



THIRD-PARTY LIABILITY FOR GNSS MALFUNCTIONING
THIRD INFORMAL MEETING

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RISK MANAGEMENT IN GNSS MALFUNCTIONING

(Report)

On 11 November 2011, the UNIDROIT Secretariat organised an informal consultation meeting on "*Risk Management in GNSS Malfunctioning*", a meeting held in the context of the proposed project on *Third party liability for Global Navigation Satellite System (GNSS) Services*. The meeting was held with a view to defining the possible scope of a future project and clarifying its essential features.

The programme of the meeting included:

- 1) a general presentation of the proposal to examine the possibility of preparing an international instrument for liability resulting from GNSS malfunctioning: reasons, why the current system is insufficient (*Prof. Anna Masutti, Senior Partner, Studio Legale AS&T (Rome), and University of Bologna, Italy, member of the team that prepared the original proposal made to UNIDROIT*),
- 2) a general presentation of technical data: what can go wrong and what the risks are (*Dr Renato Flijar, member of the Council of the Royal Institute of Navigation, and external Assistant Professor at the Faculty of Engineering and the Faculty of Maritime Studies, University of Rijeka, Croatia*)
- 3) a presentation on how the maritime insurers deal with questions of liability for GNSS malfunctioning (*Mr David Bolomini, International Group of P&I Clubs*)
- 4) a presentation on risk management: the EUROCONTROL system (*Ms Caroline Mantl, Senior Legal Expert, EUROCONTROL*)
- 5) an illustration of a developed system and how it deals with risk management: the GPS. Could the GPS non-liability system apply equally to the other GNSS systems? (*Professor Henry Gabriel, Elon University, Greensboro, North Carolina (USA) and member of the UNIDROIT Governing Council*)

The meeting closed with a round table discussion on whether the question of liability for GNSS malfunctioning is a European or global problem.

1. Background

(a) *The Proposal*

In 2005, the Governing Council of UNIDROIT was seized of a proposal to examine the possibility of preparing an international instrument for liability resulting from GNSS malfunctioning.

In the years that followed, the proposal was explained in more detail. The positions for and against were illustrated respectively by Professor Sergio Carbone¹ and Dr Hans-Georg Bollweg,² both members of the UNIDROIT Governing Council. The UNIDROIT Secretariat subsequently prepared a background document which illustrated the situation as regards the different services available and the work that had already been done by other organisations such as the ICAO.³

The arguments put forward in favour of the preparation of an international instrument were that

- a legal regime is needed to balance the economic sustainability required by operators and the adequate compensation that victims of accidents might be entitled to;
- the present regime is inadequate because:
 - the *1972 Convention on International Liability for Damage Caused by Space Objects* treats only physical damage;
 - the *1944 Chicago Convention on International Civil Aviation*: Article 28 relates only to navigation and not to all other areas in which satellites are utilised;
 - the relevant rules are inadequate as regards the question of sovereign immunity in the context of the provision of GNSS services by States or State-owned entities; and
 - the studies conducted by ICAO have shown that the problem of liability exists and that the solutions given by domestic law are both conflicting and insufficient.

A specific legal regime should cover all issues of *liability*, irrespective of the type of application. It should not be limited to aviation, and might include the following:

- (a) certification of providers of GNSS Services as “qualified providers”;
- (b) channelling of liability to qualified providers;
- (c) strict liability for damage resulting from failure or malfunction of GNSS services, subject to a limitation ceiling;
- (d) liability limits according to a global limitation per year, per incident or *pro capita*, with the ceilings possibly set at different levels depending upon the services provided;
- (e) supplementary compensation;
- (f) a special regime for open services, distinguishing between:
 - open services as a free common utility (at user risk) and
 - open services for commercial exploitation (subject to the same rules as other GNSS services);

¹ Carbone S.M. - E. De Maestri, “The Rationale for an International Convention on Third Party Liability for Satellite Navigation Signals”, in: *Uniform Law Review*, 2009, 38

² Bollweg H.G., “Initial considerations regarding the feasibility of an international UNIDROIT instrument to cover liability for damage caused by malfunctions in global (navigation) satellite systems”, in: *Uniform Law Review*, 2008, 917

³ UNIDROIT Secretariat, “An instrument on third party liability for damages caused by Global Navigation Satellite System services: a preliminary study”, (Study LXXIX – Preliminary Study (2010), also issue as Document CD(89)7 Add. 1 (2010)).

- (g) the GNSS operator only subject to qualified providers' rules when it supplies services in the market-place;
- (h) immunity for publicly regulated services in certain circumstances (specific defence or security applications);
- (i) measures against unqualified providers and producers of uncertified equipment.

The arguments invoked against the proposed project were essentially that:

- the development of a legal framework to govern the implementation of GNSS has been on the Work Programme of the Legal Committee of the *International Civil Aviation Organization (ICAO)* for many years; in particular the issue of liability was examined by the *Secretariat Study Group on Legal Aspects of CNS/ATM Systems*, which reported to the 33rd ICAO General Assembly in 2001. After several years of not making any progress on this project, in 2007 the 36th ICAO General Assembly downgraded the priority of the project from 1 to 3;
- with the European Union set to commence GALILEO operations in 2013, there would not be enough time to draft a Convention and secure sufficient ratifications;
- the only operational commercial navigation system covered would be GALILEO since other systems are military;
- an international Convention covering only one operational entity would be unique, as it would be an international Convention to cover a *regional* navigation system, and it remains to be seen if and when other commercial systems might start to compete with GALILEO; and
- the European Commission is examining the possibility/necessity of preparing a third party liability regulation in this area.

(b) *The Initial Research conducted by the UNIDROIT Secretariat*

At its 88th session (2009), the Governing Council entrusted the Secretariat with the preparation of a detailed feasibility study focusing on gaps in liability resulting from the malfunctioning of satellite-based navigation systems.

The findings of that study were that

- none of the current international rules governing liability for space activities apply to third party liability; and that
- special liability regimes established by the various international conventions on the carriage of goods or persons have numerous gaps.

Thus,

- none of the carriage Conventions would apply as such to GNSS failure;
- existing regimes can present gaps in protection;
- a number of accidents provoked by GNSS failure or malfunction could fall outside the scope of application of the existing instruments;
- the transport operator maintains a right of recourse in respect of the GNSS signal provider; and
- all the instruments provide for a limitation of compensation, leading plaintiffs to potentially be induced to address the GNSS provider directly in order to obtain higher compensation.

In particular:

- (a) it is not entirely clear to what extent a carrier may be exempt from liability for damage ultimately attributable to GNSS failure;

(b) it is not entirely clear to what extent a claimant that has been compensated within the limits of an existing Convention may sue the provider of a GNSS signal for the amount not compensated by the carrier; and

(c) it is not entirely clear, in either case, whether the insurer (cargo or carrier) may have direct course of action against the signal provider.

Furthermore,

- there may be instances of liability that are left uncovered, leading potentially to either
 - unlimited liability or no liability at all, whilst
 - in other instances liability would be limited to a set amount and no further compensation could be directly or indirectly obtained.

A new instrument on GNSS-related liability could

- either be superimposed on the existing instruments; or
- be a supplement to those Conventions for the amount of damage that exceeds their respective liability limits; or
- be conceived to co-exist with the current carriage Conventions.

(c) *The Possible Approaches*

Three possible approaches were identified by the proponents of the project:

- *a strict approach,*
 - which considers that the current liability regime under domestic law adequately addresses GNSS liability issues; and
 - that the development of a universal liability system is neither feasible nor desirable;
- *a broad approach,*
 - which considers that a universal liability system or convention should be worked out; and
- *a middle ground approach,*
 - which proposes a contractual approach accompanied by a framework agreement containing some uniform rules, including rules on liability;
 - in this context some feel common rules should be mandatory for all parties concerned; while
 - others lean towards mere recommendations.

