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Arrival of Sa'ar 6 Ships Marks Evolution of Israeli Naval Doctrine

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EXECUTIVE SUMMARY: The docking of the first of four German-made Sa'ar 6-class Israel Navy warships (dubbed Magen) at Haifa Naval Base marks the arrival of an advanced sea platform that will give Israel new capabilities to defend its critical offshore energy resources against a growing array of precision-guided enemy weaponry.

The INS Magen, a German-made Sa'ar 6-class warship, arrived at Haifa Naval Base in early December 2020. It will be joined by the INS Oz in July of this year, and INS Atzmaut and INS Nitzhahon are scheduled to arrive in September and November.

The ships are constructed by the German shipbuilder Thyssenkrupp, and the design of the platforms was conducted in close collaboration with Israel Navy engineers. Each platform costs $400 million to produce, with the German government covering one-third of the cost.

Israeli onboard combat systems will be installed after the warships arrive in Israel. Ninety-five percent of those systems will be Israeli-made, and many of them will be completely new, designed for today's threats.

The arrival of the Magen at Haifa Naval Base marked the Israeli Navy's transition into a new combat doctrine that is better suited than its predecessor to the evolving regional threat. Under the new strategy, the Navy will play a significantly greater role in rapidly detecting and engaging enemy targets on shore.

The Magen project therefore represents a leap forward in Israel's naval defense capabilities and an evolved naval strategy concept designed for the 21st century threat landscape.

Hezbollah's arsenal of projectiles, which is larger than that of most NATO armies, represents the primary conventional threat to Israeli security. The Iranian-backed terror army is estimated to have some 130,000 projectiles, including, according to international media reports, the supersonic Yakhont surface-to-sea cruise missile, which it reportedly received from Assad regime weapons depots in recent years.

Hezbollah is also trying to develop precision ballistic capabilities, with the support of Iran.

Hamas and Palestinian Islamic Jihad in Gaza, meanwhile, are building up their own ballistic rocket capability. Adversaries in Lebanon and Gaza have fleets of unmanned aerial vehicles that can challenge offshore rigs.

The Iranian Quds Force, for its part, could deploy its own direct strike capabilities on the Syrian coastline. In addition, Iran is believed to have moved cruise missiles to Syria.

In short, the arena is rapidly changing, and threats of high-intensity projectile barrages are evolving at a pace not seen in the past. At the same time, Israel's dependence on the sea has never been greater, and is set to expand even further in coming years.

The Tamar offshore rigs are located west of Gaza in Israel's Exclusive Economic Zone (EEZ), while Leviathan is off the Haifa coastline. The Karish and Tanin gas fields are located north of Leviathan in the Mediterranean Sea. The rigs deliver liquefied natural gas to the coast, where they are converted to electricity in power stations. Some 70% of Israel's electric consumption is now based on natural gas, and the transition away from coal and toward gas is essentially irreversible due to infrastructure changes.

Around half of Israel's fresh water comes from the Mediterranean Sea via five desalination plants, with two more expected to come online in the next few years.

The vast majority of Israel's imports also arrive via the sea. They include 90% of the country's wheat, 300,000 vehicles per year, and an array of raw materials that depend on secure sea routes—not air traffic—to continue to arrive. Container shipping represents a rate of import with which cargo planes cannot compete, as a cargo ship can carry many times more goods than any cargo aircraft. Sea routes and ports are thus more critical for Israel's daily routine than air cargo.

Even during the Yom Kippur War's "air train" of successive planes carrying emergency military equipment and bombs to Israel, such supplies

represented no more than 10% of Israel's imports of emergency supplies in the 1973 conflict. Most supplies came in via the sea.

Today, Haifa's port handles 53% of imports, Ashdod's 43%, and Eilat's some 4%. While small, Eilat's port is critical because it represents an additional southern outlet via the Red Sea.

Israel's first PM, David Ben-Gurion, once noted that without maritime control the State of Israel would be besieged. His observation is even more relevant today. The sea remains Israel's longest border and its chief electricity source, water supply, and means of bringing goods into the country.

As Israel's economic waters—an area roughly twice the size of Israel in square kilometers—grew in strategic importance, naval planners began thinking of new ways to defend it. In 2013, the government allocated the Navy the job of defending the state's waters, and planning work began in earnest.

As it evaluated its new role in securing strategic assets in Israel's EEZ, the Israel Navy concluded that it can only protect offshore rigs using ships.

