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**Committee on the Peaceful
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Scientific and Technical Subcommittee
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Draft report

Addendum

[...]. **Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)**

1. In accordance with General Assembly resolution 67/113, the Subcommittee considered agenda item 5, “Implementation of the recommendations of the Third United Nations Conference on the Exploration and Peaceful Uses of Outer Space (UNISPACE III)”.
2. The representatives of Canada, Indonesia, Italy, Japan, Nigeria and Portugal made statements under agenda item 5. During the general exchange of views, statements relating to the item were made by representatives of other member States.
3. The Subcommittee heard a scientific and technical presentation entitled “Expansion of the United Nations/Japan Long-term Fellowship Programme on Nanosatellite Technologies, hosted by the Kyushu Institute of Technology (Japan): post-graduate study on nanosatellite technologies”, by the representative of Japan.
4. The Subcommittee had before it the following:
 - (a) Note by the Secretariat on the contribution of the Committee on the Peaceful Uses of Outer Space to the United Nations Conference on Sustainable Development: harnessing space-derived geospatial data for sustainable development (A/AC.105/993);
 - (b) Conference room paper entitled “Rio+20 and beyond” (A/AC.105/C.1/2013/CRP.16);



(c) The outcome document of the United Nations Conference on Sustainable Development, entitled “The future we want”, as endorsed by the General Assembly in its resolution 66/288 of 27 July 2012;

(d) The first report by the United Nations System Task Team on the Post-2015 United Nations Development Agenda, entitled “Realizing the future we want for all”.

5. The Subcommittee recalled that the General Assembly, in its resolution 67/113, had recalled that a number of the recommendations set out in the plan of action of the Committee on the Peaceful Uses of Outer Space on the implementation of the recommendations of UNISPACE III (A/59/174, sect. VI.B) had been implemented and that satisfactory progress was being made in implementing the outstanding recommendations through national and regional activities.

6. The Subcommittee noted that its long-standing achievements encompassed the three United Nations Conferences on the Exploration and Peaceful Uses of Outer Space (UNISPACE I, II and III), held in Vienna in 1968, 1982 and 1999, respectively, and had resulted in many important actions of the Committee and programmatic activities of the Office for Outer Space Affairs.

7. The Subcommittee welcomed paragraph 274 in the outcome document of the United Nations Conference on Sustainable Development, entitled “The future we want”, whereby the Conference recognized the importance of space-technology-based data, in situ monitoring and reliable geospatial information for sustainable development policymaking, programming and project operations.

8. The Subcommittee noted with satisfaction that a side event of the Conference, entitled “Space for sustainable development”, was organized by the Office for Outer Space Affairs with the support of the Governments of Austria and Brazil on 19 June 2012 to increase awareness of the value of space data in addressing sustainable development challenges, including in the area of water resources, marine ecosystems, health care, population growth, climate change, disasters and food security and to discuss the contribution of space-based information and technologies to support the implementation of Conference outcomes and actions.

9. The Subcommittee noted with appreciation that the tenth open informal session of the Inter-Agency Meeting on Outer Space Activities would be organized by the Office for Outer Space Affairs and the United Nations Office for Disaster Risk Reduction on 12 March 2013 in Geneva, and would focus on the theme of “Space and disaster risk reduction: planning for resilient human settlements”, which, in view of the broader development agenda, was a timely initiative, in particular in view of the relevance of the overall concept of resilience.

10. The Working Group of the Whole, reconvened in accordance with General Assembly resolution 67/113, also considered agenda item 5. At its [...]th meeting, on [21] February, the Subcommittee endorsed the recommendations of the Working Group (see annex I to the present report) concerning the implementation of the recommendations of UNISPACE III.

[...]. Recent developments in global navigation satellite systems

11. In accordance with General Assembly resolution 67/113, the Subcommittee considered agenda item 9, “Recent developments in global navigation satellite systems”, and reviewed issues related to the International Committee on Global Navigation Satellite Systems (ICG), the latest developments in the field of global navigation satellite systems (GNSS) and new GNSS applications.

12. The representatives of China, France, India, Italy, the Russian Federation and the United States made statements under agenda item 9. During the general exchange of views, statements relating to the item were also made by representatives of other member States.