(d) *Meetings*

In the course of the preliminary work it has conducted, the UNIDROIT Secretariat has organised a series of informal meetings:

- 1) THE FIRST INFORMAL CONSULTATION MEETING ON “*THIRD PARTY LIABILITY FOR GLOBAL NAVIGATION SATELLITE SYSTEMS (GNSS) SERVICES*” (ROME, 22 OCTOBER 2010)

The purpose of the first informal meeting was to assess the possible interest in the preparation of an international instrument on third party liability for GNSS Services. The meeting was attended by representatives of the Governments of China, the Czech Republic, Germany, Italy, the Russian Federation, the United States of America, and the Commission of the European Union, as well as by

academics and members of the international space communities. The presentations illustrated “*Reflections on the Legal Framework for TPL for GNSS*” (Prof. Dr. Lesley Jane Smith, LL.M., Leuphana Universität Lüneburg, Weber-Steinhaus & Smith, Bremen), “*Policy Aspects of Third Party Liability in Satellite Navigation. Preparing a Roadmap for Europe*” (Matxalen Sánchez Aranzamendi, Resident Fellow ESPI), “*A legal regime for third party claims relating to the malfunctioning of GNSS in Europe*” (Walter Vasselli, Head of Compliance and Regulation, Finmeccanica Legal and Corporate Affairs, Rome) and included also a general presentation prepared by the Secretariat.

The participants discussed in particular whether an international instrument might, following the example of most liability instruments, set a liability limit which would also help the insurability of satellite activities and cover aspects such as liability channelling, provision for supplementary compensation to guarantee satisfactory recovery of losses and provide criteria for identifying the competent jurisdiction. Whilst expressing differing views on the topic, notably by reason of the legal and political complexities involved, the participants conveyed their general interest in continuing consultations.

2) *THE SECOND INFORMAL MEETING: BRIEFING SESSION (ROME, 25 FEBRUARY 2011)*

The second informal meeting was held on the occasion of the fifth session of the *Committee of Governmental Experts for the Preparation of a draft Protocol to the Convention on International Interests in Mobile Equipment on Matters specific to Space Assets (Rome, 21-25 February 2011)*, in the form of a briefing session to inform participants in the session of the basic elements of the proposed project on third party liability for GNSS and to seek their views on its desirability and feasibility. Attendees included members of the delegations of Canada, China, Colombia, the Czech Republic, Germany, Hungary, Indonesia, Italy, Japan, Kenya, Mexico, Saudi Arabia, Slovenia, the United Kingdom and the United States. Also present were representatives of the European Centre for Space Law, the European Space Agency (ESA), the International Bar Association (IBA) and the International Institute of Space Law. At this briefing, Professor Carbone and Mr Walter Vasselli (Finmeccanica, Italy) illustrated the proposal and answered questions from the audience (with a presentation on “*A Legal Regime for Third Party Claims Relating to the Malfunctioning of GNSS Initiatives for new legislation and indications for further developments*”).

3. *The Third Informal Meeting on “Risk Management in GNSS Malfunctioning” (Rome, 11 November 2011)*

The third informal consultation meeting was held on 11 November 2011, with a view to defining the possible scope of a future project and clarifying its essential features.

The meeting was attended by representatives of States, inter-governmental organisations, non-governmental organisations, international trade associations, industry, insurance, and law firms.⁴

(a) *THE PRESENTATIONS*

(i) *Presentation of the proposal to examine the possibility of preparing an international instrument for liability resulting from GNSS malfunctioning: reasons, why the current system is insufficient (Prof. Anna Masutti)*

In her presentation of the proposal, Professor MASUTTI began by referring to the work conducted in Italy with a view to a regulation at European level. She described the “GALILEO Architecture” and illustrated the current status of development of the GALILEO system, as well as the “EGNOS System Architecture” and its status. Other GNSS systems that Prof. Masutti referred to were the GPS of the United States (which should complete GPS III by 2021), the Chinese *BeiDou Navigation*

⁴ The list of participants is annexed to this report.

System ESSP, and other navigation systems operating in Japan, India and Brazil. Prof. Masutti thereafter detailed the services that will be available from GALILEO and proceeded to illustrate the damage that can be caused by GNSS signal malfunctioning, i.e.:

- the absence or degradation of the signal may cause economic loss but also huge damage in a vast area or to a very large number of people;
- such incidents may involve the interests of a number of jurisdictions and people and organisations from different nations;
- damage to property and environment may affect several countries;
- in such circumstances, as a result of the absence of uniform international legislation, many difficulties could arise in the effort to solve legal problems.

In this connection she made a number of considerations:

- that the current major utilisation of GNSS was the Air Navigation Service (ANS);
- that most countries will not provide the GNSS signal directly, but will receive the service from other countries;
- that accidents caused by the malfunctioning of a GNSS signal would involve a number of parties of different countries (the GNSS operator, air navigation service providers, air carriers). Air navigation services were mainly governed by domestic legislation: from the beginning experts had noted the absence of international regulation (international Conventions) in this field. Harmonised legislation was therefore necessary;
- that it was necessary to identify who was a victim and who ultimately was responsible for the damage, to see for what kind of damage it was necessary to compensate victims for and in what way that compensation should be paid.

From these considerations the following legal issues had been identified:

- conflicts of laws and of jurisdictions;
- State immunity;
- definition of 'damage compensation': Prof. Masutti stressed the importance of arriving at a general definition of the notion of "damage", which would also assist in determining what damage should be compensated;
- civil liability regime for catastrophic events as a consequence of the use of the systems.

There already existed a number of instruments at international level in particular fields, characterised by important principles of law, such as:

- the *Convention on Civil Liability for Oil Pollution Damage* (Brussels 1969), as modified by the Protocol of London (1992)
- the *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage* (FUND) (1971)
- the *Convention on Civil liability for Nuclear Damage* (Vienna, 1963), and
- the *International Convention on Liability and Compensation for Damage in Connection with the Carriage of Hazardous and Noxious Substances by Sea* (London, 1996)

or

- the *Convention relating to Civil Liability in the Field of Maritime Carriage of Nuclear Material* (Brussels, 1971).

Prof. Masutti suggested that it would be desirable to establish a two-tier liability system that comprised a *first tier* funded by compulsory contributions and a *second tier* that could be made available when necessary.

In such a scheme, the limited liability of the liable party represented the first tier, under which a provision should be inserted to the effect that the amount of the liable party's liability cannot exceed a certain amount, where the exact amount should be established in consultation with the insurance market.

The second tier of compensation had two basic purposes:

- (i) to increase the amount of compensation available to the victims, and
- (ii) to share the financial risk borne by private industry (if one or more of the operators is identified for the exploitation phase) with public parties.

The circumstances in which supplementary compensation would be envisaged were when the damage exceeded the liable party's liability, when the liable party was not liable because the damage was a consequence of *force majeure*, or when the party liable for the damage under a regulation was financially incapable of meeting its obligations in full, and any financial security available did not cover the claims or was insufficient.

