Space experts try to fix Galileo satellites

PARIS, FRANCE: Experts are racing to identify and fix a problem that saw two satellites from Europe's troubled Galileo satellite navigation system going into the wrong orbit.

European Commissioner for Industry and Entrepreneurship Ferdinando Nelli Feroci says that while this is a setback for the programme he is confident it will continue to go ahead as planned. Image: FirstOnline

The pair of satellites were launched from Europe's space pad in Kourou, French Guiana, last week and were intended to be the first two fully operational satellites in the new-generation navigation system.

Experts said it seemed unlikely the two satellites could be brought into the right orbit and used.

"Investigators from the European Space Agency (ESA) and launch operator Arianespace will work with an "internal task force" set up by the European Commission to figure out what went wrong," the EU's executive said.

Initial results will be presented in the first week of September.

European Commissioner for Industry and Entrepreneurship Ferdinando Nelli Feroci said he stood by the project because of its strategic importance, adding he was confident deployment of the satellite constellation will continue as planned.

Two more satellites had been expected to be hoisted into orbit by the end of 2014, opening the way for a first phase of Galileo services in 2015, including applications for smartphones and in-car navigation and search-and-rescue location.

24 operational satellites planned for Galileo

By 2017, according to the Galileo's schedule, all 24 operational satellites would be in place. Six backups would join the fleet by 2020, at which point the system would be fully operational.

The launch of the two Galileo satellites that were deployed into the wrong orbit around Earth, rendering them useless at this stage. Image: European Commission

Launched by a Russian-made Soyuz rocket, the misplaced satellites should have been slotted into a circular orbit at an altitude of 23,500km, inclined at 56 degrees to the equator.

Instead, apparently as a result of a problem with the upper part of the rocket known as the "Fregat", they were placed in an elliptical orbit at a height of 17,000km.

Unlike bigger satellites, which carry larger tanks of hydrazine propellant to adjust their position, the two Galileo satellites weigh only 700kg and only have enough fuel for minor orbital adjustments.

"If it were just a small (orbital) correction, it would be possible, but this one really is major," said French Astrophysicist Alain Dupas.

"The fuel reserves will definitely not be enough to get the satellites on the right track. If you start using up fuel at this stage the satellite's operational life is reduced," Dupas said.

Orbit failures being investigated

Arianespace had initially hailed the launch as a success but hours later, it issued a terse statement saying further observations "highlighted a discrepancy between targeted and reached orbit."

One of the Galileo satellites being correctly deployed in orbit around the Earth. Image: ESA

According to ESA and Arianespace the satellite is in a stable orbit and under control.

Galileo, according to the project's defenders, will be more accurate and have a stronger signal, particularly in built-up areas, than its competitors.

The failure adds to a litany of problems encountered by the €5.4bn space programme, designed to give the EU independence in satellite navigation from the United States' Global Positioning System (GPS).

The programme, financed entirely by the European Commission, has had to brave political objections, technical hitches and cost over-runs.

On the plus side, it says it has used experience from building and using four test, or "validation," satellites to be able to launch four satellites in one go, rather than two, using ESA's Ariane 5 ES heavy launcher.

Each satellite costs around €40m, and the double launch costs between €65m and €70m.

In 2013, the annual global market for satellite navigation products and services was valued at €175bn, and was expected to reach €237bn by 2020, according to figures cited by the European Commission.

Source: AFP via I-Net Bridge