

Israel in Space – Current Status
e-Mail interview with Dr. Fred Ortenberg
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Summary

Following the review of Dr. Ortenberg's book "Israel in Space 1988-2008" (see book review in this issue, Vol.18, iss.3, 2021) SpaceOps News (SoN) had the opportunity of an e-mail interview with Fred Ortenberg to fill in the gap between 2008 and 2021 as well as to discuss some ideas and plans for the future of Israel's role in aeronautics.

SoN: What radical processes have taken place in Israel's astronautics in recent years?

During the years following 2008, the development of astronautics in Israel continued in the traditional directions: observation satellites for civil and military purposes and communication satellites. For example, satellites of the Ofeq series No. 9, 10 and 11 were launched by an Israeli rocket in 2010, 2014 and 2016 and were radar spy satellites equipped with devices that allow photographing the desired objects and transmitting information with high resolution up to 0,5 meters day and night and in any weather. Moreover, in the middle of 2020, the newest apparatus of this series "Ofeq-16" (see Figure 1) was launched, equipped with the most advanced equipment, which was recognized by specialists as perfect for this class of satellites.

At the same time, the grouping of geostationary communication satellites launched from foreign test sites expanded. Unfortunately, this program was plagued by successive failures. I will cite just one story preceding the launch of the last satellite of this series, Amos-17, into orbit. Let me remind you that a few days before the launch of the Israeli Amos-6 satellite, SpaceX's Falcon-9 rocket, which was supposed to put the Israeli satellite into orbit, exploded during testing at the Cape Canaveral cosmodrome (USA). During these tests of the launch vehicle, the Amos-6 satellite was completely disabled. Three years later, in August 2019, in order to compensate for the damage, SpaceX delivered a payload of about 6,500 kg to orbit free of charge - the Israeli communication satellite Amos-17. Because of all these events, the AMOS (Afro-Mediterranean Orbital System) communications satellites are now successfully providing broadband data transmission from Central Asia to the US East Coast.

In addition to this main activity, Israel launched several dozen small spacecraft into space, mainly nanosatellites that solve private scientific, technological, educational or commercial problems. As an example, three innovative nanosatellites recently went into orbit in March 2021 as the payload of the Russian Soyuz launch vehicle from the Baikonur cosmodrome in Kazakhstan. The rocket simultaneously launched 38 spacecraft of various applications from 18 countries into space and sent satellites into close sun-synchronous orbits. The Israeli group consisted of three miniature satellites, each weighing about 8 kg and including sensors, antennas, computer systems, control systems, navigation devices and a power system. The purpose of the flight was to demonstrate the long-term autonomous flight of a cluster consisting of several satellites and to determine the geographic position (geolocation) of a ground transmitter. After entering orbit, autonomous nanosatellites are moving in orbit in a fixed formation, will monitor and be used to refine the calculation of the location of people, aircraft and ships.

Let me add a word about the fate of our most advanced Venus (Vegetation and Environment on a New μ -Satellite) is a joined Israeli – French micro-satellite, dedicated to a scientific and technological combined mission. In my book it was announced to be launched 2010. However, life has significantly postponed the date of delivery of the satellite into orbit relative to the planned date. This is a typical example for as they say, man proposes, but the Lord disposes. A real contract with Arianespace for the joint launch of Venus and Optosat-3000 satellites was signed only in 2014. The Venus spacecraft of ISA/CNES, along with OptSat-3000 of the Italian Ministry of Defense, was launched on August 02, 2017 on a Vega vehicle (VV10) from French Guiana Space Center in Kourou.

SoN Would Israel plan additional robotic missions for exploration of outer space?

Among the more ambitious projects completed during the last period, mention should be made of the attempt to land a module on the moon capable of jumping across the lunar surface. Specialists of the private aerospace company Space IL developed an Israeli lunar rover named "Bereshit". In February 2019, the first Israeli probe to the moon was successfully launched with a Falcon-9 rocket. Then, using its own low-thrust engine, in April it entered lunar orbit and began landing ... The image below (Figure 2) shows the device as it was seen by its creators. The real embodiment of the plan turned out to be dramatic: instead of a soft landing, there was a hard collision at high speed, which ended in the complete destruction of the lunar module. Prime Minister Benjamin Netanyahu was present at that moment in the control center, watched the module crash in the fall, and vowed to repeat the Bereshit-2 mission in 2024, in which two landing modules and one orbital module will participate.

Whether this dream of landing on the moon will come true, whether many other space projects will be realized, depends on a chronic disease inherent in Israeli space - a lack of funding. Israel is a small state with limited economic potential; the permissible financing of space projects is ten times less than the budgets allocated for space by the leading space countries. Therefore, many projects proposed by engineers and scientists remain unrealized. On the other hand, Israel's satellite program, keeping pace with the latest advances in the space industry, has allowed it to successfully explore outer space for more than 30 years. Israel belongs to a limited number of countries capable of creating and operating both spacecraft and their means of delivery into orbit, and the country's success in space is indisputable.

SoN Are there any Israeli plans to further participate in the human spaceflight program?

For such a small but technologically advanced country like Israel, participation in other countries' manned programs is a good opportunity to make a name for itself. As you know, the first Israeli to visit orbit was Ilan Ramon, who died in 2003 when the shuttle returned to Earth. Since then, the dreams of continuing manned flights have not left enthusiasts. Negotiations on this issue were carried on continuously, but to no avail. Most recently (November 2020), at a meeting at the residence of Israeli President Reuven Rivlin, they announced a breakthrough in negotiations with the private American company Axiom Space. The signed documents determine the date of the flight (end of 2021), the name of the future second Israeli astronaut (former Israeli military pilot Eytan Stibbe is 62 years old), the mission in which he will take part (200 hours of flight on the International Space Station, conducting experiments within the Israeli scientific developments) and other flight details. For example, pre-flight preparation before launch will take place in the United States for three months; the shuttle will be launched from a cosmodrome in Florida, etc.

These are, in brief, the main recent milestones in the history of Israeli space, which took place in recent years after the publication of my book.

SoN: Thank you for the frank and very interesting interview and good luck for the future!

Figure 1



Ofeq-16. Ground tests

Figure 2



Israeli moon rover. Dreams