The main principles of a third party liability regulation would thus be:

- the *channelling of liability* to a single liable party: the principle of the channelling of liability was the solution most commonly adopted at international level to protect victims, who can easily identify the liable party and take legal action without risking the rejection of their claims;
- the *strict liability* of the liable party: there were a number of advantages with a strict liability regime:
 - there was a greater protection of the victims: i.e. the victims do not need to prove the liable party's negligence or fault in order to make it liable, and
 - mitigation of the strict liability regime: there is no liability in case of *force majeure* or when the liable party proves that the damage was caused by an act or omission of a claimant.
- the *limited liability* of the liable party (first tier) (i.e. if the liability were channelled to a single liable party, it would be necessary to limit this liability);
- the *compulsory insurance* of the liable party, up to the limit of the first tier, and direct claim against the insurer;
- *supplementary compensation* if the damage exceeds the first tier (entering the second tier) (such as the *International Convention on Civil Liability for Oil Pollution Damage (CLC)* (Brussels, 1969), and the *International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage (FUND)* (Brussels, 1971); and
- *limitations of the amount of compensation*.

The regulation would cover:

- loss of life, personal injury (defined as any *physical damage* with the exclusion of any *psychological damage*) and loss of, or damage to, property;
- economic loss arising from the above loss or damage, if incurred by a person entitled to claim in respect of such loss or damage;

- the costs of measures to reinstate impaired environments, unless such impairment is insignificant;
- the costs of preventive measures
- the exemption for open services:
 - exclusion of liability if the damage is caused by a malfunctioning of the GNSS Signal used to provide an open service.

Prof. Masutti proceeded to consider the option of a framework agreement. She stated that the question of third party liability cannot be solved through a 'Contractual Framework' agreement between States. Contractual or private instruments *per se* were unable to guarantee a uniform applicable law without a suitable regulatory framework at international level to ensure victims reasonable and harmonised compensation.

She declared that a possible solution for a complex legal framework was an international convention. International practice had led to the conclusion that only an international convention can regulate effectively:

- the responsibility of the liable party;
- the form of indemnity for the victims of catastrophic incidents (also if they live in different countries);
- the prevention of disparity of treatment arising from paying different indemnities to victims of the same incident;
- the need to protect the parties involved in the GNSS (and the continuity of the services) from being obliged to answer unlimited claims for compensation.

(ii) *A Presentation of the Technical Data (Dr Renato Filjar)*

Dr Renato FILJAR, representing the *Royal Institute of Navigation*, illustrated the GNSS from the engineering point of view. He reminded participants that timing, orientation, positioning and navigation are deeply embedded in the lives of everyone, the satellite navigation devices on cars being an example. The GNSS was no longer a toy of the military, the GNSS had become part of the infrastructure of States. The business environment and system of the GNSS were built on GNSS core technologies extended by augmentation and assisting systems. Built upon that, were service and application technologies used by end users. The end user's perspective was very important, even if a number of urban legends survived, such as that the GNSS permitted the remote control of individuals, or that the GNSS can be used also in catacombs, which however was not the case. The users thought that the GNSS was something acquired, without problems, was something perfect. The user did not care about technology, about the applications, the user did not understand the limits of the technology and assumed that the GNSS could work everywhere. This was however not the case.

Taking a look at how the GNSS worked, and at what could go wrong, Dr Filjar referred to the

- propagation time, i.e. the time required for the signal to arrive to the user equipment,
- time synchronisation and common reference framework (WGS84), which were essential,
- four non-linear mathematical equations of four un-knowns: for the core GNSS system 3Dimensional position, time

The architecture of the GNSS was made up of four parts:

- the space (satellite) segment (GPS now had 31 satellites, GLONASS 23)
- the ground or control segment
- the user segment, and

- the propagation media (i.e. the ionosphere, the troposphere).

In addition, there were the advanced systems: the DGNS – Differential GNSS, the A-GNSS – Assisted GNSS provided by the Telecom, and the SBAS (EGNOS) – satellite-based augmentation systems. These were operated by operators different from those operating the core systems.

There were a number of what could be termed “vulnerabilities” and risks of the GNSS. There were positioning errors, which were divided into dilution of precision (in essence this referred to the number of satellites), and user equivalent ranging errors. Under these came satellite ephemeris, satellite clocks, multipath, receiver noise, ionospheric delay and tropospheric delay.

The reduced service availability were divided into natural causes and artificial causes. To the first belonged geomagnetic storms, ionospheric storms, volcanic eruptions and earthquakes. (The global scientific and engineering community had already started to tackle the effects of space weather and ionosphere disturbances.) To the second intentional jamming and non-intentional artificial causes (non-electro-magnetic compatibility issues), re-broadcasting (“meaconing”) (i.e. same-frequency signals), and spoofing (intentional broadcasting of GNSS similar signals, e.g. by terrorists). In reduced service availability GNSS vulnerabilities and risks related to the utilisation and environment for satellite positioning.

The mitigation GNSS vulnerabilities and risks were brought about by a close monitoring of the GNSS, by a continuous GNSS performance and positioning environment monitoring, also by the national agencies, considering that the GNSS were now part of the infrastructure of countries. A lot still had to be done to raise awareness and impact assessment.

(iii) Risk Management: the EUROCONTROL system (Ms Caroline Mantl, Senior Legal Expert, EUROCONTROL)

Ms Caroline MANTL stated that EUROCONTROL was an inter-governmental organisation that looked at risk, but only from the point of view of safety, and had been involved with the ICAO Legal Task Force for over 20 years. She stated that air traffic over Europe totalled 10,000,000 air traffic movements per year, or 30,000 per day. Aviation was a safety critical mode of transport, which was very safety conscious, so any new element that was used in aviation had to go through rigorous safety and certification checks, and the same could be said of the use of GNSS in aviation. In air catastrophes, it was not just one element, for example GNSS, that would cause an accident, it was usually a number of accumulated factors that come together at one time. EUROCONTROL dealt with air traffic management and air traffic management was not only what happened in the air, it was also what happened on the ground. GNSS were just one element in a whole line of technological instruments used in air traffic management.

EUROCONTROL had recently been nominated Network Manager under the Single European Sky legislation. Its task was to ensure improved performance across the ATM network and implement common procedures for designing, planning and maintaining the network. It also acted as central unit for air traffic management across Europe, and will also have the power, together with the Commission and under the instruction of the EU, to step in, in times of crisis. For example, when 9/11 happened, EUROCONTROL had managed to shut down all air traffic in Europe very quickly, rather than it going State by State, they had contacted all the States and had done it in concert with them. Regarding safety, EUROCONTROL had to have a safety and risk assessment for everything that it did. GNSS was no different from that point of view.

There was one GNSS service provider in Europe, i.e. the ESSP which provided the EGNOS signal which enhanced the GPS signal over Europe, and this operator had been certified. All procedures using the EGNOS signal would also be certified, and safety-cases were being built around GNSS, in

particular EGNOS. Just because there was a new technology, this did not mean that things automatically happened, EGNOS was available for use in aviation, still very few procedures had been built and would not be used broadly until that had happened. One thing to bear in mind was that there was not a legal vacuum, there was a legal system for GNSS, what was known as “the law”, common law or civil law, it was there. For aviation there was not a separate legal instrument dealing with radars, they fell under the law. For GNSS, there were multiple providers, extra-territorial ownership and control, it was multi-purpose, multi-modal, and most States were not involved in the operation of the GNSS, they were relying on facilities outside their control, but this was the same for aviation. An example was the Überlingen accident which happened in 2002. In this case there had been a Russian plane carrying passengers, a Bahrain plane carrying cargo, flying from Italy to Brussels over German air space controlled by Swiss air traffic control. The accident had happened in a State that was not controlling the air traffic services at the time. There had been so many different countries involved, but at the end of the day the law had found a way.

