it is legitimate to wonder about the possibility of insurance against such risk materialising. In fact, under most space insurance policies the risk of electromagnetic and radio frequency interference is specifically excluded. However policies will often cover the risk of physical damage to the satellite directly resulting from such interference and from interference coming directly from the satellite itself.

From a practical point of view, efforts can be made to make systems more robust against attempts at hacking/interference. The problem of cyber-attacks is not confined to space-based systems. The US Air Force has developed and deployed a “Counter Communications System” (CCS), designed to block potential enemies’ satellite communications and to locate satellite jammers. This has been publicly acknowledged and reported and one can assume that there will also be covert developments of this nature in the US and in other major space-faring nations.

Now, five major international broadcasters have called upon the World Radiocommunications Conference (WRC-12) meeting in Geneva, between 23 January and 17 February 2012, to address this problem. The conference, which

is held every three to four years, is tasked with reviewing and revising the Radio Regulations.

The views of the five broadcasters have been conveyed to the conference in a note submitted on their behalf by the European Broadcasting Union (EBU). The statement made requests “Member States, working with the support of the satellite industry and broadcasters from all regions, to work to end this increasingly prevalent practice of deliberate interference to satellite broadcasting signals”. However, the five broadcasters, known as the “DG5” also state “... Accordingly, the DG5 calls upon WRC-12 to consider ways in which to halt such activities which contravene the constitution and the Radio Regulations (Article 15), to determine, during the conference, how best this issue can be treated and, most importantly, resolved within the ITU. Although the DG5 would like to see decisive measures taken at WRC-12, it also notes the view of the RRB that “Studies would be needed to determine what additional measures could be incorporated in the Radio Regulations to improve the protection of satellite networks and enable this type of harmful interference to be resolved expeditiously””.

In late 2008, Ministers of the European Union (EU) approved a draft International Code of Conduct (COC) for Outer Space Activities. This draft has in principle been endorsed by Canada, Japan and Australia but has been rejected by China, Russia, India and Brazil. On 12 January 2012, a US spokesperson stated that the US regarded this COC to be too restrictive and therefore unacceptable. However, on 17 January 2012, the US Secretary of State, Hilary Clinton, announced



that the US had decided to join with the EU and other nations to develop a new International Code of Conduct for Outer Space activities. In other statements, the US has also intimated that the present draft EU COC could form a working basis for a new COC.

Amongst other things, the EU refers to initiatives for "... peaceful purposes without interference, fully respecting the security, safety and integrity of space objects in orbit". The present draft also states that signatories will cooperate to "...prevent harmful interference in outer space activities... and seek to prevent outer space from being an area of conflict even if they were engaged in military activities in space".

The wheels move very slowly in the development and ratification of optional international agreements and codes of conduct. There is also the problem of enforcement as it is usually difficult to obtain universal sanctions against countries which contravene regulations to which they may or may not be signed up. In the absence of regulations that carry sanctions, such situations will usually have to be resolved by diplomacy rather than solely by the letter of the law. With this in mind, the question of insurance coverage for interference is likely to be debated at the Forum.

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