As a result, each Sa'ar 6 ship will have two advanced air defense systems onboard: Rafael's naval Iron Dome and Israel Aerospace Industries' Barak 8. A single radar made by IAI-Elta will control the onboard defense systems. The same radar can detect ballistic and cruise missile threats from a long range, and the ship's battle management system can quickly assign the right interceptor for a rapid hard kill.

The ships will also be equipped with advanced electronic warfare capabilities for a "soft" layer of defense against enemy projectiles.

This multi-layered defense of the gas rigs will form a virtual fence that will protect them against an array of threats—including fast, low-flying cruise missiles, which are the most challenging targets to engage.

The ships' command and control system represents an additional core capability that will integrate all the onboard systems, employ artificial intelligence, and build a live tactical picture. Seventy-six mm caliber guns and Rafael-made Typhoon remote control weapons stations will also be installed.

But defense is only one part of the new concept. The other part relates to how the Navy thinks about engaging adversaries on land.

This entails a shift from the Blue Water warfare doctrine, which has dominated the Navy since the 1973 War, to a Brown Water doctrine, which places a new focus on sea-to-land combat.

The Yom Kippur War was the first time Israeli and hostile ships fired missiles at one another at sea. On October 6, 1973, at the battle of Latakiya, Israel successfully implemented its doctrine of the time, which called for small, fast vessels carrying relatively short-range missiles and guns charging toward enemy ships at full speed until they came within missile range (12 -14 nautical miles). Once within range, the ships struck their targets.

Since enemy warships had missiles with longer ranges in 1973, the Israel Navy had to deploy electronic warfare and chafes to defend its ships. The Latakiya battle was a decisive Israeli victory that validated the doctrine, which dominated the Navy's thinking for the next 30 years.

Ships were designed with defensive and attack capabilities for ship-to-ship combat based on this experience.

But the 2006 Second Lebanon War made clear that it was time for the Navy to update its doctrine. When the INS Hanit Sa'ar 5-class frigate was hit by a Hezbollah shore-to-sea missile, the Navy saw that things had changed.

The arms race that flooded the region with precision-guided missiles and new types of rockets meant Israeli targets both on land and at sea faced a new level of exposure.

Hamas, for its part, is heavily investing in its naval commando assets—an investment that includes the construction of underwater tunnels used by Hamas scuba attackers.

Meanwhile, defense industries set about converting surface-to-surface missiles into land-to-sea missiles, with some of those missiles proliferating to adversaries.

A new strategic naval situation was taking shape.

The Navy's Brown Water concept is founded on the building block of interconnectivity, which means the creation of a joint air situation picture between the Navy and the Israel Air Force.

In other words, whichever branch detects targets first automatically shares the threat with the other branch—a key feature of network-centered warfare. The result is that Israel's air defense networks are nourished by the same sensors on land and at sea. Ground forces can also feed data into this common network and use it to order strikes on targets from the sea.

The Sa'ar 6's advanced radar detection and interception capabilities, and its connection to ground-based air defense systems, form a central foundation for

a new level of interoperability. Ships that detect threats will transfer the data to land-based military networks, meaning it will be easier for the IDF to launch return strikes. The Sa'ar 6 ships will also be involved in intense combat data-sharing among themselves.

Another key feature is the ships' low radar cross section design, which creates a near stealth effect for enemy radar systems.

The new ships carry more firepower per square meter than any ship its size in the world, and for a 2,000-ton, 90-meter-long vessel (10 meters longer than the Sa'ar 5), it is packed to the brim with firepower.

During routine times, the Sa'ar 6 ships will conduct patrols as well as operational assignments. During emergencies, they will head to designated defense zones to protect the gas rigs. The ships' onboard systems will enable them to detect, transmit, and receive land-based threat locations and strike those targets if called upon.

The Israel Navy will grow to a size of approximately 15 vessels. While relatively small, the fleet will nevertheless enjoy a high degree of flexibility, meaning it will conduct operational assignments that go beyond protecting the gas rigs.

The Sa'ar 6 ships can stay at sea longer and sail farther than their predecessors, so they will be able to play an active role in securing Israel's maritime borders and defending its sea routes.

The ships can take active part in Israel's Campaign Between the Wars, which involves disrupting enemy force build-up activities in multiple arenas with an emphasis on the north.

These ships' arrival represents a milestone in the evolution of the Israel Navy.

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