A new legal regime was not necessary because someone else was providing the traffic control service. She did not see how adding an extra layer of technology necessitated the addition of an extra layer of legal regime. It was very complicated, many parties were involved, but many parties were involved in any air transport accident. So we have to find a way of trying to cut the Gordian knot in this and perhaps simplify things. She illustrated the inter-connections regarding liability in GNSS for EGNOS. In the US the equivalent of EGNOS was WAAS and there was the FAA which controlled what in Europe was done by five or six different entities. EGNOS was operational, but had only a number of procedures in place, the rest were still being designed. EGNOS was just an enhancement of GPS, Europe would have its own system with GALILEO. However. GALILEO was still in the early stages, and from the point of view of legal knowledge and reliability, EGNOS was a good starting point.

The main legislators in Europe were the European Union and the European Commission, at present they were carrying out an analysis of liability, with a view to examining whether or not a regulation for liability for GNSS was needed in Europe. The word on the street was that perhaps it was not. Some time ago their view had been that they would wait and see, that it was quite complicated to put something into force, it would take some time even in the EU to do it.

With a view to a Convention, EUROCONTROL had always been very much in favour, but after fifteen years in the ICAO legal task force it had not progressed very far. Part of this was because there were many players in GNSS, considering Europe, when other States were involved, especially the US with the Federal Tort Claims Act, this complicates things. In the ICAO and the working groups it had been clear that Europe and the US had a different viewpoint regarding liability for GNSS. She was not sure that this had changed. She recognised the work of UNIDROIT and thought that it was important to look at this now, because it had lost much of its momentum in ICAO, but she wondered if the mind-set had changed in the US and if any progress had been made in Europe in the thinking.

What were the options? Either the *status quo* could continue, and the legal systems at hand (“the law”) used, or new legislation could be adopted, e.g. an EU regulation on GNSS liability: for the normal person on the street or in a plane this might make a difference if a tragedy occurred, but for the rest of the people, for the operators or the service providers, she did not think it would make much difference. However, just because a chain of liability was clarified somewhat, it did not absolve of liability, and there was usually not one reason, certainly in air transport, for a crash. So for EUROCONTROL or for an air navigation service provider legislation would not make much difference. A GNSS convention was a global solution if States ratified it, but the question was if they would do so and further would they do so in the medium to short term time frame (which was unlikely) or was there some other solution? The solution EUROCONTROL had put forward with the ECAC States was a contractual framework, where although not ideal, they tried to create a

contractual set-up between parties just to clarify things, and then after that either the law as it stood or arbitration would try to sort things out. It was just a simplification, not an answer to the problem.

(iv) How the maritime insurers deal with questions of liability for GNSS malfunctioning (Mr David Bolomini, International Group of P&I Clubs)

Mr BOLOMINI presented slides of ship casualties, starting with the MSC Napoli and continuing with the Cosco Busan incident in San Francisco. Claims for clean-up and third-party damages ran into the category of 200 million US\$ plus. Had these incidents been caused by failures in GNSS for which the provider would be liable, there would be a need for enormous reserves of the insurance. The suite of the conventions established in the IMO worked on the principle that ship-owners accepted the doctrine of strict liability in prescribed circumstances, and there was a *quid pro quo*: they were entitled to limit their liability as established in the conventions, and the conventions conferred on..... the right of direct action against the ship-owner and the ship-owner's insurer. These conventions would apply even in cases where the GNSS failed and such failure had resulted in damage. The issue for insurers was to maintain the current systems because in general terms the extent of liability was a known entity and reinsurance could be purchased on the basis that overall exposure to such liabilities was available in the market.

Many of the leading Clubs of the P&I Clubs had been established in the early 19th century for ship owners to insure one another against the liabilities that were arising and mounting with the increase in large shipping at the time. They did that because at the time insurance was not available widely through Lloyd's of London. The mutuality continued and they operated on a not-for-profit basis. The members of the International Group of the P&I Clubs reinsured one another for substantial third party claims. Property insurers, e.g. Holland Machinery, was purchased separately from the market, and this was usually purchased by the Club on behalf of the owner. Cover excluded certain liabilities, including for example war risks, nuclear risks, and cyber attacks. War cover was purchased separately from specialist underwriters in the market. There was the capacity to do it, because some of the exposure was known. In a total catastrophic failure involving a GNSS system, there were real assets in the sky, real people on board aircraft, and there were real people and real assets on the sea. The total exposure was absolutely colossal. It was also worth noting that ships entered in the Clubs must pass technical and safety requirements: it must be in class, i.e. an oil requirements must satisfy certain requirements laid down by international law, it must go through a fairly rigorous process to ensure that the vessel itself was not going to fall apart as it crossed the sea.

Those insured in the Clubs had access to a very high level of reliable reinsurance cover in the event of a maritime casualty. P&I insurance would cover a member's legal liability, the damaged property of a third party for collisions, pollution damage for oil spills, lost or damaged cargo, and personal injury to passengers and crew. Crucially, however, the financial security afforded by the International Group of Clubs was recognised and respected by Governments and maritime authorities world-wide and usually the entry was adequate proof to most States that that ship was insured with a reputable insurance provider and claimants had access to recompense in respect of their damages.

With reference to the box on "Third General Excess Unlimited Reinstatements" in the slide illustrating the International Group, the important point to note was the reference to unlimited reinstatements: up to 2 billion US\$. What that meant was that claim after claim after claim in any one insurance year (runs from February to February) could be made for 2 billion US\$ against the reinsurance programme. The top cover (in excess of 2 billion) would pick up one reinstatement. After that it was necessary to buy particular cover in the market to cover the additional exposure. The reason this slide was important was because if strict liability backed by compulsory insurance

of the GNSS service provider is being considered, it was necessary to think about really significant sums of money, and the insurance industry would need to think very carefully about how it would structure that reinsurance programme.

The International Group of P&I Clubs worked very closely with maritime organisations, in the first hand the International Maritime Organisation (IMO), with national Governments and agencies, they offered technical advice and support when asked to, and worked with them to develop liability systems that worked for both Governments, claimants and industry. The challenges ahead for the P&I Clubs included the fact that large claims were becoming significantly more expensive, there was a very significant escalation in wreck removal costs. The Athens Convention, which dealt with the liability of ship-owners for passenger claims, would have a significant impact when it entered into force, and that was where the 2 billion mark could be hit, even with the limits of liability established in the Convention at 250,000 SDR per passenger certificated – the ship-owner was responsible on a fault basis for 400,000 SDR *per capita*.

Turning to the CLC/Fund regime, he remarked that the CLC was what fell on the ship-owner: the Fund was paid for by receivers of persistent oil in the member States of the IPC Fund, and there were other instruments there for Bunker conventions, that is bunker ships, fuel, and wreck removal. All of these had the dual concept of strict liability on the owner, backed by compulsory insurance provided most of the time by the International Group of the P&I Clubs. As concerned the purpose of the P&I Clubs, there were an unparalleled range and limits of cover provided at cost. He reflected that he did not know if the provider of GNSS would be able to claim the same thing, as the insurer of providers would be looking to make their cut on the price that they give for a product to cover exposure, whatever that exposure might be. Under the P&I Clubs systems there were guarantees of prompt payment of compensation to victims, even before substantial claims were put in. There was a great deal of experience in the P&I Clubs in terms of claims management and handling, and they provided advice and support both to Governments and to claimants. In conclusion, the International Group provided well established and effective means of compensating victims or damage, whether that was for oil pollution or for the loss of a bag on a ship, from a very small amount to a very large amount. It was a product of choice for the majority of the world's ship-owners, and it had proven to work in the interest of its membership and the public at large.

(v) A developed system and how it deals with risk management: the GPS. Could the GPS non-liability system apply equally to the other GNSS systems? (Professor Henry Gabriel)

Professor Henry GABRIEL suggested that it might be a misnomer to say that the liability structure of the American GPS was a liability system that was a develop system, as to a large extent the liability structure of the GPS was somewhat accidental. The GPS system was being developed in the 70s and came on board fully in 1994. In 1983 there had been a navigational error by a flight of Korean Airlines which had ended up over Soviet airspace and was shot down. The day after that had occurred, President Reagan signed an executive order saying when the US had the system up and running, it would be given to the world free.

