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PRESS RELEASE

Leonardo: the new control room for satellite orbital insertion has been inaugurated at the Telespazio's Fucino Space Centre

- **Telespazio is the leading private operator of space innovation in Europe which makes it the most capable in managing the sensitive LEOP (*Launch and Early Orbit Phase*) stage of a satellite mission**

- **On 17th December the LEOP system will supervise the orbit insertion of the first COSMO-SkyMed Second Generation satellite. Since 1996, the Fucino Centre has handled operations for 50 satellites**

- **The new infrastructure confirms the commitment of Leonardo to the consolidation of distinctive skills and capabilities to oversee the whole value chain of space activities**

Fucino, 13th December 2019 - Leonardo, through its subsidiary Telespazio (67% Leonardo and 33% Thales), today inaugurated the new LEOP (*Launch and Early Orbit Phase*) control room at the Fucino Space Centre in Abruzzo - the technological core for the sensitive satellite orbital insertion and testing of spacecraft.

The ceremony was attended by the Undersecretary of State of the Prime Minister's Office designated for Space Activities, **Riccardo Fraccaro**, by the Military Advisor to the Presidency of the Council of Ministers, Admiral **Carlo Massagli**, by the Italian Space Agency's President, **Giorgio Saccoccia** by the CEO of Leonardo, **Alessandro Profumo,** and the Coordinator of Leonardo Space Activities and CEO of Telespazio, **Luigi Pasquali**.

"The continuous investment in technologies, capabilities and infrastructures to guarantee safe and effective space operations, in light of the strong growth within this sector, is a key factor in consolidating the leadership of Leonardo in satellite services", **declared the CEO of Leonardo, Alessandro Profumo**. "Leonardo – he added – through Telespazio, is the leading private operator in Europe capable of managing the LEOP stage of a satellite mission, but we are also among the most innovative companies in the marketing of services for institutions, businesses and citizens; from navigation, to geo-information, to the security of territories and infrastructures".

The order of complexity that is managed during a LEOP activity includes up to 50,000 telemetric parameters which indicate the satellite status, with a required performance during this type of operation near to "zero error tolerance".

Luigi Pasquali, Coordinator of Leonardo Space Activities, added: "Since 1996 to the present day, Telespazio has successfully carried out over 50 operations to put into orbit some of the most important international satellites, many of them carrying Leonardo technologies on board. From Fucino, we are supervising the preparatory activities to put into orbit and control the first satellite of the COSMO-SkyMed Second Generation Italian constellation, which will be launched on 17th December. The new room will also represent a strategic asset for managing electric propulsion LEOPs, which will become increasingly important in the coming years".

The role of Leonardo in COSMO-SkyMed Second Generation is not limited to the orbital insertion of the satellite. The company, in fact, also provides stellar attitude sensors for correct positioning in space; the power required for satellite and instrument operation is guaranteed by eight advanced photovoltaic panels. Multiple control and distribution units will transform sunlight into power and will manage it, maximising its efficiency to power on-board systems and subsystems. After COSMO-SkyMed, the “Piero Fanti” Centre will supervise the launch of several EUMETSAT European meteorological satellites starting from 2021.

The “Piero Fanti” Fucino Space Centre is the most important teleport in the world for civilian-use, extending over an area of 370,000 sq.m. and with 170 antennas. Besides the LEOP room, the centre has rooms dedicated to controlling the network of ground stations and flight dynamics, equally important activities in the management of a satellite mission. All facilities are manned 24- hours a day and can simultaneously handle multiple space missions.

Note to editors: what is a LEOP

The LEOP (*Launch and Early Orbit Phase*) is one of the most critical stages of a satellite mission and includes all the activities carried out by the control centre, from the moment of satellite separation from the launcher up to its positioning in the final orbit. For a typical geostationary mission, this requires a series of orbital transfers, in which propellant consumption is close to half the satellite mass. The required performance during this type of operation is very close to "zero error tolerance", since the duration of the mission operational life depends on the residual fuel still on-board the satellite at the end of the LEOP.

The major criticality of LEOP operations depends on the fact that a technologically complex object such as the satellite is operated in flight for the first time after the launch phase, which involves considerable environmental stress, both mechanical and thermal. It is therefore essential to be able to promptly intervene with any actions required to safeguard the mission.

For geostationary satellites (whose orbit is 36,000 km above the Earth), a LEOP lasts ten days on average, but its preparation can last several years. This time is necessary to allow highly specialised personnel to develop all the stages, times and procedures required to transfer the satellite from the release orbit to the final one.

Current satellites are highly complex systems and their management requires dedicated teams, 24- hours a day, each one of them specialised in a specific subsystem. During a LEOP it is necessary to monitor and interpret approximately 50,000 telemetric parameters reporting the satellite status.

The most important stages characterising a LEOP phase are:

1. first telemetry acquisition through the antennas of the Ground Station network after launcher separation;
2. initialisation and configuration of the propulsion system;
3. positioning towards the sun and unfolding of solar panels to allow the supply and recharge of internal batteries;
4. the various (3 to 5) Apogee manoeuvres to pass from the release orbit, highly elliptical and inclined with respect to the Equator, to the geostationary one at an altitude of 42,168 km from the centre of the Earth, which has the characteristic of having the same period of the Earth revolution (24 hours);
5. reaching the target longitude and entering the nominal mode, with the communications antennas facing the ground, the panels fully open and all the subsystems active.