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THE SPIRIT IS WILLING... IRAN'S EFFORT TO CONQUER SPACE

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On October 27, Iran launched its first satellite. The Sinah-1 was carried by a Russian Kosmos-3M Space Launch Vehicle (SLV), which took off from Plesetsk in northern Russia and also carried seven other satellites for various states and research organizations. Thus, Iran has become the forty-third country in the world to own a satellite.

Not many details are known about the Sinah-1, but it carries two cameras and communication equipment and is reported to weigh 160 kilograms. If that report is true, it confounds previous assumptions that Iran's research program deals with much smaller satellites. The Sinah-1 is described as an earth monitoring satellite and its cameras are to be used to monitor agriculture and natural resources in Iran, as well as natural disasters. According to Iranian spokesmen, the satellite cost \$15 million and was designed by the Russian firm Polyot, based in Omsk, which also produces the Kosmos-3M SLV. One can assume that the Sinah-1 is a version of the Sterkh satellite, designed and marketed by the same firm.

Besides the Sinah-1, Iran is involved in several other satellite projects, the most important of which is the Mesbah (variously translated as "Dawn," "Lighthouse," and "Flashlight"),

announced in 1999. The Mesbah will be built with the aid of the Italian company Carlo Gavazzi Space and the design will be based on a multi-purpose bus for the MITA mini-satellites that the company developed for the Italian space agency. With a mass of sixty kilograms, the Mesbah will apparently include a remote sensing camera and will also carry communications equipment designed for amateur radio frequencies. Like the Sinah, it is to be launched on board a Russian SLV from Plesetsk.

Several other research satellites have been reported. One is a cooperative, multinational project in which Iran was to join forces with several Asian-Pacific states to build a small research satellite on board a Chinese SLV. Another is a project to build and launch a satellite indigenously. The project was variably named SMMS, SMNS, Safir and even Sinah-1. It is difficult to determine whether this project was linked to the Asian satellite project or even whether it was a single project or a number of different ones. But according to Iranian spokesmen, it was meant to be a "pure" Iranian satellite, built by Iranian engineers and launched by an Iranian satellite launcher – the Shehab-4.

Finally, there is the Zohreh. Iran began to work on a project to launch communications satellites as early as the mid-1970's. Since then, the

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project has passed through several phases. First, Iran conducted protracted negotiations with French companies, and French-built satellites were supposed to be launched in 1995. But nothing ensued from this phase and in early 1998 Iran entered into similar negotiations with Russian organizations. These contacts were suspended in 2003 and renewed only in late 2004 – probably with different organizations in Russia. In January 2005, it was announced that a contract had been signed with Aviaexport Company. In the new version of the Zohreh contract, the project is reported to cost \$132 million – much less than the \$300-350 million price of the previous transaction. If this contract is carried out, that is, if Iran actually makes the first payment, the launch date will be set for 2007-2008.

Various goals have been presented as reasons for launching research satellites. Iranian spokesmen have noted that the satellites are designed to locate and monitor natural resources and perform other, similar missions. But Israeli and American sources have emphasized the military dimension of the Iranian space program. Indeed, Israeli media have portrayed the Iranian satellites as spy satellites, meant to collect visual intelligence data.

Whatever the truth, the primary goal in launching research satellites is to acquire technological know-how, and some Iranian spokesmen have candidly stated that they want to train engineers and researchers in various areas of planning, construction, and launching of satellites. Many other countries and companies are involved in similar projects and current technology is readily accessible. Iran has managed to reach the stage of launching a satellite with the aid of foreign manufacturers, which other countries in the Middle East, including Saudi Arabia, Egypt, Algeria, and Turkey, have done quite some time ago. Nevertheless, these projects should not be underestimated. Although Iran currently depends on foreign technology for both the construction and launching of satellites, it has not

given up its goal of launching a satellite on its own SLV. Development continues on the Shehab-4, which is intended to be Iran's first SLV.

Iran is determined to attain an independent satellite capability for communications and research and, in the future, for military purposes. But beyond their functional aspects, these projects are seen as contributing to the nation's strength and deterrence capability and bolstering its position as the dominant regional power. After all, when almost every state can purchase on the open market satellite products for communications as well as imagery for research and even military quality imagery (up to a resolution of one meter!), there is little economic sense in investing enormous resources to attain an independent satellite capability.

Nevertheless, a closer examination of the projects in which Iran has been engaged indicates its great difficulty in attaining this capability. The Sinah-1 launch came very late considering the length of time Iran was involved in space-related projects. The case of the Zohreh is even more revealing; more than 30 years of continuous efforts have yet to bear fruit. The reasons for this failure are not clear, but they seem to be linked to the government's inherent inability to coordinate government agencies, temper irreconcilable demands, and mobilize the required resources for the projects.

In other words, Iran has both the motivation to achieve far-reaching goals and a significant technological infrastructure, but the wheels nevertheless grind slowly and important projects suffer repeated delays. If this assessment is correct and there is a deep systemic failure, it could have implications for Iran's ability to realize its ambitions in other programs, including those devoted to ballistic missiles and nuclear weapons.

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