That lays out some interesting structures, because by providing effectively a free service, the US entailed no contractual liability, period. Because the US simply said that they would send those signals up, but the user can do with them as it wished. So from a contractual point of view, there was no contractual liability by the US Government and because there was no direct contractual liability, there was no third party contractual liability – by definition, as there were no contracts. Given the diffuse risk in the unknown number of users, there was really no practical argument for an implied contract. It was generally the position of those that looked at the question from the US that the question of contractual liability had to be eliminated, to the extent that that might be part of a liability structure for another GNSS System.

Professor Gabriel suggested that there were three tiers of liability: the first tier was the satellite system (physical satellites, software) provided by someone and paid for by the Government. That, however, was not what he was concentrating on, given the contractual relationship and the layers and layers of remoteness. The second tier consisted of the operator of the system, i.e. the signal provider (in this case the US Government). The third tier was made up of the final users. If the GNSS device was used to give instructions on how to drive, that was a different structure of liability, and if a users phone acted up and gave bad directions, there could be some potential products liability against that layer of provider, but attention was not here given to that, attention was given to the provider of the signal, which for the purposes of the GPS was the US Government.

If the contract layer of liability were taken out, what was left? The answer was some potential tort liability. There were a variety of ways, those who had considered the question thought they knew what the liability could be, but it really had not been tested. For the purposes of tort liability, which was what would be left over if there was no contractual liability, the structure in the US was US law, it was not going to reflect necessarily any other legal system, e.g. under US law the US Government took sovereign immunity as the starting position, i.e. the Government could not be sued. Having said that, there were a whole layer of statutes that provided for certain circumstances when you could sue the US Government. Probably the vehicle would be the Federal Tort Claims Act (FTCA), which was the broadest piece of legislation that might provide for liability. That was not very good, because the Federal Tort Claims Act was limited to pure negligence actions. If there was someone who has a discretionary decision to make and simply used bad judgment, it was not possible to sue. Furthermore, it was limited to an employee of the US. This meant that it was not just that the GPS system failed, it would be necessary somehow to be able to prove that the failure was caused by a human person who committed an act of negligence. Furthermore (and this was very traditional American tort law and was embodied in the FTCA), it was only possible to get personal injury and property damages, it was not possible to get economic losses. So, e.g., if an airline could not fly for two or three weeks because of the failure of the GPS system, and they wanted to sue the US for their lost profits, the case would be dismissed instantaneously. It would be a different question if there was an airline accident and the plane had been destroyed and people injured or killed, but economic damages were excluded. So there was very, very limited liability.

Coming back to the question whether the US system would be a good model for other potential GNSS systems, the answer was probably not, it depended on the structure of the system. GALILEO would have free services and paid services. The free services would be primarily liability free, a user would use the service at its own risk. Paid services brought in contract liability. When liability was considered, the issues would be should liability be limited? Would there be third party beneficiaries? Was there going to be direct contractual liability? All those questions would have to be answered in any system that used a contractual basis. There were other issues that they did not have to deal with, that would have to be dealt with if the scheme for potential liability were broader. Thus, was it going to be negligence liability? Would it be strict liability? Should liability be capped? All of these questions would have to be asked in order to come up with a package of potential liability, if the system considered were one that expressly or implicitly provided for a level of liability that the US did not.

Turning to conflicts questions, he observed that those were not inherently obvious questions. Whose law applied? That would probably depend on where the accident occurred, and that was not necessarily a clear question: using the GPS system, the signal was sent and was controlled somewhere in the US. If, for example, the error occurred in Washington DC, but the signal came out of a satellite in space and it landed in Hamburg where buses smashed, where did the accident occur? Washington or Hamburg? Under some US law the answer would be Washington DC. There had been a case of a plane crash in Paris, when the US authorities had been sued under the

Federal Tort Claims Act, for which the tort had to occur in the US, in which the court had said that it had been a Federal Aviation Administration error in the US that had caused the accident.

If it was not established which law applied, it had to be kept in mind that if a contractual or quasi contractual or even a tortious basis of liability were used, the law was not the same in all jurisdictions and therefore all of those questions had to be resolved. There were a variety of issues that certainly were not addressed under the American liability law with the GPS, since they effectively had very little liability that would need to be addressed in other systems where there potentially was a lot of liability.

Professor Gabriel concluded that the answer he gave to the question whether the GPS system would be suitable also for other systems was probably not, if the GNSS system presupposed liability, because the US system did not work well that way. When the GPS system had got up and running, there had been a lot of discussion in ICAO about the fact that the airlines could never use the GPS system unless there were some convention which dealt with liability. That convention was never developed, but the airline industry in the whole world was to a large extent based on the GPS system, as was the maritime industry and a lot of other industries. The systems had evolved, and they had evolved organically, even without a convention. He did not know if that was the best solution, but historically it had been possible to adapt commercially to GNSS systems and to use them on a day to day basis even without this external convention.

(C) QUESTIONS AND DISCUSSION

The Secretary-General asked Prof. Masutti to what extent a carrier can disclaim liability if the breach had been caused by GNSS failure, how that would relate to the liability regimes established under the various conventions, and to what extent e.g. an insurer that paid compensation for an insured event which ultimately had been due to GNSS failure, had direct action against who ultimately was responsible. The other question related to in those legal systems, such as the US, where the courts were reluctant to apply what they perceived as inequitably low limits of liability, e.g. under the Warsaw Convention, whether damaged person would have a direct course of action in the case where the damage was limited by a ceiling established by the convention for the sums that exceeded the ceiling. This was not clear, and the initial research indicated that it depended on interpretation.

Prof. Masutti recalled that at international level there were several conventions on civil liability for oil pollution damage or air carriers. The 1999 Montreal Convention dealt with both the contractual and non-contractual liability of the air carrier. The main aspect of any future regulation of third-party liability would be to identify a liable party so as to guarantee victims, to permit them to identify the liable party immediately, but also in order to permit the insurance market to cover the liability of this party. At same time it was necessary to provide for a right of recourse against who really caused the damage. As regarded the low level of compensation referred to by the Secretary-General, if a system of two tiers of liability involving the contribution of States or organisations involved this low level of compensation might be avoided.

Dr Bollweg stated that he missed answers to the basic question of the need for an international instrument on third party liability. Prof. Masutti had referred to a lot of conventions, but those conventions were not applicable in these cases. Prof. Masutti had indicated that the major application of GNSS was the air navigation service, and there existed several very modern international conventions which covered the damage caused by an aircraft. First of all the 1999 Montreal Convention on passenger liability, but also the 2009 Montreal Conventions covered third party liability. He wondered whether it really was necessary to have a new convention covering damage caused by GNSS malfunctioning if that same damage was already covered by the 1999

and 2009 Conventions in the aviation sector. He stressed that on the table was a consideration of third party liability, not contractual liability.

Prof. Masutti stated that the idea to have an international convention on third party liability for GNSS had originated with the consideration that the current conventions did not cover this. Thus the 1999 Montreal Convention was applicable only in case of the death or injury of passengers and therefore did not cover all the damage that could be caused by a malfunctioning of GNSS systems to people on the surface or property. The 2009 Montreal Conventions would be important instruments when they entered into force, but they were only applicable in particular cases, such as terrorist attacks. The first of the two 2009 Conventions revised the 1952 Rome Convention, the second applied to unlawful interference. When GNSS services were considered, air transport activities were certainly covered, but they were not the only ones, there were also other activities, as GNSS were used for commercial activities in different fields, not only transport.