13. The Subcommittee had before it the following documents:

(a) Report on the United Nations/Latvia Workshop on the Applications of Global Navigation Satellite Systems (A/AC.105/1022);

(b) Report of the Secretariat on activities carried out in 2012 in the framework of the workplan of the International Committee on Global Navigation Satellite Systems (A/AC.105/1034);

(c) Note by the Secretariat on the Seventh Meeting of the International Committee on Global Navigation Satellite Systems (A/AC.105/1035);

(d) Working paper submitted by the Russian Federation on the provision of the Russian Global Navigation Satellite System to the international community for free use (A/AC.105/C.1/L.331).

14. The Subcommittee heard a scientific and technical presentation on “Global Navigation Satellite System (GLONASS) Government policy, status and modernization”, by the representative of the Russian Federation.

15. The Subcommittee also heard a presentation on “ICG and its programme on GNSS applications”, by the representative of the Office for Outer Space Affairs, which served as the executive secretariat of ICG and its Providers’ Forum.

16. The Subcommittee was informed that the Office for Outer Space Affairs, as the executive secretariat of ICG, handled coordination for the planning meetings of ICG and its Providers’ Forum in conjunction with sessions of the Committee and its subsidiary bodies, along with the implementation of a programme on GNSS applications. It was noted that the executive secretariat also maintained a comprehensive information portal for ICG and users of GNSS services.

17. The Subcommittee took note that, pursuant to the ICG workplan, the Office for Outer Space Affairs, through its programme on GNSS applications, concentrated its work on promoting the use of GNSS technologies as tools for scientific applications, including space weather effects on GNSS, and organizing regional workshops on applications of GNSS and the International Space Weather Initiative.

18. The Subcommittee noted that GNSS applications offered a cost-effective way of pursuing sustainable economic growth while protecting the environment. Satellite navigation and positioning data were now used in a wide range of areas, which included mapping and surveying, monitoring of the environment, precision agriculture and natural resources management, disaster warning and emergency

response, aviation, maritime and land transportation and research areas such as climate change and ionospheric studies.

19. The Subcommittee noted that the United Nations/Latvia Workshop on Applications of Global Navigation Satellite Systems had been held in Riga from 14 to 18 May 2012. The Workshop was co-sponsored by the United States, through ICG, and by ESA. The Latvian Geospatial Information Agency had hosted the Workshop on behalf of the Government of Latvia. The overarching objective was to facilitate cooperation in applying GNSS solutions through the exchange of information and the scaling up of capacities among countries in the region.

20. The Subcommittee noted with satisfaction that the seventh meeting of ICG and the ninth meeting of the Providers' Forum, organized by the Government of China, had been held in Beijing from 4 to 9 November 2012 and that the eighth meeting of ICG would be held in Dubai, United Arab Emirates, from 10 to 14 November 2013. The Subcommittee noted the expression of interest by the European Union in hosting the Ninth Meeting of ICG, in 2014.

21. The Subcommittee noted that the ICG working groups focused on the following issues: compatibility and interoperability; enhancement of the performance of GNSS services; information dissemination and capacity-building; and reference frames, timing and applications. The Subcommittee also noted progress made on the ICG and its Providers' Forum workplans, in particular with regard to multi-GNSS monitoring to improve performance and interoperability, as well as interference detection and mitigation.

22. The Subcommittee noted that ICG continued to promote greater transparency in GNSS systems, in line with the adopted principle of transparency that every provider should publish documentation that describes signal and system information, policies of provision and minimum levels of performance for its open services.

23. The Subcommittee noted with appreciation the publication of an educational curriculum on GNSS (ST/SPACE/55), which was a unique result of the deliberations of the regional workshops on GNSS applications since 2006. It was noted that this curriculum would be made available to the regional centres for space science and technology education, affiliated to the United Nations, and supplement the proven standard model education curricula of the regional centres developed through the programme on GNSS applications.

24. The Subcommittee commended the Office for Outer Space Affairs for its outstanding performance in its capacity as the executive secretariat of ICG and its Providers' Forum, and expressed appreciation for the efforts of the Office in promoting the use of GNSS throughout its programme on GNSS applications.

25. The Subcommittee noted that the global positioning systems of the United States continued to set a high standard of reliability, accuracy and service to the international community. It was noted that this constellation continued an expanded 24+3 slot configuration to provide better coverage and availability around the world. The Subcommittee also took note of the intention of the United States to keep GPS as a central pillar in an emerging international system of GNSS and that, as new systems emerged, signal compatibility and interoperability among GNSS, as well as transparency in the provision of open civil services, would be key factors in

ensuring that civil users around the world received the maximum benefit from GNSS applications.

