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**Committee on the Peaceful
Uses of Outer Space
Scientific and Technical Subcommittee
Sixty-first session
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Draft report

Addendum

V. Recent developments in global navigation satellite systems

1. In accordance with General Assembly resolution 78/72, the Subcommittee considered agenda item 8, entitled “Recent developments in global navigation satellite systems”, and reviewed matters related to the International Committee on Global Navigation Satellite Systems (ICG).
2. The representatives of China, France, India, Japan, Pakistan, the Republic of Korea, the Russian Federation and the United States made statements under agenda item 8. A statement was also made by the representative of the European Union in his capacity as Chair of the seventeenth meeting of ICG. During the general exchange of views, statements relating to the item were also made by representatives of other member States.
3. The Subcommittee had before it the following:
 - (a) Note by the Secretariat on the seventeenth meeting of the International Committee on Global Navigation Satellite Systems ([A/AC.105/1304](#));
 - (b) Report of the Secretariat on activities carried out in 2023 in the framework of the workplan of the International Committee on Global Navigation Satellite Systems ([A/AC.105/1305](#));
 - (c) Report on the United Nations/Finland workshop on the applications of global navigation satellite systems ([A/AC.105/1303](#)).
4. The Subcommittee heard a scientific and technical presentation by the representative of China on the services and applications of the BeiDou Navigation Satellite System (BDS) that use Chinese characters.
5. The Subcommittee noted with satisfaction that the seventeenth meeting of ICG and the twenty-eighth meeting of the Providers’ Forum, organized by the European Commission in collaboration with the Spanish Presidency of the Council of the European Union, had been held in Madrid from 15 to 20 October 2023. The Subcommittee noted that the eighteenth meeting of ICG would be organized jointly by Australia and New Zealand.



6. The Subcommittee noted that the Global Positioning System (GPS) of the United States remained a reliable pillar throughout the world and that the United States continued its work to ensure that GPS operated effectively and efficiently. The year 2023 marked the fiftieth anniversary of the GPS programme. Furthermore, the Subcommittee noted that the United States had continued to upgrade the capability of and service provided by GPS through the integration of the newest generation of satellites, GPS Block III, and by developing new capabilities and enhancements for the GPS Block IIIIF satellites. In addition to being more resilient, the GPS Block IIIIF satellites would host a laser retroreflector array to enable the precise optical laser ranging of GPS satellites and a search-and-rescue repeater to relay distress signals to rescuers.

7. The Subcommittee noted that the service provided by the Global Navigation Satellite System (GLONASS) of the Russian Federation operated on the basis of open access navigation signals in the L1 and L2 radio frequency bands. In 2023, the first satellite of the fourth generation of the GLONASS constellation, namely, the GLONASS-K2 satellite, had been launched. The constellation had provided new open access code division signals in the L1 and L2 bands. In addition, the GLONASS-K2 satellites would facilitate the registration of emergency signals and thus improve the efficiency of search and rescue operations. The Subcommittee also noted that GLONASS satellites had been broadcasting the third open access signal in the L3 radio frequency band.

8. The Subcommittee noted that the BDS constellation of China had been further improved and provided global positioning, navigation and timing services. In 2023, two BeiDou navigation satellites had been launched with the aim of improving the system's reliability and service capabilities. The Subcommittee also noted that BDS had been introducing innovations that seamlessly integrated the positioning, navigation and timing functions of the System, while also building major services, namely, the satellite-based augmentation system service, the short message communication service and the ground-based augmentation service to support the development of BDS service applications that use Chinese characters.

9. The Subcommittee noted that India was pursuing two satellite navigation programmes, namely, the GPS-aided Geostationary Augmented Navigation System (GAGAN), a satellite-based augmentation system, and the Indian Regional Navigation Satellite System, also known as "Navigation with Indian Constellation" (NavIC). In 2023, the NavIC space segment was strengthened through the launch of the first satellite in the navigation satellite series. The NVS-01 satellite would ensure the continued legacy of NavIC services in the L5 and S bands, and also provide a new civilian interoperable signal in the L1 band.

10. The Subcommittee noted that the Quasi-Zenith Satellite System (QZSS) of Japan, also known as "Michibiki", was currently providing three types of services: a service complementing GPS that transmitted ranging signals from satellites; a high-accuracy service that augmented GNSS by providing error corrections through QZSS; and a messaging service to contribute to disaster risk reduction. The Subcommittee also noted that Japan had been trialling a high-accuracy augmentation service based on a precise point positioning technique and an early warning service for the Asia and Oceania regions.

11. The Subcommittee noted that France had participated in the development and operation of the European Satellite Navigation System (Galileo) and the European Geostationary Navigation Overlay Service (EGNOS). The Subcommittee also noted that Galileo had been providing a precise satellite navigation service through its open service offering metre-scale accuracy. The Subcommittee noted that the capabilities of Galileo had grown, with the addition of a new high-accuracy service.

12. The Subcommittee noted that the Korean Positioning System development programme, a regional satellite system of the Republic of Korea, had been initiated. The first satellite was to be launched in 2027, and the satellite constellation was planned to be completed by 2035. The Subcommittee also noted that the Republic of

Korea was currently developing a satellite-based augmentation system. The first geostationary satellite of the system had been launched in 2022, and provision of the safety-of-life services had begun in 2023.

13. The Subcommittee noted that the Pakistan Space-Based Augmentation System (Pak-SBAS) had been implemented by the Space and Upper Atmosphere Research Commission (SUPARCO) of Pakistan with the support of the Pakistan Civil Aviation Authority. The Subcommittee also noted that the System would utilize GPS and BDS signals and was scheduled to enter service in 2024.
