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SSK DOLPHIN CLASS ATTACK SUBMARINE, ISRAEL

Israel's three Dolphin Class submarines were designed by Ingenieurkontor Lubeck Prof Gabler Nachf GmbH (IKL), a subsidiary of Howaldtswerke-Deutsche Werft AG (HDW) based in Lubeck, Germany. A schedule had originally been planned for the construction of the three submarines by an industrial team consisting of HDW and Thyssen Nordseewerke, lead by Litton Ingalls Shipbuilding, but the project was cancelled in 1990. Following the Gulf crisis in 1990 and 1991, contracts were placed for the construction of the Dolphin and the Leviathan, to proceed with funding support from the German government. Approval for construction of the third submarine was granted in 1994. The hull sections were cut at the HDW shipyard at Kiel, and then moved to Thyssen Nordseewerke shipyards at Emden in Germany for final assembly.

The first-of-class INS (Israeli Naval Ship) Dolphin was commissioned in 1999, INS Leviathan and INS Tekuma in 2000. The mission of the submarines is to carry out interdiction and surveillance operations and special missions. They replaced the Gal Class submarines, which entered service in 1977.

COMBAT SYSTEM

The weapon control system is the ISUS 90-1 TCS supplied by STN Atlas Elektronik, which provides automatic sensor management, fire and weapon control, navigation and operation.

WEAPONS

The submarine has the capacity to carry up to 16 surface-to-surface missiles or torpedoes. The surface-to-surface missile is the submarine-launched Harpoon, which delivers a 227kg warhead to a range of 130km

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INS Dolphin was commissioned in 1999, INS Leviathan in 2000.

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at high subsonic speed.

The submarine has ten bow torpedo tubes. Four of the tubes have a 650mm diameter which could provide the capability of launching swimmer delivery vehicles (SDVs). With liners the tubes could be used for torpedoes. Six tubes of 533mm diameter for launching DM2A3 torpedoes were supplied by Atlas Elektronik. The torpedoes use wire-guided active homing to deliver a 260kg warhead at a maximum speed of 35 knots to a target range of over 13km. Using passive homing and speed of 22 knots, the torpedo has a range up to 28km.

The submarine can also be armed with mines. A wet and dry compartment is installed for deploying underwater swimmers.

COUNTERMEASURES

The submarines' radar warning receiver is the 4CH(V)2 Timnex electronic support measures system developed by Elbit in Haifa. The Timnex receives, identifies, displays and records the radar signal parameters. The system operates over 2 to 18GHz frequency bands and the processor operates at rates up to 1m pulses per second.

SENSORS

The Dolphin class submarines are equipped with an Elta surface search radar operating at I-band. The sonar suite includes the CSU 90 hull mounted passive and active search and attack radar supplied by Atlas Elektronik. The PRS-3 passive ranging sonar is also supplied by Atlas Elektronik. The flank array sonar providing passive search is the type FAS-3.

The submarine has two periscopes supplied by Kollmorgen.


PROPULSION

The submarine is powered by three 16V 396 SE 84 diesel engines developing 3.12MW sustained power and supplied by MTU (Motoren und Turbinen Union) Munchen GmbH, based in Munich. The submarine is equipped with three 750kW alternators, and a 2.85MW sustained power motor supplied by Siemens. The machinery drives a single shaft.

The propulsion system provides a speed of 20 knots dived and a snorting speed of 11 knots. The range of the submarine is 8,000 miles at a surface speed of eight knots and over 400 miles at an economical speed of 8 knots dived. The hull is rated for a diving depth of 350m. The endurance of the submarine is 30 days.




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The mission of the submarines is to carry out interdiction and surveillance operations and special missions.


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Torpedo room with reserve stowage.

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SPECIFICATIONS



The submarine has two periscopes supplied by Kollmorgen.

FEATURED SUPPLIERS

- ▶ [ATLAS ELEKTRONIK GmbH - Sonar Systems \(Sonar Systems and Equipment\)](#)
- ▶ [Bainbridge International - Flame Retardant Protection Systems \(Warship Design, Build, Modernisation and Repair\)](#)
- ▶ [Haindl - Sonar Windows and Fairings and Composite Component Production \(Sonar Systems and Equipment\)](#)
- ▶ [Kollmorgen Corporation - Electro-Optical Defense Systems \(Fire Control, Surveillance and Targeting\)](#)
- ▶ [L-3 Communications ELAC Nautik GmbH - Sonar Systems, Echosounders and Underwater Communication Systems \(Sonar Systems and Equipment\)](#)
- ▶ [RHEINMETALL DEFENCE ELECTRONICS - Nautical and Naval Simulation \(Training and Simulation\)](#)

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