26. The Subcommittee took note that the Governments of the United Kingdom and the United States had reached a common understanding of intellectual property rights related to GPS. It was noted that this understanding was part of a broader shared effort to advance compatibility and interoperability among civil satellite navigation systems and transparency in civil service provision.

27. The Subcommittee noted with appreciation the financial contributions made by the United States to the Office for Outer Space Affairs in support of GNSS-related activities, ICG and its Providers' Forum.

28. The Subcommittee noted that the Russian Federation's Global Navigation Satellite System (GLONASS) constellation had been completed and currently consisted of 29 satellites in orbit. It also noted that, at present, 24 satellites were being used as intended, providing full coverage of the entire planet, and that, in order to increase precision and operational capabilities, development continued on a new generation of GLONASS-K satellites.

29. The Subcommittee also noted that the Government of the Russian Federation had declared the prolongation of its commitment to provide GLONASS standard precision signals to the international community, including the International Civil Aviation Organization, on a non-discriminatory basis for a period of not less than 15 years without levying a direct charge on users.

30. The Subcommittee noted that Galileo, the future full global satellite navigation system under development in Europe, was scheduled to become available, with as many as 18 of the planned 30 satellites, in 2014 and that innovative receiver technologies as Galileo-based application programmes had been developed in a wide range of domains (in all modes of transport, precision agriculture and personal mobility). The successful launch of the first two in-orbit validation Galileo satellites was also noted.

31. The Subcommittee further noted that the European Geostationary Navigation Overlay Service (EGNOS) had been operational since 2009 and had made available satellite systems that were suitable for safety critical applications such as flying aircraft or navigating ships through narrow channels.

32. The Subcommittee noted that Italy continued to be an active member of ICG, as one of the founders of the European EGNOS and Galileo satellite navigation system, and that it had developed national application projects aimed at fostering the use of satellite navigation, harmonizing them with European projects.

33. The Subcommittee noted a series of successful launches of China's Beidou satellite navigation system and that the system had started providing initial positioning, navigation and timing services to China and surrounding areas.

34. The Subcommittee noted that India was currently implementing the GPS-aided GEO-Augmented Navigation System (GAGAN), a space-based augmentation system for delivering increased position accuracy for civil aviation applications and better air traffic management. It was noted that GAGAN was compatible and interoperable with other space-based augmentation systems, and that it would provide seamless navigation services, along with other systems. The Indian

Regional Navigation Satellite System, with seven satellites in geostationary equatorial orbit and four in geosynchronous orbit, was in the implementation phase. The full constellation was expected to be completed in 2015.

35. The Subcommittee noted that the Quasi-Zenith Satellite System of Japan would be expanded and upgraded into an operational and regional satellite-based GNSS for the benefit of the countries of the Asia-Pacific region.

36. The Subcommittee noted that the International GNSS Service (IGS), as a key component of the Global Geodetic Observing System, incorporated GPS and GLONASS with resulting orbits, clocks, station positions and velocities in the common International Terrestrial Reference Frame. It was noted that IGS was currently engaged in an ICG-endorsed project, the Multi-GNSS Experiment, a global activity to demonstrate data observations and analysis of all available GNSS, which was a complement to the multi-GNSS Asia campaign coordinated by Japan for tracking of Japan's Quasi-Zenith Satellite System.

[...]. Near-Earth objects

37. In accordance with General Assembly resolution 67/113, the Scientific and Technical Subcommittee considered agenda item 12, "Near-Earth objects".

38. The representatives of Canada, France, Germany, Indonesia, Japan, Mexico, Pakistan, the Republic of Korea, the Russian Federation and the United States, along with the representative of Chile, on behalf of the Group of Latin American and Caribbean States, made statements under agenda item 12. The observer for the Association of Space Explorers also made a statement. During the general exchange of views, statements relating to the item were also made by representatives of other member States and by the observers for IAU and SGAC.

39. The Subcommittee heard the following scientific and technical presentations:

(a) "The National Aeronautic and Space Administration's NEO Program Office and 2012 DA14", by the representative of the United States;

(b) "Japan's Asteroid Missions Hayabusa and Hayabusa-2", by the representative of Japan;

(c) "The status of the European Space Agency's near-Earth object segment", by the observer for ESA.

40. The Subcommittee had before it the following documents:

(a) Information on research in the field of near-Earth objects carried out by Member States, international organizations and other entities (A/AC.105/C.1/106);

(b) Recommendations of the Action Team on Near-Earth Objects for an international response to the near-Earth object impact threat (A/AC.105/C.1/L.329);

(c) Final report of the Action Team on Near-Earth Objects (2012-2013) (A/AC.105/C.1/L.330).