Mr Burman wondered if the reference to *force majeure* was intended to be an exception to the strict liability proposed. Prof. Masutti confirmed that the *force majeure* referred to, i.e. a natural phenomenon of an exceptional, inevitable and irresistible character, was indeed intended to be an exception to strict liability.

Mr Burman also wondered whether the term “operator” covered the signal generator, or covered also the service providers that received the signal, developed it, manipulated it and made it available through other technologies to an ultimate user.

Prof. Masutti stated that when this question had been examined, the idea had been to cover the generator and manager of the entire satellite system, as well as the service provider of the services, so as to have a service provider of the services who would be the liable party in order to channel the liability, but would also be the entity able to provide all the services, to collect all the fees for these activities, would in the end be able to compensate the victims thanks to its activities.

Ms Mantl pointed out that in air transportation normally there was not simply one single thing that caused an accident, it could be 100 different things that come together and caused an accident. Therefore, even if there were a liability convention or some way of pointing GNSS liability, this would not automatically solve problems, because GNSS malfunction may not be the only catastrophic reason a certain event happened. She asked Prof. Masutti whether this had been taken into account in the work on this particular topic. Prof. Masutti confirmed that this point had been extensively discussed.

The Secretary-General asked Dr Filjar if there was any data or study that would indicate the likelihood of a navigation accident being attributed to a malfunctioning of GNSS signal.

Dr Filjar stressed that the issue was a really complex mesh, that there was a very slim line between the operators, users, service providers, and data providers, and this fact brought a lot of issues in devising the legal liabilities of the stakeholders. If a user bought a car navigator, used it, after two or three years the geospatial database would be too old, as there would be new roads, new roundabouts, etc., and the user would not have the information required to navigate the car. Then there was a road accident. Who would be liable? Apparently not the GNSS operator who sent the satellite signals, as they could do that, they could be the control part of such a system but they could do nothing about what went on in the place the signal was received, and certainly they could do nothing about the user’s negligence in updating the geospatial database which resulted in the traffic accident. Turning to the question of the studies, he indicated that there were a couple studies that identified the probable scenarios of the failures, and made an assessment of how serious the damage could be. There was also an excellent report by the Royal Academy of Engineering. The European Commission had made a couple of very good documents or studies on

the effects of the failure of the GNSS, with some figures and also with some estimates of how serious it could be.

Mr Oliver Heinrich of BHO Law Firm, wondered whether the concept of *force majeure* might not be incompatible with protecting the victim as desired. He wondered whether in a system with so many factors which were out of the hands of the people really running the system, *force majeure* really was something that could be taken into account.

Mr Peter HULSROJ, Director of the European Space Policy Institute (ESPI) observed that Prof. Masutti was advocating strict liability, but in practice what might happen was that there might be a combination of one action regulated by strict liability and several by fault liability. Since it was not just a question of saying someone had been damaged by oil, it is not just a question of saying that someone had been damaged by a faulty signal, because a faulty signal in itself would normally not cause damage, how could this be regulated sensibly when there was a competition or interaction between different liability regimes? He believed that it was slightly misleading to talk about third party liability, he believed that in reality it was a question of product liability, because the examples given were normally part of a contractual chain.

Prof. Masutti indicated that the complexity was one which it would be necessary to face in the future, with the expected technological developments: it would not be a matter of dealing with the air navigation service providers one to one, the air navigation services would be offered by service providers and all the information would come also from other operators. All this information would be used by all the operators in air transport, so it would be difficult also in this sector to identify who was responsible for an accident doing the carriage of people. She believed that it would be easier to protect victims if there were a legal instrument at international level it.

Mr David GASSON, Secretary General of the International Union of Aerospace Insurers (IUAI) wondered what system GLONASS had, whether it was set up in a way similar to GPS in liability terms.

Ms Evgeniya FILATOVA of NIS GLONASS stated that liability issues had not yet been discussed in Russia in relation to GNSS malfunctioning, there were only general rules on civil liability. She indicated that a legal structure was being developed, with several acts being adopted to regulate the relationships that would arise in connection with the use of GLONASS and the commercial and public systems that would be built based on the GLONASS signal and services.

Mr Wu Attaché of the Chinese Embassy in Rome, observed that almost all satellite navigation systems were operated by States or State entities. When the question of State immunity in party liability in satellite navigation systems came up, how would it be possible to deal with this issue from the point of view of international private law?

Prof. Masutti indicated that at international level a project was underway to prepare a new convention aimed at defining when States or State entities could invoke state immunity. When States or State companies were involved in commercial activities it was hard to invoke State immunity.

Mr Attila Matas, Head of the Space Publications and Registration Division of the International Telecommunications Union (ITU), stated that what he missed from the beginning was a clear definition of what was being discussed. It had to be stated clearly that what was being discussed was not liability for free services, but for regulated and safety of life (SOL) services, when there was a clear, written agreement and the service was paid for. He observed that even for the regulated service, if the user wished, he/she could pay only 1\$ to use the regulated service, but at that point would not care about liability, or the user could pay 1million \$, in which case he/she

wanted the SOL satellite operator to give a message every time there was jamming or a problem with satellite failure. In this case it was clear that the satellite operator had full responsibility to set up a monitoring facility world-wide, and had to prove that the service that a provider was selling to customers by means of a signed contract was a full SOL service. After that the user could go to court if the provider did not furnish a service provided for in the written contract. A free service on the other hand was a free service and if people used it improperly that was their problem, because it was not possible to control how a free service was used.

Mr HULSROJ wondered if non-liability for free services was correct. When third party liability was spoken of, it was assumed that the person who bought a tom-tom navigation equipment was taking the signal him/herself, and that therefore the potential responsibility issue was between the driver and the signal provider from space. Was this true? Tom-tom presumably provided a service that included the signal, and if this was the case, then the liability issue changed again, because then it was not a question of whether there was an implied contract between the driver and the GALILEO operator, but whether there was an implied contract between tom-tom and the signal provider.

Ms Mantl thought that it depended on which jurisdiction was involved: if something was free, it did not mean that there is no liability, if someone gave a person a free hot dog and that person died from food poisoning, the donor was likely to be sued. The same applied for any service of a public nature. There was very little State immunity in some common law countries, and if it was reasonably foreseeable that someone would use a free service some liability may attach.

Prof. Gabriel agreed that it would be a jurisdiction by jurisdiction question, because the fact that there was no contract liability in the US for the GPS was not because it was free, but because there was no contract. If one donated things there could be all sorts of liability. As regards liability in the US for GNSS malfunctioning, there was no liability because the US Government said there was no liability.

Mr HULSROJ said that he was considering the narrow issue of implied contracts. It could be argued that there was a contractual relationship between the tom-tom user and tom-tom, but ultimately the question was whether you were suing tom-tom for a bad radio or also for a bad programme. There was of course also the general issue of tort liability, but also of whether a Government was saying it was accepting no responsibility even if it knew that there was a high dependence on the signal by a number of service providers.

Dr Filjar observed that satellite navigation was a technology, but also the enabler for many services. There were services that needed a legal framework and there could also be completely commercial services. He pointed out that there were not only catastrophic events with loss of life, there were also other sorts of damages.

Mr Burman observed that the fact that a provider of services declared it to be free, absent real litigation was not a wholly reliable basis to assume that there was no liability. If an incident was sufficiently large, with enough claimants, efforts would be made to circumvent the issue of no liability because there is no contract, and to find a basis to argue an implied contract because of expected use. It could only safely be assumed that there was no liability in a jurisdiction where that matter had been litigated or there was a clear affirmative statute declaring that there could be no liability.

