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SATELLITE COMMUNICATIONS

Turkey's Space Roadmap Calls for 17 Satellites in Orbit by 2020

BURAK EGE BEKDIL and
UMIT ENGINSOY, ANKARA, Turkey

The Turkish government has devised an ambitious roadmap for the country's multiple satellite programs until 2020, having recently set up an office that will become a national space agency.

Last November, Ankara set up a Space Technologies Directorate under the supervision of the Transport Ministry. Officials said this office would later become the country's first national space agency.

According to the roadmap, 17 Turkish satellites will be in orbit by 2020. A space industry expert based here said that satellite contracts to be signed in the next five years would amount to \$2 billion.

"This is a niche market with strong prospects due to Turkey's genuine ambitions in space technology," the expert said.

According to the roadmap, Turkey this year will launch Gokturk 2, an electro-optical reconnaissance satellite, and in 2013 Gokturk 1, as well as Turksat 4A, a communications satellite.

Turksat 4B will launch in 2014 and Turksat 4R in 2015, along with Gokturk 3, a synthetic aperture radar (SAR) reconnaissance and observation satellite.

The year 2016 will see in orbit a regional positioning satellite, an infrared early warning satellite and Turksat 5A communications satellite. In 2017, Turksat 5B and a second regional positioning



The Turkish government has announced an ambitious roadmap that would see 17 Turkish satellites launched into orbit by 2020, including the Turksat 4A and 4B communications satellites.

satellite will be launched. Electro-optical Gokturk 4 and two more regional positioning satellites will be in orbit in 2018, and yet two more regional positioning satellites will be launched in 2019.

Finally, in 2020 Turkey will launch its SAR Gokturk 5 into orbit.

The Gokturk satellites launching this year and next are being built by Thales Alenia Space of France and Italy; the Turksat spacecraft are being built by Tokyo-based Mitsubishi Electric Co.

In the mid-2000s, Turkey's military command declared space to be its emerging fourth service, and the government embraced the idea. The focus was to improve intelligence gathering, communications network and early warning.

A military analyst said, "The basic idea is to boost military intelligence capabilities. Also, some of the various satellite programs could in the future be used to boost Turkey's missile programs."

There is a multitude of space actors in Turkey, but experts hope establish-

ment of the national space agency will improve coordination. Current players include the State Planning Organization, Ministry of Transport, communications satellite operator Turksat, state scientific research institute Tubitak and defense procurement agency the Undersecretariat for Defense Industries. Defense firms Aselsan, Roketsan and Turkish Aerospace Industries and three universities also are involved.

A key player, Tubitak cooperates with the Russian space agency, Roscosmos; the German aerospace center, DLR; British UK Space Agency; and the Dutch NSO.

In 2004, the Turkish government identified space as a priority in scientific and technological progress. As part of this strategy, it has sought to develop programs in line with the Human Space Technology Initiative, an effort under the framework of the United Nations Program on Space Applications. The effort promotes international cooperation in human spacelift and space exploration.

"Turkey has the potential, and has been progressing in space programs seeking access to space, with possible involvement in the international space station," said Celal Tufekci, an assistant professor at Istanbul's Yildiz Technical University and an adviser on space to President Abdullah Gul.

Tufekci said the government's critical space programs, other than satellites, include a national astronaut program and a microgravity research center.