41. The Subcommittee heard a message from the Canadian astronaut Chris Hadfield on board the International Space Station about the close fly-by with Earth of the asteroid 2012 DA14 at a safe distance of 27,700 kilometres from the Earth on

15 February, discovery and subsequent tracking of which demonstrated the importance of coordinated international efforts to predict and, if necessary, mitigate such threats posed by near-Earth objects in the future.

42. The Subcommittee conveyed its condolences to the Government and the people of the Russian Federation for the damage caused by a large meteorite that crashed in the Chelyabinsk region on 15 February 2013.

43. The Subcommittee noted with appreciation the work of the Action Team on Near-Earth Objects under the chairmanship of Sergio Camacho (Mexico) in finalizing the recommendations for an international response to the NEO impact threat and progress made on coordinating international NEO detection efforts.

44. The Subcommittee noted that activities in protecting the Earth from an asteroid impact involved diverse and complex scenarios that could be best addressed through international cooperation, and consisted of early detection and tracking of a NEO, determining the risk of impact and deciding on a course of action in cases where the risk was relatively high and if a deflection was necessary.

45. The Subcommittee also noted the importance of information sharing in discovering, monitoring and physically characterizing the potentially hazardous NEO population to ensure that all nations, in particular developing countries with limited capacity in predicting and mitigating a NEO impact, were aware of potential threats.

46. The Subcommittee noted with appreciation the international efforts undertaken by member States to detect, catalogue and characterize NEOs, such as the Minor Planet Center, the Arecibo and Goldstone radio telescope facilities, the Korea Microlensing Telescope network (KMTNet), the NEO Program Office of NASA and the European-Union-funded NEOShield project, coordinated by the German Aerospace Centre.

47. The Subcommittee noted that the Near-Earth Object Surveillance Satellite (NEOSSat), to be launched on 25 February 2013, as a mission led by Canada with an international science team, would be the first satellite dedicated to searching for NEOs from space.

48. The Subcommittee noted with satisfaction the initiative of the European Commission to facilitate and fund the NEOShield project. The Subcommittee expressed its encouragement for continued funding of similar vital efforts in preparing techniques for preventing a NEO impact on a long-term basis.

49. The Subcommittee welcomed a worldwide research project being undertaken on samples of the first sample-return mission from a near-Earth object by the asteroid explorer Hayabusa of Japan, which had returned to Earth on 13 June 2010, the results of which were to be used for scientific purposes and future management of threats posed by near-Earth objects.

50. The Subcommittee also welcomed upcoming sample-return missions, such as the Hayabusa-2 mission of Japan, to be launched in 2014 to arrive at the target near-Earth object in 2018 and return to Earth in 2020, and the Origins Spectral Interpretation Resource Identification Security Regolith Explorer (OSIRIS-Rex) sample-return mission of the United States, to be launched in 2016 to arrive at the target near-Earth object in 2019 and return to Earth in 2023.

51. The Subcommittee noted the past and upcoming missions to investigate near-Earth objects, including the Dawn mission of the United States, which had completed its year-long mission in August 2012. The mission, in which for the first time a spacecraft had entered orbit around an object in the main asteroid belt, a densely populated belt and a source of most near-Earth objects, would provide further information about the nature of asteroids and the main asteroid belt.
52. The Subcommittee noted a number of international meetings to discuss international collaborative efforts on near-Earth objects, such as the 2013 IAA Planetary Defense Conference, to be held in Flagstaff, Arizona (United States) from 15 to 19 April 2013.
53. The Subcommittee also noted that the twenty-eighth General Assembly of IAU, held in Beijing from 20 to 31 August 2012, had adopted a resolution on the establishment of an international near-Earth object early warning system, as proposed by the IAU Division III Working Group on Near-Earth Objects.
54. The Subcommittee welcomed the initiatives of SGAC, such as the “Move an Asteroid” technical paper competition and the “Find an Asteroid Campaign”, to raise awareness about NEO issues among the public and, in particular, young people.
55. In accordance with General Assembly resolution 67/113, the Working Group on Near-Earth Objects was reconvened under the chairmanship of Sergio Camacho (Mexico). The Working Group held [...] meetings.
56. At its [...]th meeting, on [...] February, the Subcommittee endorsed the report of the Working Group (see annex III to the present report), including the recommendations contained therein for an international response to the near-Earth object impact threat.
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