Mr Ingo Baumann of BHO law firm observed that it had not been mentioned that there were many discussions about the compatibility of the different global systems and that there was a huge expectation that in the future there may be receivers which received GLONASS, GPS GALILEO and Beydoo at the same time. This would make life even more difficult, because then there would not

be one operator attributed to one receiver, there would be one receiver attributed to four or even more operators.

The Secretary-General wondered whether the fact that the different operators would be subject to different liability regimes make a difference and whether an international convention would acquire any meaning because of that.

Mr HULSROJ agreed that this did not make things easier. He stated that he would be more persuaded by Mr Matas's argument if the Tom-tom user could sign up for two different contracts: one which had high reliability, and one where the user did not pay anything for the signal, because it was free. If there was no choice, the more reliable or the less reliable, should then the one who provided the free service be free to provide it in a totally non-reliable fashion subject to no liability? He stated that that was not what the law in general would imply.

Mr Matas stressed that if he wanted to receive only reliable signals and if he received free signals, he needed a red blinking message warning to be careful in the aeroplane, to ask air traffic control, to use other navigation systems because you are using a free service. This was easy to do, it was impossible to say that you do not know you are using a free service, they know very well as the free service used a completely different frequency.

Mr HULSROJ objected and said that if a legal regime were considered, it could not be assumed that the receiving party knew, because the receiving party had no idea and should have no idea.

Prof. Gabriel gave the example of the GPS system being run from the US but the satellite having been built in Japan and the GLONASS system being run from Moscow, whereas the satellite was built in Korea, and the signal being received by someone in Germany, who uses a Chinese-built GPS system, and something goes wrong. What he wanted to know was how a lawyer was going to figure out if it was the Chinese, the Indians, the Japanese, the Koreans or the Americans that were liable. Somehow the signal did not work correctly, there was an accident, and the user had a system that picked up the best signal, but the user did not know which one it was, and I did not know if it was a satellite failure or a signal failure. He was not sure how a convention on the liability system would be structured if the factual questions were as complicated as suggested.

Ms Mantl pointed out that for the end user with a tom-tom in their car, this would not choose a signal provider, it would look at all the satellites and the more satellites there were, the better the signal would be. If there was a loss of signal, it would take more than one system for it to go down.

Dr Filjar remarked that if the satellite navigation operator failed to provide or to generate what was expected, meaning that the ground segment and also the satellite segment did not work properly, then definitely there was guilt on the part of the satellite navigation operator. If GNSS satellites broadcast what they were expected to broadcast, without any failure, then problems could arise in the environment nearest to the user. In that way, it became the problem of the GNSS receiver manufacturer, and service provider. If the geospatial database was old enough, it would not serve the purpose for which it existed, it should be updated. If the user of the service failed to do that, the service provider could not be guilty of not providing the service in an appropriate way.

Dr Baumann observed that from a user perspective, especially if they were not talking about one dedicated receiver, but one device integrating several technologies and services, when the user perhaps did not even know if it was mapping or navigation or whatever, it was more or less impossible to tell what service he/she was using.

Dr Bollweg suggested that a discussion whether an international convention on third party liability for GNSS malfunctioning was necessary should be the first step.

Ms Laurence MARTIN, Head of International Relations of the *Confederazione italiana armatori* (CONFITARMA), representing the International Chamber of Shipping (ICS), indicated that from an ICS perspective there was no pressing need for an international regime to govern liability for GNSS malfunctioning. The liability of ship-owners for the main types of damage that might be expected to result from GNSS malfunctioning was already regulated by a comprehensive framework of international instruments adopted by the *International Maritime Organization* (IMO) and other international organisations. It was necessary to know more about current national systems in terms of technology and then to study the legal framework. To date, there were no cases resulting from GNSS malfunctioning.

The Secretary-General asked how a case clearly attributable to the failure of a satellite signal would be handled under existing liability and insurance schemes.

Mr Bolomini replied that there was a limitation of liability, and there was also an enormous reinsurance programme behind the clubs. When there was an opportunity for recourse action, it was taken, but there was not an international convention which regulated the liability and compensation of pilots, there was just the law, it was not necessary to have a liability and compensation instrument, which was extremely complicated simply to pin down the person who would be liable. As regarded the proposal for a fund, like the international oil pollution compensation fund that sits behind the CLC regime. He did not see how such a system could operate well, or in the same way as the IOPC Fund, and there was no reason to use that model. He did not understand how it would work for the providers of satellite systems, especially given the complicated scenarios envisaged in the discussion.

Mr Michael GILL, Senior Legal Counsel of the International Air Transport Association (IATA) observed that if the 1999 Montreal Convention were considered, it made it very clear that the rights of recourse against third parties of an airline, which was strictly liable under the Convention-regime to passengers and to cargo-shippers, whether in tort, delict, contract or otherwise, were not restricted. The third party surface damage conventions referred to and adopted in Montreal in 2009 were not in force, but addressed the issue of recourse more restrictively than the 1999 Convention, but they did provide that the airlines would have rights of recourse against any liable third parties. In his view any new convention in the field discussed at the meeting would not be able to change the primary liability of the airlines. The question he had in my mind and which had arisen with IATA members was whether any new convention in this field could change the provisions on recourse against third parties that were already provided for by international conventions part of the ICAO aviation regimes.

Mr Denis BENSOUSSAN, representing the International Union of Aerospace Insurers (IUA) commented that it was known that airlines were using GPS, and that airlines had a comprehensive insurance and were covered if there was an accident. If there was an accident, the first party and the third party alike would be covered and would be compensated - up to a certain limit. As would the final user, who would be compensated and would be compensated fairly quickly - up to a certain limit. For aviation there was already a comprehensive legal regime and a comprehensive insurance regime attached to that which basically fairly compensated any victim of an accident.

Mr Heinrich (BHO) felt that what the meeting was told for the international shipping industry, and again from the aviation sector, was not really very consoling for an operator, because an operator ran the risk of being faced with an unlimited recourse action. Mr Burman had said that until there was a statutory regime which explicitly excluded or capped this kind of liability, the operator would not be safe from such actions, and there was a good reason for the US to have this law and to take

good action to protect the GPS system, because it was basically military and should not be burdened with law suits.

Ms Mantl wondered whether it was actually possible to have a convention. Any convention was only as good as the States that had ratified it, and the US were quite happy with their system (the FTCA which it was hard to get around), she did not see them shifting from that position. In Europe there was no unified position on liability, and she did not see them getting one in the near future. She agreed with Mr Heinrich that the operator should be concerned: the operator in the US was fairly well covered, in Europe not. The operator in the EU would *de facto* be the EU, which would be the owner of the GALILEO system. She did not see how 27 member States would allow the EU to contract itself out of liability for something like GALILEO very easily. She was not sure how all the EU States would be able to sign a convention and how the US would be able to sign it, and for this to work it would be necessary to have at least the States that had a GNSS interest as signatories

Ms Cécile GAUBERT, Head of Contracts and Claims, Aviation and Space Department of Marsh S.A. , observed that a lot of actors were involved: e.g. the manufacturer of the tom-tom box, the manufacturer of the satellite, the signal provider, satellite operators, etc. There were already insurance solutions that were not specific for GNSS operations, but that already existed. All these insurances were limited in terms of conditions, in time, and most of all in amount. In other words all these actors could already find insurance protection, but only to a certain extent.

