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Iran's Air Defence System

The public assessments about Iran's air defense capability to deal with a massive air attacks on its nuclear infrastructure are based on the data that is selectively leaked by intelligence gathering organisations.

The recent procurement of the TOR-M1 (SA-15) by Iran indicates an effort to expand the capability, not only by the upgrade of existing systems, but with newly purchased ones.

Yiftah Shafir, an analyst in the institute for national security studies in Tel-Aviv (INSS) said that last year, Russia has agreed to sell 29 of its Tor-M1 systems to Iran.

Shafir said that the TOR-M1 surface-to-air missile system is capable of shooting down fixed/ rotary wing aircraft, unmanned aerial vehicles, guided missiles and precision weapon.

The system is designed to operate in very "dense" environment, where jammers are being used intensively.

TOR-M1 can detect and track up to 48 targets at a maximum range of 25km, and engage two of them simultaneously – at a speed of up to 700m/sec and at a distance of between one to 12km.

The missile is armed with a 15kg high-explosive fragmentation warhead, activated by a proximity fuse.

According to Shafir, the Iranians are operating ten batteries of the Chinese version of the SA-2 (Guideline) missile and four batteries of the Russian SA-5 (Gammon) and SA-6 (gainful) missiles. These were declared operational in 1997.

The SA-5 improved Iran's air defense capability when it was introduced into service, but as this system was designed mainly to defend against strategic bombers, it has a limited capability against very fast, highly maneuverable strike fighters and precision guided weapons.

The Iranians are also operating what was left from the 15 MIM-23 HAWK missile systems that they have received from the United States in the 1960s. It is known that a big effort was made to keep at least some of them operational. By getting spare parts through "straw" companies – mainly in Europe – and by simple cannibalism "...they managed to keep these old system is an operational status by a massive effort to get spares in many ways," the Israeli analyst said.

The effort in keeping the old US-made systems



The Thor-M1 missile system.

operational is (according to Shafir) the reason why Iran in recent years made such a big effort to modernise its air defense units.

According to confirmed intelligence, the Iranian Revolutionary Guards are operating at least two batteries of the SA-10 Grumble missile system – known also as the S-300PMU.

"This is now the most capable anti air system in the Iranian arsenal," Shafir said.

This version of the S-300 system for surface launch was designed mainly for export and is using the advanced 48N6E missile that has a much longer range and improved lethality.

The S-300 features four missiles per launcher and a 22 second reaction time.

The information about the Iranian early warning capability is limited. The early warning systems built in the 1950s were upgraded in the 1970s with a modern air defense radar network. Following the 1979 Khomeini Revolution, Washington cancelled an ordered AWACS sale which left the air force's SA-2 and SA-6 SA-2 battalions and 15 improved Hawk battalions as the basis for Iran's air defense.

The Iranians (according to the INSS data base) are also operating a number of units equipped with ageing British Rapier and obsolete Tiger missile, as well as Swedish RBS-70 short-range missiles.

Combat units are equipped with should

launched missiles, mainly SA-16 (IGLA), Fim-92a (stinger) and a locally built Misagh.

According to Shafir, the S-300 and TOR-M1 systems (especially if connected by a command and control system) might create a relatively efficient air defence system.

The reports about the deployment of the Iranian air defences are very general. The very recent assessment is that the main sites of the surface-to-air missiles are Tehran and the strategic military industrial centers. Iran has deployed the SA-5 batteries to defend Tehran, major ports and oil facilities, providing long-range medium-to-high altitude defence for vital coastal facilities. The Hawk and SA-2 batteries are reportedly located around Tehran, Isfahan, Shiraz, Bandar Abbas, Kharg Island, Bushehr, Bandar Khomeini, Ahwaz, Dezful, Kermanshah, Hamadan, and Tabriz, providing point defense for key bases and facilities.

The Iranians have been making attempts to locally build air defense systems. One example is the a copy of the Chinese Feimeng 80.

The Feimeng 80 air defense missile is a point defense missile that is usually deployed to ammunition depots or military bases. Its mission is similar to that of the "Avenger" missile. With an effective engagement range of 12-15km, the system uses an E/F-band acquisition radar and a J-band engagement radar.

The INSS data indicates some help from China in upgrading some of Iran's surveillance radar systems.

Shafir said that Iran is using the JY-14 search radar to detect aerial targets. In recent months, there were some reports about an Iranian deal to procure the Russian made Pantsyr-S1 air defense system.

This close-in air defence system is designed to defend ground installations against a variety of weapons, including fixed-wing aircraft and helicopters, ballistic and cruise missiles, precision-guided munitions and unmanned air vehicles. It was designed by the KBP Instrument Design Bureau of Tula, Russia, and is manufactured by the Ulyanovsk Mechanical

Plant, Ulyanovsk, Russia

In May 2000, the United Arab Emirates ordered 50 Pantsyr-S1 systems, mounted on MAN SX 45 8x8 wheeled vehicles.

Syria has placed an order for 50 Pantsyr-S1 systems. Deliveries began in June 2008.

Some reports indicate to a "combined" deal in which some of the Pantsyr-S1 will be transferred to Iran.

Pantsyr-S1 carries 12 surface-to-air missiles, each weighing 65kg at launch. Range is from 1km to 12km.

The mobile system is also fitted with two 2A72 30mm guns, with 750 rounds of varied ammunition. Is the Iranian air defense arsenal a problem for any air force that would attack targets in this country?

"One cannot down-play their capability in spite of the problems," Shafir said. He added that with the Iranian effort to build military systems based on reverse engineering, the arsenal could pose a technical challenge to electronic warfare and countermeasures. **APDR**

The latest model of S-300P for Vietnam and China, the S-300PMU-2 "Favorite." It has the capability to launch missiles of different types and sizes, like those two models in front of the vehicles.