Mr Thierry HERMAN, Legal Administrator of the Legal Department of the European Space Agency (ESA) pointed out that most likely the damage would be at the level of the financial services that used GNSS services for timing functions, to synchronise transactions. This should be kept that in mind

Mr Burman observed that there was an assumption by some to think of accidents primarily in the transportation industry and to then slide into tort responsibility issues. There were many other areas that could be implicated. In consulting with people active in this field, one of the points of focus had been to examine the different groups within the framework of the EU because this had arisen in the context of the movement towards GALILEO. There were at least three major groups, one looking towards some type of multilateral solution, another preferring solutions within the context of the EU first, and within those groups there seemed to us to be not a point of resolution yet, as to whether there it be likely to be a tort liability approach, some kind of a negligence approach, or whether there would be an effort to parallel what was done in oil pollution and nuclear damage. He observed that funding a large multilateral fund, even if it was only within the EU, would be a challenge at the present day. Given all of that, and given the absence of clarity as to what kind of multilateral instrument might be workable, people in US had said that this was not the time in which there was sufficient clarity to make even a decision on negotiating a multilateral instrument. In other words the process would have to get much further along in terms of potential focus in results even for that kind of decision to be approached. There was also the fact that there had not yet been a line of substantial cases that would identify the likely areas of liability and the kinds of circumstances that led to them. That also had led some to say that there was not yet a demonstrated need, and the problem people had with that, was that until there was a demonstrated level of actual problems, of actual liability issues, it was hard to know which of the approaches might best fit that circumstances. They certainly supported the limitation of liability, that obviously was the path they had followed in their own consultations, focusing on the European framework, it was not clear to them that all major players in the European framework would agree that limiting liability was the right way to go. There needed to be an enhanced focus on many of the issues before States would be willing to look at engaging on a multilateral basis.

Prof. Masutti observed that the P&I Clubs talked about the possibility of exercising the right to recourse, and again we talked about a subrogation action, but the problem was if this action could be exercised successfully. That was why a clear regulation was necessary.

Dr Bollweg stated that he shared the views expressed by Mr Burman. As regarded the recourse action and the view that this was an item that should be covered by such an international instrument, he had serious doubts whether this was right and whether this could be an item for an international instrument made by UNIDROIT. A recourse action in the main area of GNSS services would relate to the aviation area. Which meant that there was a wrong signal sent by a malfunctioning GNSS service provider which causes the crash of an aircraft. Maybe there were victims in the aircraft and on the surface. The victims in the aircraft were compensated by the 1999 Montreal Convention, the victims on the surface were compensated by the 2009 Montreal Convention and the person liable was most of the time the airline, the aircraft operator. If the airline or aircraft operator was liable, it was possible to have a recourse action against the service provider of the GNSS signal. But if there was a commercial system like GALILEO, the airline or the aircraft operator was bound by a contract to the signal service provider and this signal service provider could protect itself by this contract by limiting its liability. It was not necessary to have an international convention dealing with this matter. Secondly, Dr Bollweg asked Ms Mantl for more details as regarded the work on the ECAC contract framework. When ICAO had decided to stop its work on GNSS in 2007, ICAO had related this to the ECAC contract framework, saying that this was more or less a regional problem which should be solved by the region concerned and that was Europe concerning GALILEO. What was the status of this contractual framework? Was there already a contractual framework, what was its contents: he assumed that it covered only contractual liability.

Ms Mantl stated that EUROCONTROL would still like a convention, but did not see it happening in the near, even long term, future. They had therefore thought that a contractual framework might simplify things a little. The work had gone on for a few years, they had developed the contractual framework idea, which was a strange mix of public law and private law, where there would be a kind of virtual contract entered into by air navigation service providers and the satellite operator, and certain matters would be regulated through that. There would be mandatory recourse to arbitration, and mandatory insurance. It was relatively simple but the idea was just to channel things a little bit and also to try to get over the jurisdictional problems through the mandatory recourse to arbitration. It had lost its momentum in ICAO because it had been seen as a regional solution and ICAO was more interested in Conventions. EUROCONTROL had eventually decided to put it to the air navigation service providers and to ask whether they would enter into a contractual framework regarding this, to channel liability, to put a certain place as a spot for arbitration to get over the jurisdictional issues, and the answer had basically been no. Some had not been sure that they could do it legally. Fundamentally there were five large air navigation providers across Europe, all subject to different laws, so there was a lack of willingness, perhaps a lack of understanding of how their own law would impede this. The EU Commission had supported EUROCONTROL's efforts. EUROCONTROL and ECAC had backed off a little, as the EU was the legislator and should take the lead, so things were on hold, waiting to see what European Commission did.

The Secretary-General asked the non-European participants what their feelings were, whether they felt that it was a European problem or, considering future inter-operability, the idea of developing a sort of international regulatory framework would be of interest to them.

Mr Wu stated that it was difficult to see question of liability of GNSS malfunctioning, it was not possible to say if it was only a European problem. There were at least four different satellite navigator systems, and the questions were what were the real problems, what were the market

mechanisms, what were the needs of the market? GALILEO and Beidou were not operational, so it was difficult to say if it was a European or world-wide issue.

Ms Evgeniya FILATOVA, Legal advisor on international law of the Joint Stock Company «Navigation-Information Systems» (NIS GLONASS), stated that in Russia the internal level of regulation was not clear, so she thought that in the first instance the Russian authorities would like to prepare such an instrument to clarify internally to the country. Before it were made clear internally, it was difficult to discuss something at international level. GLONASS would belong to the State and the State would of course want to limit its liability or to use immunity, NIS GLONASS had been appointed as a satellite navigation service provider, so they were interested in the question of liability, but at the moment basic laws were being elaborated, which would regulate their relationships and other services, commercial or public, free and paid services, together with the liability issues. She felt that the internal work could go in parallel with the international work, as they were interested in ideas elaborated at international level

Mr Wu agreed that if the work proceeded in parallel, at national level they would be able to get good ideas prepared at international level

Mr Herman transmitted a message from his colleagues at the European Commission who had been unable to participate in the meeting, to the effect that the Commission was preparing an impact assess on the need for European regulation on liability of GALILEO and it would be issued in the first semester of 2012. The decision of the Commission whether or not to proceed with the drafting of a Regulation would be based on that impact assessment.

Concluding the meeting, the Secretary-General summarised the discussion as follows: part of industry saw no immediate need for an international instrument, as the current framework was adequate, other industry representatives said yes, but you are looking at it only from the narrow perspective of your particular industry, and there are other concerns that maybe the current framework is not addressing properly, there are still questions open, yet other industry representatives that preferred to wait and see and not to express a position at this point in time. Some practising lawyers pointed to the potential difficulties with the future interoperability, as did some representatives of academia. Some questioned very deeply the rationale for any work in this area, and this was very passionately the view taken by the ITU. The positions expressed by Prof. Masutti and Dr Bollweg were in line with the positions taken by Italy and Germany. To a very large extent also the opinion expressed by Mr Burman reflected the position taken thus far by the US. No one had said that Unidroit should stop talking about third party liability for GNSS malfunctioning on the contrary, there seemed to be some interest even if the conclusion were at a certain point that there was nothing at international or global level to be done in the nature of an instrument, that the discussion might be a fruitful one even for cross-fertilisation of the domestic environment that was to be developed. The fact that an impact assessment would be available by the EU Commission by the first semester of 2012 would certainly provide useful material for the discussions to continue. The Secretariat would prepare a Report for the Governing Council of the Institute on the outcome of these consultations, trying to continue to identify potentially interested parties, and maybe then, after that impact assessment by EU has become available, the Secretariat might organise another round of consultations of this nature, unless the Governing Council decided they wanted to have another round of consultations even before that study became available, but that did not seem very likely.

**THIRD PARTY LIABILITY FOR GLOBAL NAVIGATION SATELLITE SYSTEM
(GNSS) SERVICES
RISK MANAGEMENT IN GNSS MALFUNCTIONING
Informal meeting
(Rome, 11 November 2011)
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